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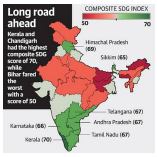
Agriculture and Rural Development: Strategic Issues and Reform Options



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On

Agriculture and Rural Development: Strategic Issues and Reform Options

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CONTENTS

Geographical Study Of Fruit Farming In Barshi Tahsil Of Solapur District

Dr. Ankush Shankar Shinde
Associate Professor, Department of Geography, C.B.K's B. Sc, R.V. Commerce & R.J. Arts College, Akkalkot.
ankushshindegeo@gmail.com.

Abstract

Fruits and vegetables contain a variety of nutrients including vitamins, minerals and antioxidants. Fruits are rich in fiber which is very essential for the smooth movement of the **digestive system**. There are some fruits that give body energy as they contain carbohydrates which are the main source of energy**. Carbohydrates** in fruits are mainly sugar which actually breaks down easily and make a quick source of energy. They also contain **minerals, vitamins** and **nutrients** that are useful for a healthy life. They are easy to cook and digest easily. Some of the popular and healthy fruits that can be consumed in daily everyday meal are **apples**, banana, grapefruit, mango, orange, strawberry, guava, papaya, watermelon, muskmelon, sweet lime etc. Barshi tahsil is a drought prone region in which the proportion of fruits cultivation area was about 1.37 % in 1995-96 and about 1.07 % in 2010-11 to the total cropped area. This tahsil ranks 4th position in fruits cultivation district in 1995-96 & 7th position in 2015-16. Barshi tahsil is in drought prone region where temperature ranges between 15˚C in winter season & 41˚C in summer season and the annual rainfall is less than 610 mm. The proportion of gross irrigated area to gross cropped area is about 8.81 % in 1995-96 and it was about 5.73 % in 2015-16. Due to availability good soil condition, there is a greater scope for fruits cultivation by using dry farming technique. In this paper, an attempt is focused on changing the pattern of fruits cultivation in tahsil with comparison to Solapur district.

Keywords: Landuse, Change of volume cropping pattern crop, Total fruits cultivation area (TFCA)

Introduction

Fruits and vegetables contain a variety of nutrients including vitamins, minerals and antioxidants. Fruits are rich in fiber which is very essential for the smooth movement of the **digestive system.** There are some fruits that give body energy as they contain carbohydrates which are the main source of energy. **Carbohydrates** in fruits are mainly sugar which actually breaks down easily and make a quick source of energy. They also contain **minerals, vitamins** and **nutrients** that are useful for a healthy life. They are easy to cook and digest easily. Some of the popular and healthy fruits that can be consumed in daily everyday meal are **apples,** banana, grapefruit, mango, orange, strawberry, guava, papaya, watermelon, muskmelon, sweet lime etc. Barshi tahsil is in drought prone region where temperature ranges between 15˚C in winter season & 41˚C in summer season and the annual rainfall is less than 610 mm. Due to availability good soil condition, there is a greater scope for fruits cultivation by using dry farming technique. In this paper, an attempt is focused on changing the pattern of fruits cultivation in tahsil with comparison to Solapur district.

Rational of the Study :-

Fruits and vegetables cultivation requires definite assurance of water availability for growth of fruits and it gives more yield and economic profit to the farmers. Out of the total district, Sangola and Malshiras tahsils are leading in irrigation facilities, but Sangola and Pandharpur tahsils are leading position in fruits cultivation in the district.. The proportion of fruits cultivation of Maharashtra state to India is about 22.02% in 2015-16. As compared to other districts , Solapur district shows about 4.69% fruits cultivation in Maharashtra state in 2015-16. There is very less proportion about 5.49 % of fruits cultivation to the total fruit cultivated area in Solapur district in 2015-16. There are slowly irrigation development takes place in Solapur district from back 30 to 40 years period. Solapur district is famous for sugar industries in Maharashtra and area under sugarcane have had been increasing . The land is also suitable for fruits cultivation in the district.

Objectives:

By keeping, the perspective agricultural development view in mind, the paper investigates the following objects as

1. To study the fruit farming pattern in Barshi tahsil of Solapur district.
2. To study the changing fruit farming pattern in Barshi tahsil of Solapur district.

Hypothesis :-

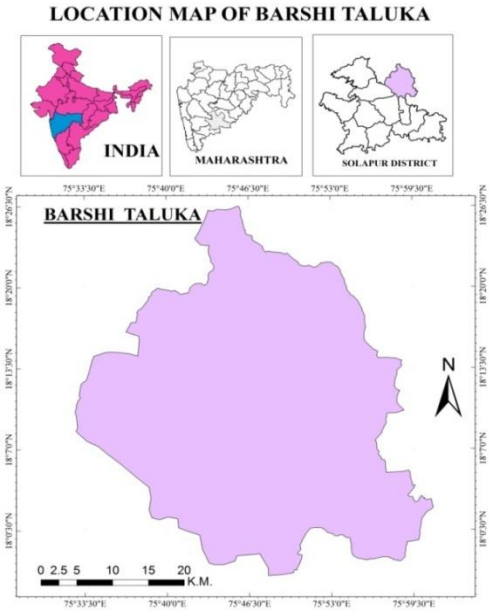
1. Fruits cultivation is directly depends upon irrigation facilities and development.
2. Farmers choice to specific type of fruit cultivation is depends upon his economic status, Government Schemes /subsidies for cultivation.
3. Climatic extremes at certain period is destroying factor for fruits cultivation.

Research Methodology :-

The Secondary data is collected from agricultural bulletins, District socio-economic Abstract, District Agricultural Reports and Agricultural Websites, District Census Handbook and so on. Total Fruits Cultivation Area has been calculated at tahsil level, under specific fruits has been calculated to total tahsil fruit cultivated area. Statistical formula are applied for removing conclusion.

Study Area :

Barshi tahsil is located in the northeast part of Solapur district. It is situated at the foothills of Balaghat range. It is surrounded by Bhum tahsil of Osmanabad district to the north part, Kalamb tahsil of Osmanabad district to the northeastern part, Osmanabad tahsil to the East, Tuljapur tahsilof Osmanabad district northeast part , Madha tahsil to the southeast & west part and Solapur North tahsil to the south part and Parenda tahsil to northwest part. It's an area of 1547.15 Km² and holds the 4th rank of tahsil in Solapur District. This tahsil has situated on the central upland part of Solapur District . The latitudinal extent is **17˚55'53**" N to **18˚26'25**" North and longitudinal extent is **75˚32'24**" E to **76˚0'59**" East. This Barshi tahsil is mainly rural in character and has **139** villages according to 2011 census. The total population was 324027 persons that holds 4th rank while total literacy was 78.9 % & 2nd holds rank in Solapur district as per 2011 census.



Analysis and Data Analysis Discussion :-

In Solapur district out of total fruits cultivation about 12.0 % area is found under fruits cultivation in Barshi tahsil in 1995-96 and it changes 5.49 % in 2015-16.In 1995-96, total fruits cultivation area was about 1651 Ha which accounts about 1.37 % cropped area to the total cropped area. It seems that, out of total fruits cultivation area (TFCA), other pome fruits accounts about 3.55% share; other fruits constitutes 30.37% area ; grapes constitute about 33.25 % area; citrus fruits constitutes about 18.35%; mangoes constitutes about 5.94%; banana constitutes 2.60 %; chikku constitutes about 3.14% ; guava constitutes about 2.49% and mango constitutes 5.94% area in the tahsil. In 2015-16, total fruits cultivation area was about 1702 Ha which accounts about 1.22% cropped area to the total cropped area. It seems that, out of total fruits cultivation area (TFCA), pomegranate accounts about 10.04% area; table grapes constitutes 33.19 % area ; banana constitute about 0.23% area ; ber constitute about 11.33 % area; lemon & acid lime constitutes about 8.93%; other citrus fruits constitutes about 18.09 % ; mangoes constitutes about 12.56%; mangoes constitutes about 9.87 ; mosambi constitute about 1.93 %; and guava constitutes about 0.52 % area in the tahsil.

Table :- Area under Fruit Cultivation in Barshi tahsil

Area under Fruit Cultivation in Barshi tahsil (1995-96 to 2015-16)							
Fruits	**1995-96**		**Changes in 1995-96 to 2010-11**		**2015-16**		**Fruits**
	HA	% to TFCA	Hectares	% to TFCA	HA	% to TFCA	

Mangoes	98	5.94	70	3.93	168	9.87	Mangoes
Banana	43	2.60	-39	-2.37	04	0.23	Banana
Grapes	549	33.25	21	0.23	565 05	33.19 0.29	Table Grapes White Grapes
Papaya	02	0.12	-02		0	0	Papaya
Guava	41	2.49	-32	-1.97	09	0.52	Guava
Chikku	52	3.14	01	-0.03	53	3.11	Chikku
Citrus Fruit	303	18.35	190	10.6	0 33 152 308	0 1.93 8.93 18.09	Orange & Kinu Mosambi Lemon & Acid Lime Other Citrus fruit
Other Pome Fruits	59	3.55	-59	-3.55	0 0	0 0	Watermelon Muskmelon
Other Fruits	504	30.37	-99	-6.60	193 171 41	11.33 10.04 2.40	Ber Pomegranate Other fruits
Total Fruits	**1651**		51		**1702**		**Total Fruits**
Proportion of All Fruits to TCA	**120432 1.37**		**-0.15%**		**158152 1.22**		**Proportion of All Fruits to TCA**

In the investigation period of study, it seems that though the fruit cultivated area has been increased by 51 Ha in the district and it declines about 0.15 % area to gross cropped area in w.r.t. Total Fruits Cultivation Area (TFCA) in 2015-16. There is a positive and negative changes takes place in fruits cultivated area in the district. There is a positive changes takes place by about 3.93 % under mangoes ; about 0.23 % under grapes fruits; about 10.60 % under citrus fruits in tahsil. There is a negative changes takes place by about 2.37 % under *grapes* banana ; about 1.97 % under guava; about 3.55% under other pome fruits and about 6.60 % under other fruits including Ber. Pomegranate) in tahsil.

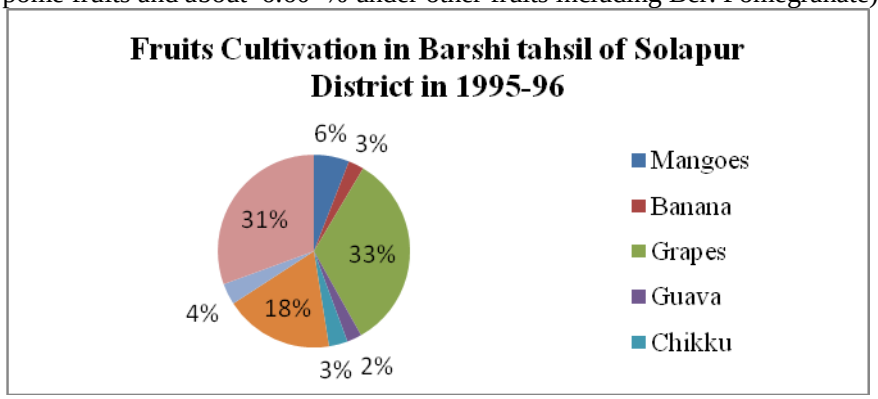


Diagram : Fruits cultivation in Barshi tahsil of Solapur district in 1995-96

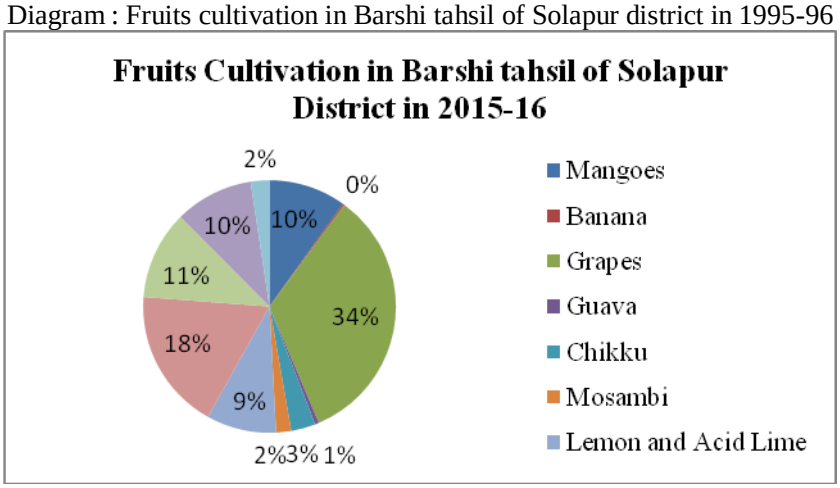


Diagram : Fruits cultivation in Barshi tahsil of Solapur district in 2010-11

Conclusion :

1. There has been increased only 51 Ha under fruits cultivation due to the more concentration of pulses cultivation in Barshi tahsil.
2. Barshi tahsil is famous for Lemon and Acid lime cultivation in Solapur district and it shares about 28.95 % area of fruit cultivation in Barshi tahsil. There is a greater demand for it.
3. There is a positive changes found under mangoes, grapes, and citrus fruits in Barshi tahsil.
4. There is a negative changes found under banana, guava and other fruits like Ber, Pomegranate and other pome fruits in Barshi tahsil.

Recommendation / Suggestion :-

These fruit cultivation requires assured irrigation source, modern agriculture technique, new ,marketing centres , therefore these facilities should be provided at micro level that gets more benefit gets to farmers and their attitude changes towards fruit farming from traditional agriculture.

References:

1. Socio economic Abstract of Solapur District.
2. A New geography of Maharashtra : Afzal Sharieff , Massod Ali Khan , A. Balakishan.
3. Geography of Maharashtra –Dr.S.M. Bhamare.
4. Census of Maharashtra.
5. Economic Review of Maharashtra.

Spatio-Temporal Changes In The Distribution Of Population In Jalgaon District (Ms)

Arvind A. Badgujar
Associate Professor in Geography, Y. C. S. P. Mandal's Dadasaheb Digambar Shankar Patil Arts, Commerce & Science College, Erandol, Dist. Jalgaon
Email : aabddsp@gmail.com

Abstract :

The present paper investigates and elaborates the spatio-temporal changes in the distribution of population in Jalgaon district of Maharashtra. The data for the study is collected from the secondary sources, mainly the District Census Handbooks of Jalgaon districts for the period of 2001 and 2011. The basis of distribution of population is arithmetic density of population which is also called as man-land ratio. The spatio-temporal changes are based on relative percentage changes incurred during the decade of 2001 and 2011. The results suggest that the spatio-temporal changes positive in all the tehsils but changes are very high in Jalgaon and Jamner tehsil. Jalgaon being the headquarters of the district enjoys the central location in the district and well connected with other parts of the districts by railways and roadways. Therefore, there is an increase in population.

Key Words : Population Density, Population distribution, Spatio-temporal change, Jalgaon

Introduction :

'Demography is the study of population change over time and space, it studies the various determinants of population change and the impact of such changes on socio-economic development of the region. The study of population gives an idea about the dispersion of population. The density is one of the parameters for measuring population ratio of the region. This can be measured by arithmetic, agricultural and physiological.' (Pacharane, 2012). 'The concepts of distribution and density of population, though not identical, are so intimately related to each other that there is a genuine reason to discuss them simultaneously.' (Chandana, 2011).

The population distribution is studied in terms of population concentration. From this point of view, it is interesting to study the population and their changes in the study region. The change in population is not only change in its numbers but also its change in structure, composition and distribution with respect to region and time. The population growth means changes in total population; it may be positive or negative. Population growth is the indicator of economic and social development. The study of measurement of such change, both temporal and spatial or comparative study gives an idea about changing characteristics of population of study region.

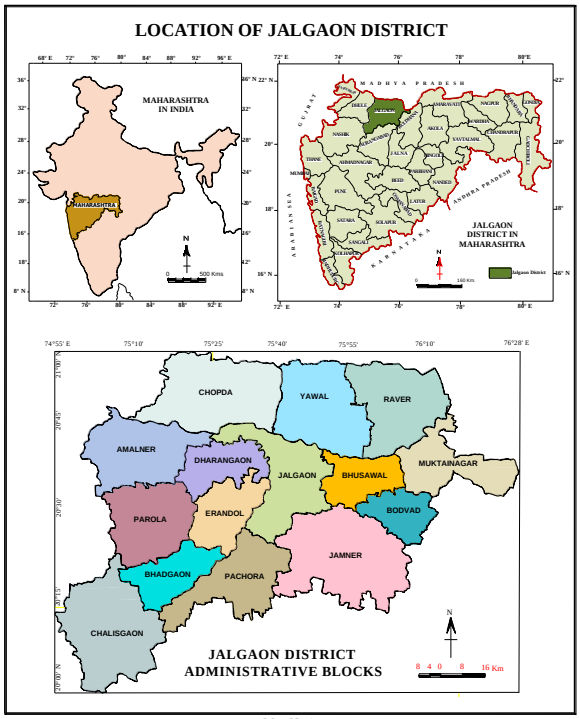
The Study Region :

The district under study is flanked by the Satpura ranges to the north and Ajanta hills to the south and the central part of the district is covered by well known Tapi river basin which flows towards the west. The region experiences slightly different climate than by rest of the state of Maharashtra, since it is located away from the coast but at much lower altitude that the rest of the plateau of Maharashtra. The location away from the coast has resulted in high range of mean daily temperature which is slightly than 15^0C. Low altitude has resulted in abnormally high maximum summer temperature which is normally above 40^0 C. The district is bounded by the state of Madhya Pradesh to the north. The rivers Anner and Panjhara form a boundary in the west between the region and the Dhule district. In the east, the district under study is bordered by Buldhana district. To the south, Satmala, Ajantha and Chandor hills form a natural boundary between the study region and the districts of Nasik and Aurangabad. The Jalgaon district which is one of the 34 districts of Maharashtra lies between 20^0 N and 21^0 N latitudes and 74^0 55 E and 76^0 28' E longitudes. The total area of the district is 11765.0 sq. Km. According to 2011 Census, the total population of the region was 42, 29, 917.

Objective : The objective of the present paper is to investigate the spatio-temporal changes incurred in the distribution of population in Jalgaon district of Maharashtra.

Methodology :

The data for the present study are of secondary type, which are collected from the District Census Handbooks of 2001 and 2011 for Jalgaon district. The distribution of population is based on the arithmetic density of population which is calculated simply as man-land ratio. The spatio-temporal changes are based on relative percentage changes incurred during the decade of 2001 and 2011. While calculating spatio-temporal changes, the data of 2001 are considered as base, and then relative changes are calculated accordingly for each tehsil of Jalgaon district. The results, thus obtained are elaborated thoroughly with the help of table and maps.



Map No.1

Results And Discussion :

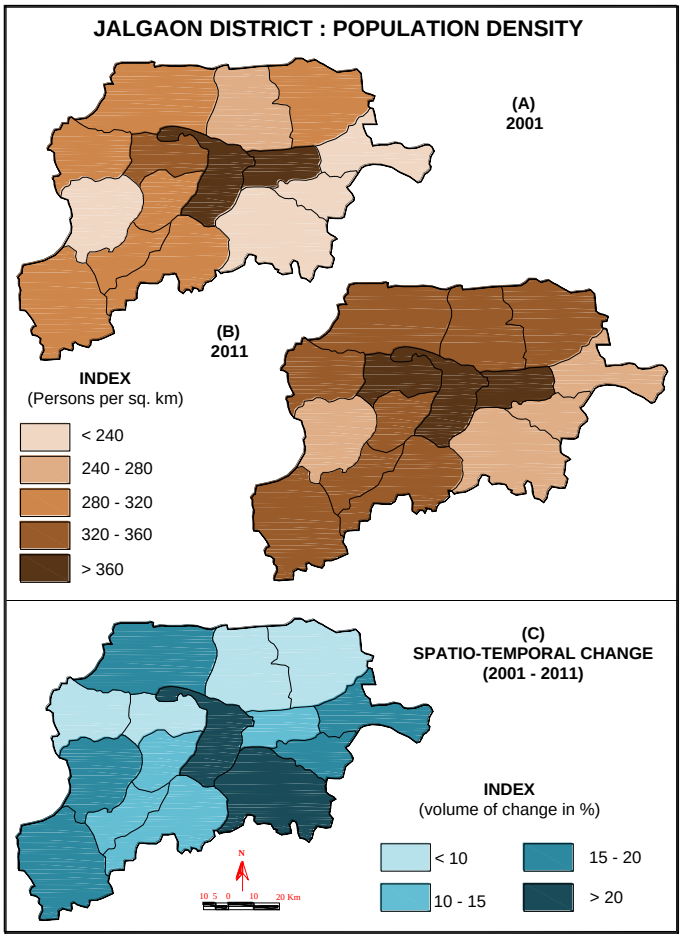
The density is the ratio between land and population in a region. This density can be expressed into three ways, namely, arithmetic, agricultural and physiological density. The geographers are generally use arithmetic density which is the total number of people divided by total area of the region (Rubenstein, M. James, 2003). Arithmetic density of population is also called crude density as it only denotes only persons living in per sq. km area. Table No. 01 shows arithmetic density of population in Jalgaon district for the years 2001 and 2011. It also shows spatio-temporal changes occurred in it over the last decade.

Table No. 01 - Jalgaon District : Arithmetic Density of Population (2001-2011)

Sr. No.	Tehsils	Density of Population		Volume of Change in %
		2001	2011	
1	Chopda	285	328	15.06
2	Yawal	260	285	9.51
3	Raver	305	334	9.41
4	Muktainagar	213	253	18.65
5	Bodvad	223	258	16.02
6	Bhusawal	686	757	10.42
7	Jalgaon	671	819	22.09
8	Erandol	300	337	12.43
9	Dharangaon	335	361	7.98
10	Amalner	311	341	9.65
11	Parola	215	249	15.86
12	Bhadgaon	293	336	14.58
13	Chalisgaon	293	341	16.28
14	Pachora	307	353	14.97
15	Jamner	212	257	21.17
Jalgaon District		**316**	**363**	**14.86**

Source : District Census Handbooks of Jalgaon District, 2001 & 2011.

The arithmetic density for the district was 316 persons per sq. km. in the year 2001. This density was higher in the central part of the district consisting Jalgaon (671) and Bhusawal (686) tehsils. Jalgaon is the district headquarters and centre for industries, trade and commerce. Bhusawal is main railway junction on Central Railways and hosts industries. Due to these reasons, concentration of population is higher in Jalgaon and Bhusawal tehsils.



Map No. 02

Therefore, the density was more than 670 persons per sq. km. The arithmetic density of population was low (less than 250 persons per sq. km) in the southeastern tehsils namely Muktainagar, Bodvad and Jamner tehsils. It was also low in Parola tehsil in the west. These tehsils have agricultural dominant activities and lacking in industrial and economic development. Yawal tehsil had population density consisting 260 persons per sq. km. Most parts of the district in the north and west had population density between 280 and 320 persons per sq. km. These parts were consisting Chopda and Raver tehsils in the north while Amalner, Erandol, Bhadgaon, Pachora and Chalisgaon tehsils in the west. Dharangaon tehsil had reported population density 335 persons per sq. km. (Fig. No. 2, A) In the year 2011, the arithmetic density calculated for the study region is 363 persons per sq. km. The tehsil-wise variation in the population density reveals almost similar picture as the year 2001. The central part of the district consisting Jalgaon (819), Bhusawal (757) and Dharangaon (361) tehsils have reported higher density of population. The eastern tehsils namely Muktainagar, Bodvad and Jamner as well as Parola in the west have population density between 240 and 280 persons per sq. km. The northern tehsils namely Chopda, Yawal and Raver as well as southwestern tehsils namely Chalisgaon, Bhadgaon, Pachora and Chalisgaon have density of population between 320 and 360 persons per sq. km. Amalner tehsil in the west has population density 341 persons per sq. km. (Fig. 2, B)

The Fig. No. 2, C shows spatio-temporal change occurred in arithmetic density of population during the last decade. The map suggests overall increase in arithmetic density of population during the last decade. Jalgaon tehsil has reported the highest increase (22.09 percent) in density of population. Jalgaon, being the district headquarters is also a big city having cluster of industries, trade and commerce. It also provides specialist amenities like healthcare, education, entertainment etc. Due to these reasons, a

large number of people have immigrated in Jalgaon city. The increase is also high in Jamner tehsil. Here population density was low in the last decade. Due to faster development of Jamner city, the density of population has increased. The spatio-temporal changes suggest low increase in Yawal, Raver, Amalner and Dharangaon tehsils. These tehsils are industrially backward tehsils. Therefore, they provides less employment opportunities which leads to outmigration. Bhusawal, Erandol, Bhadgaon and Pachora tehsils have suggested increase between 10 and 15 percent while increase in between 15 and 20 percent in Chopda, Parola, Chalisgaon, Bodvad and Muktainagar tehsils.

Conclusion :

There is increase in the spatio-temporal changes in the distribution of population in all the tehsils of Jalgaon district during the decade of 2001 and 2011. Jalgaon tehsil has reported the highest increase in density of population. Jalgaon, being the district headquarters is also a big city having cluster of industries, trade and commerce which also provides specialist amenities like healthcare, education, entertainment etc. Due to these reasons, a large number of people have immigrated in Jalgaon city leading to increase in population. The increase is also high in Jamner tehsil due to its fast growth. The other tehsil have reported comparatively less increase in the spatio-temporal changes in the distribution of population.

References :

1. **Chandana, R. C. (2011) :** *'Geography of Population : Concepts, Determinants and Patterns'*, Kalyani Publishers, New Delhi. P. 35.
2. **James, M. Rubenstein (2003)** : *"An Introduction to Human Geography",* Pearson Education, Inc., Upper Saddle River, NJ.
3. **Knowles, R**. & Wareing, J. (2010) : 'Economic and Social Geography', Rupa & Company, 7/16, Ansari Road, Daryaganj, New Delhi. P. 90.
4. **Pacharane, S. R. (2012) :** *'A study of population characteristics in Ahmednagar district'*, unpublished Ph. D. thesis submitted to the Tilak Maharashtra Vidyapeeth, Pune. P. 27.

Analysis of Indian Agricultural Laws : Issues and Challenges

Viralkumar J. Kanudawala
Research Scholar in Law Parul University Vadodara Gujarat
Kanudawalaviral1993@gmail.com

"If Agriculture goes wrong, nothing else will have a chance to go right in the Country".

-M.S. Swaminathan

Introduction:

India is developing country and agriculture is the backbone of Indian economy. Fruit production and marketing are the most significant agriculture-based activity in rural area. So, farming is the main foundation of rural life. The cashew industry is one sector that has the probableto increase India's foreign exchange earnings an employment. The most of agriculture andeconomics reports noticed that farmers as well as investors in the cashew industry in the regionare not efficiently resourced and motivated to contribute effectively to the development ofthe local economies. Economics tries to recognize the complex behavior of the customers andproducers, and formulates recommendations and methods that can be used by both supervisorsand farmers to optimize their decisions. Economics is an ideal field for the application of induced fuzzy cognitive map as it has many variables that are difficult to quantify.As an academic discipline, "Agricultural Law is the study of all the activities, agencies and policies involved in the procurement of farm inputs by the farmers and the movement of agricultural products from the farms to the consumers". In developing countries, it is understood to compose of product marketing and input marketing and the actors in product marketing include farmers, traders, wholesalers, processors, importers, exporters, marketing cooperatives, regulated market committees and retailers. From a governance perspective, marketing as a system, includes reforms to enhance farmers" access to a unified market, formulation of standards and adherence to food safety standards. The government also regulates the flow of goods, to and from farms, and therefore maintains a role to provision the related market infrastructure and provide the other basic enabling infrastructure for agri-businesses to flourish. The agricultural marketing system therefore also relates to economic growth of the agriculture sector and ensuring safe and affordable food to consumers, both of which are directly linked to the food security of the country.

Keywords : Agriculture, food grain, platforms, grain mandis.

Agriculture in present scenario :

India has achieved a remarkable growth in agriculture, increasing food grain production from 83 million tonnes in 1960-61 to about 275.68 million tonnes in 2019- 20 which has enabled our country to not only achieve self sufficiency in production of food grains in order to meet food requirements of the country but also to export it and contribute towards foreign earning. However, despite this success, barring a small section, majority of Farmers in India are not able to get benefits of bumper production due to limited marketing platforms and hegemony of middleman in Grain mandis that led to receiving low prices for their produce. Thus, our Country is yet to solve the 'riddle of agriculture marketing' to ensure remunerative prices to the farmers for their agriculture produce.

India is the second largest country of population in the world Most of the population living in agriculture sector. The impact of covid-19 pandemic is not only on agriculture sector butalso on industry and service sector. India is largely self-sufficient in agriculture, and is not dependenton imports. The production of agriculture usually falls in the pandemic situation. India's GDP for the first quarter (Q1) of 2020-21 estimated by 23.9% and the share of the manufacturing sector in total gross value added (GVA) which was 17.5% in Q1 of 2019-20. Reduced to 13.8% in this quarter. Growth rate in manufacture sector has jumped to 39.3% in Q1 of 2020-21. For continuously eight quarters manufacturing growth rate has been declined, due to lack of demand and structural crisis in the sector in the pandemic-induced lockdowns. The impact of coronavirus pandemic on Indian economy has been largely adversely in terms of economic activity as well as a loss of human lives. Almost all the sectors have been facing long term impact as domestic demand and exports sharply declined. An attempt is discussingto the impact for some key sectors.Agriculture is the backbone of the Indian economy. And a part of the government announced essential sector, the most impact is on primary agricultural production and usage of agriculture inputs. India's food grain output was projected to be at 292 million tonnes in 2019–20, up by 2.4 per cent from 2018–19. The stock of wheat and rice with the Food Corporation of India (FCI), as on March 1, 2020, was 77.6 million tonnes. This stock was more than three times the quantified minimum operational buffer-cum-strategic stock of 21.04 million tonnes required as on April 1. Numbers of state governments have already allowed free movement of supply agriculture commodity. Like fruits, vegetables, milk etc. RBI and Finance Minister

announced measures will help the industry and the employees in the short term. The rural food production areas in the pandemic situation have held a great macro impact of COVID-19 on Indian food sector as well as larger economy.

Organisationalstructure

The Department of Agriculture & Co-operation of the Ministry of Agriculture is the nodal department for over viewing horticulture development in the country. The Division of Horticulture was carved out of Crop Division in 1981 and a position of Horticulture Commissionerwas created in 1985. The Division of Horticulture in the Department is vested with the responsibilityof over-seeing the overall development of horticulture at national level
and issupported by two Boards i.e., National Horticulture Board, Gurgaon and Coconut development board cochi, with their centres spread across the country.Growth rate in the manufacturing sector has jumped to -39.3% in Q1 of 2020-21. For continuously eight quarters manufacturing growth rate has been declined, due to a lack of demandand structural crisis in the sector in the pandemic-induced lockdowns.

Research Methodology :

This work is a review and examination of information gathered from a variety of sources. The data has been collected from primary as well as secondary sources. Important primary resources are statutes, reports, surveys, Interviews, Govt. Records etc. The secondary sources data are collected from Books, Journals, Articles, Magazines and Internet. The methodology adopted for the present research is NonDoctrinal research method.

Objectives :

1. To evaluate the impact of the legal framework in reducing the uncertainty and improving the competitiveness of Agricultural Produce Marketing system in India.
2. To examine the need and prospects of regulation of the agricultural markets.
3. To study the socio legal aspects of contract Farming in India
4. To study the prospects of Information and Communication Technologies (ICT) for small and marginal farmers

Agriculture Laws in India :

In India, There are various agriculture laws in India. But Currently. Some laws are amended honourable agriculture minister Shri Narendrasingh Tomar in 2020.

1. Farmer's Produce Trade and Commerce (Promotion and Facilitation) act, 2020
2. Farmer's (empowerment and protection) agreement on price assurance and farm services act,2020.
3. Essential commodities act,2020

Issues and challenges of Agriculture laws in India.

Some major issues raised by the farmers unions during the talks with the centre while insisting on repeal of farm laws.

Laws on 'agri market' and 'contract farming' will enable big private companies:

a. To have control over crop purchasing
b. To set up private agriculture markets and dictate prices.
c. To control supply and prices of inputs for agriculture
d. To monopolise food processing.
e. To control the storage, cold storage and transport of crops.

2) Amendments in the Essential Commodities Act will.
   a. Allow hoarding and Black marketing.
   b. Espose the entire rural and urban poor to agri giants and private food corporations.
   c. agri-business firms, processors, wholesalers, ecporters and Large retailers for farm services will manipulate market situationto gain the cost of farmers.

3) Law on contract farming will put farmers ownership of land at risk as the act provides for debt instruments to be operational alongside the contract with companies which will have their own recovery mechanism.

4) Farmers cannot protect their interests while exposed to giant traders in the name of ' Freedom of choice'.
5) Law makes SDM Court the final authority for dispute resolution.
6) It's unfair to punish farmers for stubble burning under new ordinance on air quality management without providing them with economically viable solutions.
7) proposed electricity (Amendment) bill will force farmers to make payment upfront at the rate decided by private power companies.

Conclusion :

Food is the foremost important to sustain life and livelihood followed by shelter and cloth. There is a certain level of acknowledge worldwide that farmers are an important part of the economic, social and political fabric of society and required support. The PPVFR act is the first in the world to grant formal rights to farmers. The act recognises the farmer as cultivator, conserver and beeders. Who has bred several varities. The farmers who have bred or developed a new variety has the right to register it.

References.

1. www.sci.gov.in
2. http://gujarathighcourt.nic.in
3. www.indiankanoon.com
4. The times of India news paper 04/12/2020
5. Indian Agriculture economy by rajaram dasgupta
6. Agriculture acts of 2020 by Dr. justice a.k. rajan

Issues In Rural Development

Dr. Ganesh J. Dubale
Assistant Professor Dept of Commerce Vaishnavi Mahavidyalaya Wadwani, Dist. Beed

Abstract

In India, 70% of population living in rural areas however too much discussion is taking place everywhere to build smart cities but there is less discussion to build rural areas smart and sustainable. Making rural development is very essential because it is aptly said about India that India lives in villages and now a days India is one of the rapidly urbanizing nations so it will also harmful to the urban area and migrated people too.The Government of India has launched number of schemes for development of rural areas. The rural India facing the major problems of housing, absence of infrastructure in villages and towns to village connectivity and absence of employment opportunities in villages. This paper is to focus on the major issues in rural development and also study how to overcome on it.

Keywords: Rural development, urbanization, agriculture, Infrastructure, Irrigation.

Introduction

Rural Development in India is the most important factors for the growth of the Indian economy. The future growth of Indian economy is in rural areas because urban places have almost reached to their development level. Due to urbanization, it is very essential to stop migration of people from rural to urban and sort out the issues relating to the development of rural area. Rural areas are still facing issues like poverty, low literacy rates, and lack of basic infrastructures like road, schools and hospitals. As a result, youth is migrating to urban areas in search of new opportunities. If rural areas are poor, India is poor. The Government of India is now focused on developing rural areas and creating more opportunities. They have introduced various schemes like DeenDayal Upadhyay Grameen Kaushal Yojna,**Roshni: Skill Development Scheme for Tribals,Sansad Adarsh Gram Yojna,Antyodaya Anna Yojna (AAY),**Heritage Development and Augmentation Yojna (HRIDAY), Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), and many more.

Objective of the study

To study the major issues relating to rural development in India.
To study challenges in rural Area.
To suggest some remedial measure to rural development in India.

Research methodology

To conduct the research study descriptive research method has been used. For the purpose of the study secondary data is used. It is collected from the published books, research papers in journals, annual reports and website.

Major issues in rural development in India

Following are the major issues of rural development in India

Infrastructure Related Issue:

It is the major issue in rural development, rural infrastructure in the country, is crucial for agriculture, agro-industries, and poverty alleviation in rural areas. It includes rural roads, electricity, transport facilities, canal works for irrigation and drainage, rural housing, water supply, and telecommunication connectivity. Rural infrastructure must be self-sufficient for providing the basic amenities to people that can improve their quality of life and also can reduce the migration of people to urban areas for better facilities.

Employment Related Issue:

Unemployment is a big issue in India, especially in rural areas. Youth is migrating to urban areas to find jobs while the aged remain in rural areas. The amount of agricultural land is the same but the population is growing. With the increase in agriculture technology, we have seen a decreased rate of employment in the past few years.

Finance Related Issue:

In rural area rural credit agencies and its schemes have failed to meet the needs of the small and marginal farmers. Thus, lesser attention has been given on the credit needs of the needy farmers whereas the comparatively well-to-do farmers are getting more attention from the credit agencies for their better credit worthiness.

Education Related Issue:

There is a lack of educational resources in the rural regions in India. There is also a lack of infrastructure in the schools situated in rural areasno availability of benches, playgrounds, laboratories, washrooms or if present they are in the worst condition.

Sometimes the textbooks are not available in proper quantity. The availability of stationery is also a challenge. Many rural Indians don't have enough money to bear stationary charges and other expenses. here is also less availability of schools in rural regions. This challenge also aids in increasing drop-out student ratios in rural India.

Agriculture Related Issue:

There are increasing pressures from climate change, soil erosion and biodiversity loss and from consumers' changing tastes in food and concerns about how it is produced. And the natural world that farming works with plants, pests and diseases continue to pose their own challenges. Due to improper irrigation facility, farmer can produce one crop only in a year.

Fighting Against basic needs:

When individuals do not have any form of shelter or housing accommodation means homelessness. Such individuals are residing in temporary shelters, on the roadside, or congested living. Housing is the basic requirement, if people are homeless, they experience many problems in fulfilling requirements, quality, and standards of life are also reduced. Though the government is implementing many development programs to reduce the housing shortage in rural areas with the vision "Housing for All", due to a lack of proper interventions there is still mismanagement of supply and demand of the housing sector.

Marketing Related Issue:

In India the rural agricultural market is in bad condition, the inadequate and absence of good marking facilities, the farmers have to depend upon local traders and middlemen for market and these people exploit farmers of rural areas. Storage facilities in rural areas are absent or inadequate under such conditions the agricultural products can't be stored for long durations so farmers are forced to sell their products immediately after the harvest at the prevailing market prices.

Conclusion

Eventually there are so many things are making hurdles between development in rural area. Such as Traditional way of thinking,Poor awareness,Division of land,Lack of expected awareness, knowledge, skill and attitude,Unwillingness to work in rural area,Unfavourable economic condition to adopt high-cost technology etc.are the major issue in rural development. before thinking about development, the government should focus on fulfilment of basic needs.

References

1. Dr. P. Srinivasa Rao, Rural Development Schemes in India A Study. International Journal of Research and Analytical Reviews (IJRAR) Volume 06, Issue 1.p. no.1072.2018www.ijrar.org
2. Mirza Danish Beg,Smartand Sustainable Rural Development. International Journal of Recent Scientific Research Vol. 9, Issue, 1(H), pp. 23427-23429, January, 2018http://dx.doi.org/10.24327/ijrsr.
3. Bhagya Sri Chintakula Problems of Rural System in India, International Journal of Engineering Research & Technology (IJERT)Vol. 9 Issue 11, November-2020http://www.ijert.org
4. Dr. Vijay Kumar Sarabu. Rural development in India: Way-Forward, Hanamkonda,FormerMember ofBoardofStudiesKakatiyaUniversity, Warangal.
5. Dr. Arpita Sharma. Kurukshetra. Ministry of rural development Vol. 62 No. 4 Pages 13-1,February 2014.
6. http://mospi.nic.in

Environmental Disaster Management: floods

Dr.Prakash Kashinathrao Morkhande
Dept. of Geography Ujwal Gramin Mahavidyalaya,Ghonsi Tq.Jalkot Dist,Latur (M.H.)

Introduction:

Sudden disasters in the environment occur suddenly and cause huge damage in a matter of moments. Although it is not possible to reduce the severity of various disasters on the Earth's surface, it is possible to reduce the severity of these disasters with proper management of available resources using our scientific knowledge. . good time this natural disaster, the relationship at the root of the geographical ghatakancanca.

objectives:

1. flood to findcauses.
2. study the results of the disaster flood disaster.
3. version floods apattivarila measures.

flood (floods):

Puratchi definition:

when more water puravathayamule spreads out in the area around the edge of the river water So call it flood Tat. The term flood is not limited to rivers, floods also occur in streams, streams and small rivers. If the sea level rises, the coastal areas are flooded by sea water. In addition, catastrophic waves, such as tidal waves and tidal waves, cause floods in coastal areas. This shows that the term flood is broad.

Causes of floods:

1. **Areas of rivers and catchment areas:**

Increased rainfall or melting of snow in these places. E.g. The rivers Ganga, Yamuna and Brahmaputra in India originate from the Himalayas. They are flooded twice a year. One is during the monsoon season and the other is due to the melting of snow in the source area during the summer.

1. In the coastal region, the area is flooded by tidal waves caused by earthquakes.
2. Sometimes a sudden change in global climate means rising sea levels and floods in coastal areas. In addition, river water is added. Floods due to the above two and three reasons are rare in the marginal area.
3. Due to the bursting of dams on rivers, the water level in the river basin increases and floods occur.
4. 5) In case of storms and torrential rains, the water level suddenly rises and floods occur.
5. 6) Due to deforestation, there is a large amount of erosion. The silt created by this can flow into the main river through small and big streams, streams and nallas Thus the main river bed becomes shallow with the accumulation of silt. In this case, even if it rains a little more, the river's carrying capacity decreases and its water spreads around and floods occur. The floods of Brahmaputra, Kosi and Damodar rivers are notable examples.

Flood effects:

a. Constructive Consequences:

1) Floods on rivers create flood plains on both its banks. The floodplain has a lot of fertile soil.

2) Sediment accumulation on the original high and lowlying areas comes to a level for a long time and changes the basic appearance of the surface.

3) Many cultures have emerged in the floodplain. Due to the constant fertility of the soil and the new soil layer, the farming business is more developed there. Ancient cultures grew and developed in the valleys of the Ganges, Indus, Nile and Tigris.

4) Polluted and rotten substances go away by proof and have to be disposed of permanently.

5) Floods increase the amount of water in the surrounding wells. Apart from taxes, the amount of water in the reservoir also increases.

Destructive Consequences:

1) Floods cause loss of human life and property.
2) Vertical crops are carried in the fields along the river. Surrounding villages, towns become waterlogged. Houses, buildings, and roads were severely damaged.
3) The fertile soil layer in the field is carried away and those lands become barren.
4) If the amount of flood is large, the character of the river also changes and its erosion in the new area creates a catastrophic disaster.

Flood control measures:

trees:

Planting ofStopping deforestation and at the same time setting up new forests is a definite solution. This helps in controlling the flow of water in the rivers. Most of the water seeps into the Soil erosion and landslides occur in small quantities.

Drainage of floodwaters: The Level of the basin is lowered and control is achieved by carrying

Waterriverflood small and large flood water in the lo lying areas around the river and building a fence around it. However, care must be taken to ensure that small and large drains do not burst.Construction of flood banks Earthen and stone dams are constructed at Allahabad, Kanpur, Patna on the banks of river Ganga to prevent river water from overflowing during floods.

.**Construction of canal network:**

The scheme diverts water from flood prone areas to drought prone areas in large countries. This solution is useful for both areas. In areas where flood control is not possible, flood warning is provided. Doing so avoids potential damage.

Squeeze the water in the soil by reducing the amount of running water: The

The most important part of flood control is to reduce the amount of rainfall but since it is not in our hands, if the rain water is diverted from the slope in different ways, then the flow of water can be reduced. If new planting is done without deforestation on the hill, the rain water stays on the leaves, branches and roots. This reduces the amount of water flowing from the ground. The presence of grass and other small plants on the ground reduces the amount of water that is absorbed by the water. As the water flowing down the slope is less, the soil does not erode, so the amount of silt in the bottom of the valley is less. If the level at the bottom of the valley is deep, water does not spread out of the container.

Conclusion:

Due to the large-scale damage caused by the flood disaster, tree planting, construction of canals, embankments, construction of canals. Creating a network can help you avoid human and financial losses from floods.

References:

1. Environmental Health- AJ Rowland & Powcopper
2. Environmental Management- Tiwari & Srivastav
3. Environmental Biology- RS Verma & VK Agrawal
4. Marine Pollution- RS Clerk
5. A Text Book of Environmental Science - Purohit, Shammi & Agrawal.
6. Environmental Protection & Laws Jadhav & Bhosale
7. Environmental Awareness- Dr. Kishor Pawar.
8. Environmental Geography: - Dr.Gharpur
9. Environment and Culture: - Dr. Madhukar Keshav Dhavalikar
10. Environmental Studies: - Dr. Suresh Phule
11. Ecology: - Dr. B.P. Wangikar
12. Ecology - Pvt. Dhaka and Pvt. D. V.

13 Environmental Assessment and Conduct: Pallavi Chafekar.

Impact of Climate on Sugarcane Yield over Belagavi District,Karnataka. Using Statistical Mode

Girish A Chavadappanavar[1] Dr.Paras Varma[2]
[1]Author KLE Society's Lingaraj College Belagavi,Karnataka
[2] Guide Department of Geography OPJS University Rajasthan.

Abstract

The impact of climate on agriculture could result in problems with food security and may threaten the livelihood activities upon which much of the population depends. In the present study, the development of a statistical yield forecast model has been carried out for sugarcane production over Belagavi district, Karnataka using weather variables of crop growing season and past observed yield data for the period of 1971 to 2010.The study shows that this type of statistical yield forecast model could efficiently forecast yield 5 weeks and even 10 weeks in advance of the harvest for sugarcane within acceptable limit of error. The performance of the model in predicting yields at district level for sugarcane crop is found quite satisfactory for both validation (2007 and 2008) as well as forecasting (2009 and 2010).In addition to the above study, the climate variability of the area has also been studied and hence, the data series was tested for Mann Kendall Rank Statistical Test. The maximum and minimum temperatures were found to be significant with opposite trends(decreasing trend in maximum and increasing in minimum temperature)while other three are found in significant with different trends(rainfall and evening time relative humidity with increasing trend and morning time relative humidity with decreasing trend)**.**

Keywords: Climate impact, Regression analysis, Yield and Forecast model.

Introduction:

Weather and climate are considered as basic input or resources in agricultural planning. Every plant process related to growth development and yield of a crop is affected by weather. Sugarcane is one of the several species of tall perennial true grasses and the main sugar-producing crop that contributes nearly 78.2% to the total sugar pool at the global level and is also a commercial crop for India on which economy depends. Sugarcane yield depends on several natural and unique succession of daily weather during the growing season and management factors. It is considered as a tropical plant but it can grow in sub-tropics too as in north and South India. It is a long duration crop and thus it encounters all the seasons, viz., rainy, winter and summer during its life cycle. Principal climatic components that control cane growth, yield and quality are Temperature, light and moisture availability. Previous studies show that most works have been done on cereal crops but almost few studies has been done for sugarcane crop in India (Agrawal, 2003; Shekh and Rao, 1996).The statistical modelling for yield forecast has been done by some workers (Gupta and Singh, 1988, 1990, 1991). Mall and Singh (2000) observed that small changes in the temperature of growing season over the years appeared to be the key aspect of weather affecting yearly wheat yield fluctuations. Yields office and wheat in the Deccan Plateau South Gangetic plains (SGP) of India were studied by Pathaketal. 2003 they concluded that the negative trends in solar radiation and an increase in minimum temperature, resulting in declining trends of probable yields of rice and wheat over SGP. A number of statistical techniques viz. multiple regression, principal component analysis, Markov chain analysis, Discriminate function and agro-meteorological models (Rai, 1999; Ram Subramanian and Jain, 1999; Baweja, 2002; Muralidhara and Rajegowda, 2002; Ravi Kiran and Bains, 2007; Bazgeer et al. 2008) have been used to quantify the response of crops to weather. Jainet al (1980) and Agrawal etal(1986) studied the effects of weather on rice yield. Weather indices and principal components of weather variables were used in the models developed by Agrawal et al. (1980). Agrawal et al (2001) Developed yield forecast models for wheat and rice using weather variables and agricultural inputs on the basis of agro-climatic zone. Four Different approaches, two on original weather variables and two on generated weather variables were used by Khistariaet al. (2004) and Varmola et al. (2004). By coupling technology trend with weather variables, models were developed by Mallick et al. (2007).Tripathi et al (2016) developed the techniques of estimating the productivity of maize crop based on past weather and yield for Belagavi district of North West Karnataka. Geographically, Belagavi (Lat. 15°8497′N and 10.0512°′N and Long. 74.4977′E and 55°3308′E) is situated on the Malaprabha river. With the establishment of various institutions, organizations and other infrastructural developments, major changes have taken place in every sector after the 1970s. The city is a major centre of socio-economic commercial, cultural and administrative activities of Northern Karnataka. And as sugarcane is the most important commercial crop of the region on which most of the farmers depends for their livelihood. This will ultimately help in the economy because India is the second major sugar producing country in the World. Hence, there is a need of this type of study that could help various decision makers, farmers, traders, exporters and importers and most importantly the government (can plan their strategic actions well in advance (in the light of the model

forecast) of import or export in the case of shortage or surplus production to maintain the availability of sugarcane and to control the prices in the market). The present study aims at the development of a statistical yield forecast model for sugarcane production over Belagavi district (Lat. 15°8497′N and 10.0512°′N and Long. 74.4977′E and 55°3308′E) using different weather variables viz. temperature (maximum and minimum), 24 hourly rainfall, relative humidity (morning and evening) of crop growing season and past observed yield data for the period of 40 years i.e. from 1971 to 2010.

Data and Methodology: The crop yield data of sugarcane including production (Metric tons), area (Hectare), and productivity (Quintal/hectare) for the period of recent 40 years (1971-2010) for Belagavi District were collected from Karnataka Development of Agriculture City government office Garag Dharwad Karnataka. Long period daily weather data were collected from India Meteorological Department, New Delhi. Daily data on weather parameters during the crop growth period were taken and arranged in weeks starting from 14^{th} to 50^{th} week of each year using cumulative value for rainfall and weekly average value for other parameters like maximum and minimum temperature, morning and evening relative humidity. Multiple linear stepwise regression procedure has been developed for selecting the best regression equation among number of independent variables. To select significant variables Step wise regression (Ghosh et al, 2014) was used. Statistical Package for Social Science (SPSS) computer software was used for the analysis of data with probability level of 0.05 to enter and 0.1 to remove the variables. To predict the yield of sugarcane for the subsequent years, the entered variables obtained from individual stepwise regression analysis are considered in the regression model. Further, analysis was carried out including significant generated variables only. Weather variables used for this model are maximum temperature (T max) in 0C, minimum temperature (T min) in 0C, morning (8:30 IST) and evening (17:30 IST) relative humidity (RHI and RHII respectively) in percentage and 24 hourly rainfall (RF) in millimetre. Combination of weather variables for weather indices, thus generated are presented in

Table 1.Notations of various weather indices used in mode

Indies	Notation for un weighted index (Z I j)	Notation for weighted index(Z I I j)
Tmax	Z10	Z11
RH I	Z40	Z41
Tmax-RF	Z130	Z131
Tmin-RF	Z230	Z231
RF-RHI	Z340	Z341
Tmax	Z10	Z11
RH I	Z40	Z41
Tmax-RF	Z130	Z131
Tmin-RF	Z230	Z231
RF-RHI	Z340	Z341
Tmax	Z10	Z11
RH I	Z40	Z41
Tmax-RF	Z130	Z131
Tmin-RF	Z230	Z231
RF-RHI	Z340	Z341
Tmax	Z10	Z11
RH I	Z40	Z41
Tmax-RF	Z130	Z131

Order to study the consistency of forecast, predicted yield values of subsequent years were worked out. Yields of subsequent years were forecasted two months before harvest .For forecasting, observed weather was used up to the time of forecast and normal values of weather variables for the remaining period up to harvest. The best agro-meteorological indices were selected to develop agro.

Meteorological yield model for the district, on the basis of examination of determination coefficients (R2), Standard Error of estimates (SE) as well as relative deviation (RD) values resulted from different weather variables. Test criteria have been separated into two groups, called summary measures and difference measures. The difference measures include the mean bias error (MBE) and the Root mean square error (RMSE). The summary measures describe the quality of simulation while, the difference measures try to locate and quantify the errors. These were calculated according to Willmott (1982) as follows and were based on the terms (Pi - Oi): RMSE indicate the magnitude of the average error,

irrelative of the size of the average difference between predicted yield (P) and observed yield (O). The value of MBE is related to the magnitude of the values under investigation. The statistic MBE describes the direction of the error bias. Negative MBE indicates that the predictions are smaller in values than those of the corresponding observations. Further, the statistical analyses were performed over all the time series data of Maximum temperature, minimum temperature, morning and evening relative humidity, 24 hourly rainfalls, actual and predicted yield of sugarcane over Belagavi district to find out fluctuations and presence of trend if any. The statistical significance of 40 years trend in the above climatic and crop data were tested by non- parametric Mann- Kendall Rank statistics (WMO, 1966)

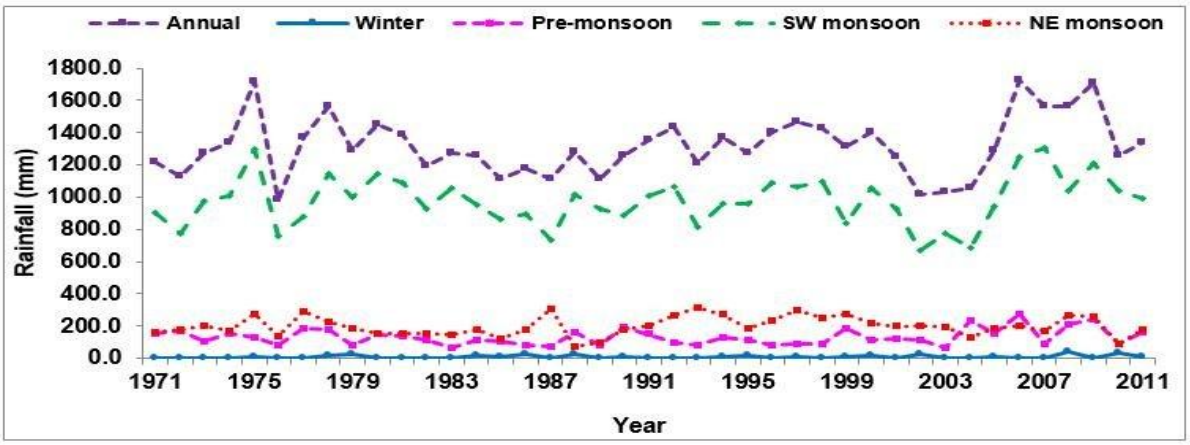


Figure 1: Crop season mean maximum temperature for the period 1971-2011

Results and Discussion

Contribution of various weather variables

District level yield forecast model was developed using independent weather variables i.e. temperature (maximum and minimum), rainfall, relative humidity (morning and evening) during the crop growing season (period from planting of crop to the harvesting) and past observed yield over the Belagavi region of North Western Karnataka with the help of statistical techniques for sugarcane crop and the results were analyzed. Changes and Contribution of various weather variables (maximum and minimum Temperature, morning and evening relative humidity and 24 hourly rainfalls) and observed yield of sugarcane are studied and discussed below. These weather parameters along with the observed yield and predicted yields so generated were further statistically tested for their significance of trend using Mann Kendal l Rank statistics at 95% level of significance. All the results of the study are discussed below: Figure 1 shows the inter annual variations in crop season (the duration from planting to harvesting) mean maximum temperature for the entire period of study i.e. 1971-2011. The crop season mean maximum temperature shows a significant decreasing trend with a rate of 0.03oC/ year with R square value 0.2489. This is very peculiar as well as interesting and alarming to the concerned scientists and environmentalists as well as for sugarcane growers. However, the data series is tested for Mann Kendall Rank statistics and the maximum temperature was found to be significant. The lowest crop season mean maximum temperature was seen 15.4 C (1971) and the highest crop season mean maximum temperature was observed 35.70C (1979). The temperature was remarkably down during the period 1997-2001. The whole period may be divided into two block of time one earlier period from 1971-1996 with a mean value 34.30 C and the other as later period from1997-2010 with a mean value 33.10C, which clearly shows a change in climate over the study area.

Results of yield forecast model

The present model is developed using actual weather variables as well as product of two weather variables at a time during the crop

Table 2. Validation of forecast model for the years 2007 and 2008

VALIDATION			
YEAR	PREDICTED YIELD (Q/Ha)	ACTUAL YIELD (Q/Ha)	%ERROR
2007	564.04	547.52	2.93
2008	581.63	524.88	9.76
		AVERAGE ERROR	6.34

growing season (from planting to harvesting).The agro climatic weather indices were Developed in two categories one considered un weighted indices (simple sum of weather variables) and other weighted indices using sum product of weather variables and correlation values of weather variables with

their respective past adjusted yield. These agro climatic indices and observed yield were linearly regressed multiple times using SPSS, whose output provides independent weather variables and coefficients (Table 1) and a model equation (Eq. 1), is established. The output of SPSS could be used to develop three different models (Table 2) from which the best suited model were chosen and based on that model; forecast equation has been used for predicting the yield of sugarcane over Belagavi district .The third model was chosen for prediction of yield because it is based on more number of variables (three variables viz. time, Z11 andZ241) and associated coefficients, hence
Supposed to give better results. Only unstandardized coefficients were used in the table.

Table 3. Forecast of sugar cane yield 10 weeks in advance of harvesting for the years 2009 and 2010

FORCASTING			
YEAR	PREDICTED YIELD (Q/Ha)	ACTUAL YIELD (Q/Ha)	%ERROR
2009	558.00	485.00	13.08
2010	571.47	498.80	12.72
		AVERAGE ERROR	12.90

Variables) and other weighted indices using sum product of weather variables and Correlation values of weather variables with their respective past adjusted yield. These agro climatic indices and observed yield were linearly regressed multiple times using SPSS, whose output provides independent weather variables and coefficients (Table 1) and a model equation (Eq. 1), is established. The output of SPSS could be used to develop three different models (Table 2) from which the best suited model were chosen and based on that model; forecast equation has been used for predicting the yield of sugarcane over Belagavi district. The third model was chosen for prediction of yield because it is based on more number of variables (three variables viz. time, Z11 andZ241) and associated coefficients, hence supposed to give better results. Only unstandardized coefficients were used in the yield forecast equation. The final yield forecast model equation using important independent weather variables has been given below:

$$\mathbf{Y} = 101.3459(\text{Constant}) + 4.9042*T + 11.9548*Z11 + 0.042562*Z241\ldots \text{(Eq.1)}$$

(R2 = 0.836)

Where, Y represents the predicted yield, T is the time variable of the corresponding year, Z 11 is the weighted agro-climatic weather index obtained from the sum product of maximum temperature and their respective correlation values taken with past adjusted yield, Z 241 represents the weighted agro climatic weather index obtained from the sum product of composite of minimum temperature with morning time relative humidity (T min*RHI) and their corresponding correlation values taken with past adjusted yield. R2 value (measure of goodness of fit) indicates that generated model equation is able to explain 83.6% of variation in the sugarcane yield.

The performance of the sugarcane yield forecast model equation has been tested by comparing the predicted values with the actual yield for the years 2007 and 2008 and is presented in Table 3. The predicted yield for the year 2007 is 564.04Q/Ha and that of 2008 is 581.63 Q/Ha, their actual yields being 547.52 and 524.88 Q/Ha respectively. The predicted yields for both the validation years are within the acceptable limit of error i.e., 2.93% for 2007 and 9.76% for 2008. The average error of the validation years is 6.34%. The validation results indicate that the model is capable of predicting the sugarcane yield successfully in Belagavi district for subsequent years. The validated model was run to forecast the yield, ten and five weeks in advance of harvesting for years 2009 and 2010. For forecasting, observed weather variables were used up to the time of forecast and normal values of weather variables were used for the remaining period up to the time of harvest. The results for both, 10 weeks in advance forecast and 5 weeks in advance forecast were taken for the years 2009 and 2010 and is presented below in table 4.

Table 4. Forecast of sugar cane yield 5 weeks in advance of harvesting for the years 2009 and 2010

FORECASTING			
YEAR	PREDICTED YIELD (Q/Ha)	ACTUAL YIELD (Q/Ha)	%ERROR
2009	548.96	485.00	11.65
2010	564.38	498.80	11.62
		AVERAGE ERROR	11.64

Based on the developed model, the predicted yield for the year 2009 and 2010 (ten weeks in Advance of harvesting) is 558.00 and 571.47 Q/Ha respectively. The actual yield for these Forecasting years (2009 and 2010) were 485.00 and 498.80 Q/Ha respectively. The error in the Yield forecast was

13.08% and 12.72% in the year 2009 and 2010 respectively. The average error in the forecast model prediction was found to be 11.64%. This shows that the model is capable of predicting the yield efficiently for 5 weeks and even for 10 weeks in advance. The percentage MBE (-0.0006%) and percentage RMSE (5.5759%) error have been calculated to check the accuracy of the results. Very small percentage errors indicate that predicted values are in good agreement with observed values. The maximum variation of estimation is less than 10 percent.

Conclusions

From the present study the following conclusions may be drawn: The variability in the weather parameters was analyzed and further they were tested for the significance using Mann Kendall Rank Statistics. The maximum and minimum temperature were found to Be significant with opposite trends (decreasing trend in maximum and increasing in minimum temperature) while other three are found insignificant with different trends i.e. rainfall and evening time relative humidity with increasing trend and morning time relative humidity with decreasing trend. The study reveals that the observed weather variables viz. maximum Temperature, minimum temperature, morning and evening relative humidity, 24 hourly rainfall and observed yield of previous years of sugarcane crop over Belagavi district, through multiple linear regressions could be used to develop yield forecast model which could be implemented to forecast yield 5 weeks and even 10 weeks in advance of the harvest.The performance of the model in predicting yields at district level for Sugarcane crop is found quite satisfactory for validation (2007 and 2008) as well as forecasting (2009 and 2010). The average errors of validation results (6.34%) and forecast results for 10 weeks in advance (12.90%) and 5 weeks in advance (11.64%) are found to be within acceptable limits. Model equation developed in this study include independent weather indices Z11 and Z241 along with their coefficients, which indicates the prime dependence of sugarcane yield on maximum temperature and next to it is the combination of minimum temperature and morning time Relative humidity which play an important role in deciding the predicted yield. Both the weather indices are weighted one and hence the past productivity record is also of vital concern. Various decisions could be taken in advance by obtaining accurate pre-harvest estimates of sugarcane crop. The main beneficiaries are farmers (decide their Procurement prices), traders, exporters and importers (for planning their Logistics, inventories and contracts). The processing companies may also plan in advance about the capacity, manpower and marketing strategy. Government may also plan their strategic actions well in advance (in the light of the model forecast) of import or export in the case of shortage or surplus production to maintain the availability of sugar cane and to control the prices in the market.

References

1. Governmental reports, government of Karnataka
2. company reports and manual
3. Reports ministry of co-operative societies, government of Karnataka
4. Nagpure SC, Jhakare AB, Khandare AP, Patil RK. Economics of sugarcane production in Vidarbha region of Maharashtra state. Rural India. 2004; 67(6, 7):123- 125.
5. www.indiastat.com.
6. www.worldsugarstat.com.
7. http://www.thehindu.com/news/national/karnataka/sugarcane-price-at-rs-2500-a-tonne-in-karnataka/article5386967.ece
8. http://sugars.kar.nic.in/
9. Agrawal, Ranjana., Jain, R.C., Jha, M.P. and Singh, D. (1980). Forecasting of rice yield using climatic variables. .Ind. J. Agri. Sci. 50(9):680-684.
10. Baweja, P.K. (2002). Predicting grain yield in maize: canopy temperature based regression indices. J. Agromet. 4 (2):177-179.
11. WMO 1966, WMO Technical Note No.79, WMO No. 195-TP100, WMO, Geneva, p.64-65.
12. Gupta, B.R.D. and Singh, K.K. (1988). Estimating sugarcane yield at Padegaon in Maharashtra based on weather parameters. Mausam39 (4): 421-424.
13. Hendrick, W.A. and Scholl, J.C. (1943). Technique in measuring joint relationship between the joint effects of temperature and
Precipitation on crop yield. North Carolina Agric. Exp. Sta. Tech. Bull.,74
14. Muralidhara, K.S. and Rajegowda, M.B. (2002).Stocheometric crop weather model to predict the fingermillet grain yield.J.Agromet.4 (1):5357.

Role Of Government Schemes In Indian Agriculture

Mrs.Savita M.Chougale.
Assistant Professor of Economics, Govt.First Grade women's College, Belagavi.
Email:smchougale17@gmail.com

Abstract

Agricultural sector plays a strategic role in the process of economic development of a country. It has already made a significant contribution to the economic prosperity of advanced countries and its role in the economic development of under-developed countries is of vital importance. Agriculture faces a range of serious challenges, particularly in developing countries like small and fragmented land holdings, exposed to price shocks, climate change and lack of infrastructure in rural areas. It is in this context that government schemes play a vital role in promoting agricultural development. Government has many schemes for agricultural and rural development which have not reached the target groups up to a satisfactory level. Therefore, by using proper methods attempts should be made to motivate them through an emphasis on the deprived need areas.

Introduction:

Indian lives largely in villages. Although the urban population has been increasing in the recent past, more than 70 percent of our population is still rural. The largest portion of the natural resources of India consists of agricultural land. Agriculture is the backbone of our country. Though its contribution to GDP is just around 14% over half of our country's population depends on agriculture for their livelihoods. The rising food prices that have pushed people back into poverty, more effective interventions are essential in agriculture (Anonymous, 2011a). The growing global population, expected to hit 9 billion by 2050, has heightened the demand for food and placed pressure on already-fragile resources. Feeding that population will require a 70 percent increase in food production (Anonymous, 2009). Agriculture faces a range of modern and serious challenges, particularly in developing countries exposed to price shocks, climate change, and continued deficiencies in infrastructure in rural areas. Climate change has also played an acute role by making prediction of natural events very uncertain. Farmers can no longer rely on timeworn coping strategies when all of their familiar benchmarks for making agricultural decisions— the timing of rains for planting and pasture, the probability of frost, the duration of dry intervals that spare crops from disease— are increasingly less reliable.In any scheme of planned economic development of the country, therefore, measures aimed at the development of the agricultural sector hold a position of basic importance. This importance has further increased in view of the rapid growth of population and growing need for food and raw materials, development of the agricultural sector is important for generating gainful employment and exports. In fact, in a country like India, measures taken to reorganise and reform the agricultural sector are the surest means of involving a significant majority of the population in the process of planned economic change.

Objectives of the Study:

1. To find out the factors responsible for the poor performance of agriculture.
2. To find out the schemes introduced by the government.

Methodology: The present study is purely based on secondary data. Secondary data consists of mainly scholarly articles from peer-reviewed academic journals. Other literature used in this study includes grey literature, including information published online by organic retailers and other organizations, as well as literature provided from the Centre for Sustainable agriculture.

Performance of Agriculture

The agriculture sector in India has undergone remarkable structural changes in the form of from the traditional agrarian economy towards a service oriented economy which is shown in the following figure. However, within the rural economy, the share of income from non-farm activities has also increased.

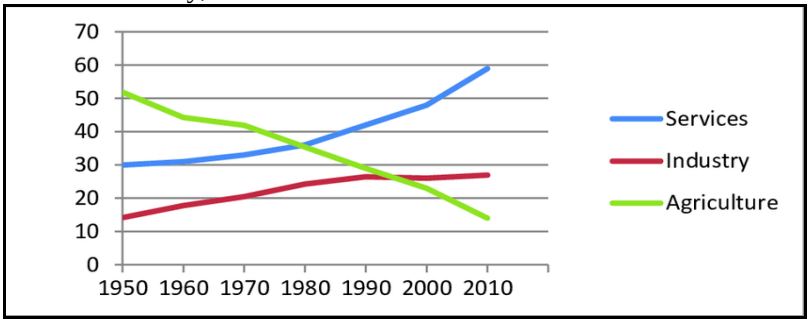


Figure: Sectoral Composition of GDP

Agriculture's contribution to GDP has been continuously declining. Even though 52% of the total workforce is still employed by the farm sector which makes more than half of the Indian population dependant on agriculture for sustenance (NSS 66th Round). But the contribution of service sector has been increasing continuously. The Government has rolled out a number of new initiatives like Soil Health Card (SHC), Paramparagat Krishi Vikas Yojana (PKVY), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), Pradhan Mantri Fasal Bima Yojana (PMFBY) and Neem Coated Urea (NCU)

These schemes are for the benefit of all farmers. The Schemes are as follows -

1) Integrated Scheme for Agricultural Marketing (ISAM):

The Scheme was launched during the XII Plan (2012-2017). The ISAM has the following sub schemes: (i) Agricultural Marketing Infrastructure (AMI) (ii) Marketing Research and Information Network (MRIN) (iii) Strengthening of AGMARK Grading Facilities (SAGF), (iv) Agri Business Development (ABD).

2) Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):

This Yojana was launched on 1st July 2015. The main motto was 'Har Khet ko Pani' for providing end to end solutions in irrigation supply chain, viz., water resources, farm level applications etc. Micro irrigation is being popularized to ensure 'Per Drop – More Crop' (PDMC).

3) Kisan Credit Card (KCC):

The Scheme was introduced in 1998 for issue of credit card to farmers. Cards were issued on the basis of their holdings.

4) Rashtriya Krishi Vikas Yojana (RKVY):

RKVY scheme was introduced in 2007 as an umbrella scheme for ensuring holistic development of agriculture and allied sectors by allowing states to choose their own agriculture and allied sector development. The scheme has come a long way since its inception and has been implemented across two plan periods (11th and 12th). Till 2013-14, the scheme was implemented as an Additional Central Assistance (ACA) to State Plan Scheme with 100% central assistance.

5) Seed Village Programme (SVP):

This Scheme is under implementation from the year 2005-06.The objective of the Scheme is to develop and strengthen the existing infrastructure for the production and distribution of certified and quality seeds.

6) Pradhana Mantri-Kisan Scheme:

The scheme was introduced on 1st Dec 2018.The Scheme aims to provide a payment of Rs.6000 per year for the farmers' families with cultivable land holding up to 2 hectare, subject to certain exclusions.

7) Pradhan Mantri Annadata Aay SanraksHan Abhiyan (PMAASHA):

This programme was launched on Sep 2018.The Scheme is aimed at ensuring remunerative prices to the farmers for their produce as announced in the Union Budget for 2018.

8) Soil Health Card Scheme (SHCS):

This Scheme was launched in 2015. The scheme has been introduced to assist State Govt.to issue Soil Health Cards to all farmers in the country. The Soil Health Cards provide information to farmers on nutrient status of their soil along with recommendation on appropriate dosage of nutrients to be applied for improving soil health and its fertility.

9) Pradhan Mantri Fasal Bima Yojana (PMFBY):

This Yojana was launched on 18th Feb 2016 by our Prime Minister Shri.Narendra Modi. It is a crop insurance scheme which helps to protect crops form losses due to natural calamities, disasters and animal attacks and covers the crops against partial or complete loss at a low premium rate.

10) National Programme for Organic Production (NPOP):

Cultivated area under certified organic farming has grown almost 17 fold in last one decade (42,000 ha in 2003-04 to 7.23 lakh ha in 2013-14). Government has implemented the NPOP in the year 2001. The programme involves the accreditation programme for certification agencies, norms for organic production, promotion of organic farming etc. States like; Uttaranchal, Karnataka, Madhya Pradesh, Maharashtra, Gujarat, Rajasthan, Tamil Nadu, Kerala, Nagaland, Mizoram, Sikkim have been encouraging organic farming.

11) Cabinet approves Corpus for Micro Irrigation Fund with NABARD:

The Cabinet Committee on Economic Affairs chaired by the Prime Minister, Shri Narendra Modi has approved an initial Corpus of Rs.5,000 crore for setting up of a dedicated "Micro Irrigation". The major objective of the fund is to facilitate the States in mobilising the resources to provide additional or top-up incentives to farmers for incentivising micro irrigation.

12) Paramparagat Krishi Vikas Yojana to promote organic farming:

This programme is an elaborated component of Soil Health Management. It encourages the farmers to take organic farming. This increases the farmers' income and potential market for traders.

13) Neem Coated Urea Scheme (NCU):

The main aim of the Scheme is to regulate use of urea, enhance availability of nitrogen to the crop and reduce cost of fertilizer application. NCU slows down the release of fertilizer and makes it available to the crop in an effective manner. The entire quantity of domestically produced and imported urea is now neem coated. The reports from field are positive. It has reduced cost of cultivation and improved soil.

Conclusion

Government of India has given highest priority for the welfare of the farmers. In this regard it has implemented several farmers welfare schemes to revitalize agriculture sector and to improve their economic conditions. But even today majority of the farmers are illiterate and they are unaware of the schemes introduced by the Govt. The Programmes introduced by the Government have not reached the targeted groups up to a satisfactory level. Therefore, by using proper methods attempts should be made to motivate them through an emphasis on the deprived need areas.

References:

1. Arora, R.C. (1986). Integrated Rural Development, S. Chand & Com. New Delhi,
2. 34 pp.
3. Braun, J.Y. Gulati, A. Peter, H. Mark, W. R. and Ruel, M. (2005). Indian Agriculture and Rural Development - Strategic Issues and Reform Options. International Food Policy Research Institute (IFPRI), Washington, DC, pp. 1-6.
4. CSO MoSPI (2014). Central Statistics Office, Ministry of Statistics and Programme Implementation, Govt. of India.
5. GOI (1952). Government of India, Planning Commission, First Five Year Plan, New Delhi,1952, pp
6. Mellor, John W(1996) The Economics of Agricultural Development, Cornell University Press.

Impact Of Covid 19 On Forest Dweller's (Ntfps) Economy In Western Satpura Of Nandurbar District (Ms) India.

Padvi Amshya
Associate Professor, Prof. Ramkrishna More Arts, Commerce and Science College Akurdi, Pune.
Email. atpadvi@gmail.com

Abstract

This article presents an analysis of the impact of the COVID 19 pandemic on forest dweller's economy in Western Satpura of Nandurbar District. The western Satpura region in Akkalkuwa and Akrani of Nandurbar district is rich in natural vegetation and it has a wide range of variety of NTFPs plants. On the basis of field survey, forest dwellers residents sell NTFPs in the local market to earn cash income. In fact, that more than half of the cash income received from NTFPs to the total cash income. NTFPs play a key role in the life and economy of the forest dwellers living in and around the forest of the Satpura region in the Nandurbar district. The outbreak of the Covid-19 pandemic is an unprecedented shock to the global economy. A non-Timber forest product being the backbone of the tribal economy has been severely affected by the shock waves of the Covid-19 pandemic and subsequent lockdown. In this paper, focus on the evidence of the Covid-19 impact on forest dwellers' economy. The harvesting, collection, and also sale of NTFPs have been affected, there were no buyers. The traders were buying NTFPs but offered very low rates. The market for NTFPs products such as Mahua seeds, Jamun, Olame, and Tadi was impacted by the lockdown when the market was closed due to the lockdown. As per the field survey, about half of the cash income loss (44.68 %) received different sectors, and also 43.22% loss of income from NTFPs in COVID 19 pandemic period.

Keywords: COVID 19, NTFPs**,** Forest dweller, Cash income, Tribal economy.

Introduction

Forests constitute a significant element of the natural capital of an economy. The term NTFPs refers to a broad spectrum of biomass-related products, food, fiber, fodder, gums and resins, medicinal plants, and a range of other items of sustenance and economic value. Satpura of Nandurbar district has a wide range of variety of NTFPs plants. These NTFPs are more important for domestic, traditional medicinal practices and commercial. The different types of NTFPs available of Satpura region in Nandurbar district. The outbreak of the Covid-19 pandemic is an unprecedented shock to the global economy. A non-Timber forest product being the backbone of the tribal economy has been severely affected by the shock waves of the Covid-19 pandemic and subsequent lockdown. This paper focuses on the evidence of the Covid-19 impact on forest dwellers' economy. As per the field survey, loss of about half of the overall cash income from NTFPs in the COVID 19 pandemic period. The sale of NTFPs has been affected, there were no buyers. The traders were buying NTFPs but offered very low rates. The market for NTFPs products such as Mahua seeds, Jamun, Olame, and Tadi was impacted by the lockdown when the market was closed due to the lockdown.

Study Area

The Nandurbar district lies in the North-Western part of Maharashtra, the district is bounded to the South and South-east by Dhule district, to the west and north, is the state of Gujrat, to the north and north-east is the state of Madhya Pradesh. Western Satpura extended 21^0 30' 45'' north to 21^0 54' 30'' north latitudes and 74^0 47' 15'' east to 74^0 7' 30'' east longitude. Satpura lies in the northern part of the Nandurbar district as well as Maharashtra state, between Narmada valley in the north and Tapi valley in the south.

Objectives

To study the different types of NTFPs available in the study region.

1. To estimate the contribution of NTFPs to household cash income.
2. To analyse the impact of COVID-19 lockdown on the loss of income from NTFPs collection.
3. To find out the problems faced by forest dwellers in NTFPs activity during the pandemic period.

Database And Methodology

The present study is based on primary data, the primary data is collected through questionnaires, Observations and personal discussions with villagers of dominant NTFPs collectors, the researcher has been conducted intensive fieldwork. Out of 284 villages of Satpura Mountain area in Akkalkuwa and Akrani tahsils 11 villages (Astamba, Bardi, Barisurgas, Dab, Dahel, Jalola, Katri forest, Khodkya, Makadkund, Polaskhobra, and Sari) are selected as sample villages by random sampling method. Near about 278 households were selected as sample households engaged in NTFPs activities before COVID 19. At the time of the COVID 19, pandemic period the researcher has been conducted the field visit as per guidelines COVID 19. Out of 59 households were selected as sample households in the same 11 villages. It

has helped us to better understand the impact of pandemic and lockdown (Covid 19) on forest dweller's economy like NTFPs collection, marketing, and annual cash income.

Analysis And Data Analysis

Different types of NTFPs available of Satpura region in Nandurbar district:

The Satpura mountain region is rich in natural vegetation having humid and semi-evergreen species. Satpura in the Nandurbar district has a wide range of variety of NTFPs plants. These NTFPs are more important for domestic, traditional medicinal practices and commercial. As per the field survey, we identified (recorded) 68 plants and 2 insect species that were used to fulfil the varied needs of local forest dwellers. Plant species collect their bark, leaves, fruits, flowers, roots, and tubers, etc. It was interesting to note that forest dwellers residents sell as many as 15 species in the local market to earn cash income. All households collect NTFPs for sustenance while involved in commercial collection and processes of plant species, viz. unripe wild mango, mahua flowers and seeds, chironji, hirada, jamun, olame, and tadi.

Impact of COVID 19 Pandemic and Lockdown on Forest Dweller's (NTFPs) Economy:

Major challenges reported by the respondents are:

Difficulties in the harvesting of NTFP harvesting, production processes, and selling due to COVID 19 Pandemic and Lockdown, the restriction on movement.

1. Unavailability of the market to sell products.
2. Unavailability of storage facilities to store NTFPs for a longer period.
3. The reduced rate offered by local traders.
4. Increase transportation cost for sample villages to the local market.
5. Massive income loss due to the impact of lockdown on NTFPs sales.

Impact on cash income from different sectors in the sample villages:

Impact on cash income from different sectors in the sample villages: The COVID 19 impacted the cash income received by the tribal households from different sectors. As per the field survey, there has been an average cash income lost Rs.18757/- HH/year, which is 44.68% of the total income from different sectors in the COVID 19 pandemic period. The sample villagers loss of Rs.10932/- from NTFP sale, 5476 from in labor wages, which is 100 % of loss, Rs.2457/- in the sale of animal wealth (Table 01).

Table 01 Loss of Average Annual Cash Income Derived from Different Sectors (INR/HH/year).

		Agriculture	Animal Wealth	Labour or Wage	NTFPs	Total
Before COVID 19 Period	Income (INR)	4453	6753	5476	25292	41977
	Percentage	10.61	16.10	13.04	60.25	100
COVID 19 Period	Income (INR)	4560	4300	00	14360	23220
	Percentage	19.64	18.52	00.00	61.84	100
Loss of Income in COVID 19 Period	Income (INR)	+107	-2457	-5476	-10932	-18757
	Percentage	+2.40	-36.36	-100.00	-43.22	-44.68

Source: Based on Field survey, household interview questionnaire.

Impact on cash income from different Non-Timber Forest Products:

Table 2: Composition of household's average annual cash income derived from different Non-Timber Forest Products (INR/HH/year).

Name of NTFPs	Amchoor and Mango Seeds	Mahua Flower	Mahua Seeds	Chironji	Hirada	Jamun	Olame	Tadi (Palm Tree)	Total
Harvesting Period	Mar-June	Feb-Apr	May-June	Apr-June	Apr-June	Apr-June	May-Jule	Feb-May	-
AMR/Kg (BC19)	120 & 15	45	15	1000	45	100	50	50	-
AMR/Kg (C19P)	85 and 00	42	-	750	40	-	-	-	-
Income (BC19)	10083	3912	646	3827	4050	179	84	2513	25292
Percentage (BC19)	39.86	15.47	2.55	15.13	16.01	0.71	0.33	9.93	100.00
Income (C19P)	4625	3835	00	2400	3500	00	00	00	14360
Loss (BC19-C19P)	5458	77	646	1427	550	179	84	2513	10932
Loss (%)	**-54.13**	**-1.96**	**-100**	**-37.28**	**-13.58**	**-100**	**-100**	**-100**	**-43.22**

Source: Based on Field survey, household interview questionnaire

As per the field survey, there has been an average income loss of Rs.10932/-, which is 43.22 % of the total income from NTFP. The researcher has calculated the loss of an average annual income per household from different NTFPs due to the lockdown as 100 % in Mahua seeds, Jamun, Olame and tadi, 54.13 % in Amchoor and mango seeds, 37.28 % in Chironji, 13.58 % in the selling of Hirada (Table 2).

Impact on Collection of Non-Timber Forest Products:

The restriction on movements impacted the collection of NTFPs in the peak season. In many homes, collections had only started when the lockdown was announced. The majority of the respondents said that the NTFPs remained in the trees and plants where they dried up or fell to the ground. Decisions to collect were also based on other factors such as lack of storage facilities. Lack of storage facilities affects the quality of harvested NTFPs and quite possibly be sold off at distress prices after lifting of the lockdown.

Impact on Market:

The sale of NTFPs has been affected by the COVID-19 Pandemic and ensuing lockdown. With the lockdown, there was an instant loss of market rate. There were no buyers. Going to the market to sell the produce was not possible or severely restricted. This was not possible due to the lockdown. Since markets were closed and traders were not coming to the village. The traders were buying NTFPs but offered very low rates. The market for NTFPs products such as Mahua seeds, Jamun, Olame and Tadi were impacted by the lockdown when the market was closed due to the lockdown.

Abbreviations

AMR: Average market rate (Rs. Per kg.) offered by local traders, **BC19**: Before COVID 19, **C19P**: COVID 19 Period, HH: Households, **INR**: Indian Rupees, **NTFPs**: Non-Timber Forest Products.

Conclusions

The western Satpura region in Akkalkuwa and Akrani of Nandurbar district is rich in natural vegetation and it has a wide range of variety of NTFPs plants. On the basis of field survey, forest dwellers more than half of the cash income received from NTFPs to the total cash income. NTFPs play a key role in the life and economy of the forest dwellers living in and around the forest of the Satpura region in the Nandurbar district. The outbreak of the Covid-19 pandemic is an unprecedented shock to the global economy. A non-Timber forest product being the backbone of the tribal economy has been severely affected by the shock waves of the Covid-19 pandemic and subsequent lockdown. The sale of NTFPs has been affected, there were no buyers. The traders were buying NTFPs but offered very low rates. As per the field survey, about half of the cash income loss (44.68 %) received different sectors, and also 43.22 % loss of income from NTFPs in COVID 19 pandemic period.

Recommendations

Guide and create awareness among tribes regarding the Government Schemes about the newly medicinal plant board, Indian Forestry and horticulture board, GOI, to increase production.

1. Fix rate through Government Schemes and availability of marketplace, along with manufacturing center.
2. Help the tribal people economically to encourage them for NTFPs production.
3. Research development about NTFPs species trees and processes.

The present study discusses the problems of NTFPs producers, Tribes, and the needs of the manufacturing process for their economic competence. The tribes will be benefited from the new modes of NTFPs production through researches on it.

References

1. **Chatterjee Sukanya. (2020),** *A rapid Assessment on impact of COVID 19 on people engaged in NTFPs Collection. Report of Indo-Global Social Service Society (IGSSS)*, 28 Institutional Areas, Lodhi Road, New Delhi.
2. **Padvi A. T. ((2016),** *WOMEN'S ROLE AND CONTRIBUTION TO NTFPs BASED LIVELIHOOD OF WESTERN SATPURA IN NANDURBAR DISTRICT.* Scholarly Research Journal for Interdisciplinary Studies, SEPT-OCT 2017, VOL- 4/36: pp. 6712-6718.
3. **Padvi A.T. and Nile Uttam V. (2016):** *Role of Non-Timber Forest Products in Forest Dwellers Economy in Western Satpura of Nandurbar District.* Maharashtra Bhugolshastra Sanshodhan Patrika, 33 (2), pp.57-62.

Crops Combination in Marathwada Region: A Geographical Study

Dr. Sanjay Raosaheb Sawate
Associate Professor & Head Dept. of Geography Kalikadevi Art's, Commerce & Science College
Tq. Shirur (Kasar) Dist. Beed
E-mail – s.r.sawate@gmail.com

Abstract

To study the district wise trends in area under different crops in Marathwada region and study the changing agricultural crop combination in 1961-2001. The time period chosen for the analysis of these trends is from 1961-81 to 1981-2001. District wise trends in area of Rice, Jowar, Bajara, Wheat, Maize, Other Cereals, Total Cereals, Tur, Mung, Gram, Other Pulses, Total Pulses, Total Foodgrains, Groundnut, Sesame, Sunflower, Safflower, Flax Linseed, Other Oilseed, Total Oilseed, Cotton and Sugarcane is mainly concentrates on the study.

Key Words Crop Combination, Cropping Pattern, Grains, Oilseed etc

Introduction

Cropping of agricultural enterprise patterns are the extent on which arable land under different agricultural activities can be put to use, these largely depend upon the socio-economic influents which determine, the possibility of enterprise the farmer chooses and the input intensity with which he farms. It became possible for the farmers to replace less profitable land by growing two or even three crops in the same field in a year with an assured supply of water and of seed and chemical fertilizers. The proportion of area under various crops at a point of time is means simply in words as cropping pattern. It is dynamic concept because no cropping pattern can be said to be ideal for all times. It changes in space and time with a view to meet the requirements and governed by the physical as well as cultural and technological factors. The changes in the agricultural development takes place due to the change in cropping 118 pattern a particular span of time. These changes are brought about by the socio-economic influences. "In most of the situations the physical environment reduces the choice of the enterprise, either by pro-habiting the growth of certain crops all together or by reducing their level".

Study Region

The Marathwada region lies in the upper Godavari basin, which extends from $17^0 35'$ North latitudes to $20^0 40'$ North latitudes and $74^0 41'$ East longitude to $78^0 19'$ East longitude.

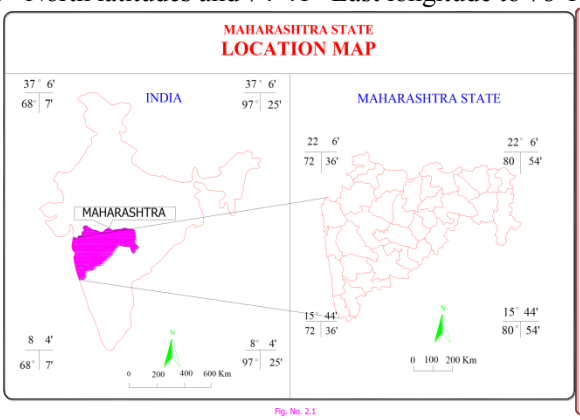


Fig. No. 2.1

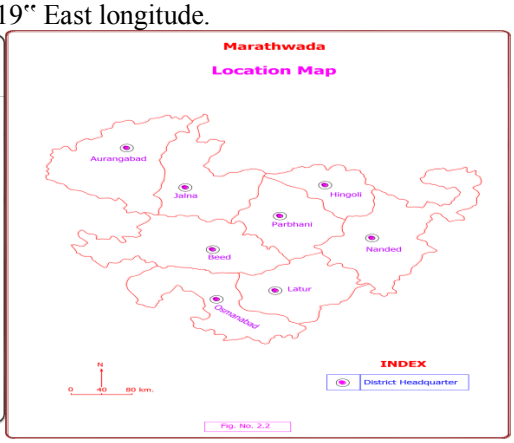


Fig. No. 2.2

Aims of the Study

1. To study what was the condition of agriculture of Marathwada region in 1961.
2. To study spatio-temporal changes in agriculture of Marathwada region during the period 1961-2001.
3. How agriculture is changed due to Crop Combination in Marathwada region.

Methodology

WeaverCrop combination method of is used to do the study,

The aggregate of various crops grown/cultivated in an area at a given point of time.

Crop combination is the analysis of the total percentage acreage area occupied by different crops in a given region in an agricultural year.

Crop Combination:

An important aspect of agricultural geography as it provides a good basis for agricultural regionalization is the study of crop combination. The crops are generally grown in combinations and it is really that a particular crop occupies a position of total isolation other crops in a given area unit at a given point of time. The distribution maps of individual crops are interesting and useful for planners but it is even more important to view the integrated assemblage of the various crops grown in an arial unit. For a

comprehensive and clear understanding of the agricultural mosaic of an agro climatic region and for the planning and development of its agriculture, a systematic study of crop combinations is of great significance.Geographers have always been closely related with spatio-temporal analysis of the regional and ecological landscape of the earth. The significance of regional analysis is really core of all geographic investigation. The regional aspects of cultivation, crop concentration and combination etc. are fundamental. Agricultural landuse planners have paid considerable attention to such studies.Thus the crop combination region delineated would emphasis the regional frame work of agricultural activities and specialization of crops in the area. The pattern of crop combination regions that will emerge from the delineation might also serve the meaningful purpose in a balanced regional agricultural planning different approaches have been applied for the delineation of crop combination. The combination analysis was originally introduced in geographical research by weaver in his outstanding study of crop combination of Mid-Western United States.

A simple scale of gradation was derived by Jonson (1958) on the basis of the scale of the level of importance for each of the crops in Bangladesh. Where five crops are grown but the method in the not suitable for the Marathwada region, where number of crops are grown. Rafiullah has used maximum positive deviation method for the functional classifications of towns.For the present study an attempt is made to delineate the crop combination regions by applying crop combination method i.e. Minimum standard deviation method is introduced by Weaver (1954) and Dois method. The combination analysis was originally introduced into geographical research by Weaver (1954) in his outstanding study of crop combination in the mid-western United States. In addition, the technique can also be applied to identify and locate areas sharing a significant proportion of single agricultural elements or crop at higher rank, such as the significant rice or producing areas of India. As such, it can be termed as regional distribution analysis. The principle of combination analysis thus promises to be an important tool of statistical studies in different field of geography, particularly in agricultural geography "The study of crop combination regions constitutes important aspects of agricultural geography as it provides a good basis for agricultural regionalization(Majid Husain, 2007)" out of many methods of crop combination the method used by Weaver, John C. 1954 and Dois have been used for the district wise crop combination of Marathwada region from 1961-2001 to 1981-2001.

Crop Combination According to Weaver's method:

Table No -1

Crops Combination of Marathwada Region

Crop Combination in Marathwada by Weaver's Method					
		1961-81			1981-2001
Name of the District	Crop Combination (No. of Crops)	Crops	Name of the District	Crop Combination (No. of Crops)	Crops
Aurangabad	16	Jowar,Sunflower,OtherPulses,Tur,Other Oil seeds,Mung,Wheat, Safflower, Flax Linseed, Gram, Rice Sesame, Sugar,Safflower, Bajara,Maize	Aurangabad	15	Jowar,Tur,Sugar,Sunflower, Other,Oilseed,Mung, Wheat,Rice,Groundnut, Gram, Sesame,OtherPulses,Bajara
Nanded	15	Jowar,Tur,Cotton,OtherOilseed,Groundnut,Other / Pulses,Sunflower,Rice,Sesame,Mung,Safflower,Bajara,Flaxlinseed,OtherPulses,Maize	Nanded	14	Jowar,Sunflower,Tur,Other / Oilseeds,Mung,Cotton,Sesame,Rice,Sugar,Groundnut,Rice, Bajara,Flaxlinseed,Other Pulses.

Osmanabad	16	Jowar, Other oilseeds, Sunflower, Tur, Other	Osmanabad	16	Jowar, Tur, Sunflower, Wheat, Other Oilseed, Gram, Mung,
		Pulses, Gram, Wheat, Mung, Safflower,			Other Pulses, Safflower, Sugarcane, Rice, Flax Linseed Sesame, Bajara, Other cereals, Maize
		Groundnut,Flax linseed, sugarcane, Bajara, Sesame, Other Cereals, Maize			
Parbhani	15	Jowar, Tur, Other Oilseeds, Cotton, Sunflower,	Parbhani	14	Jowar, Tur, Mung, Cotton, sunflower, other Oilseeds, Rice,
		Other Pulses, Groundnut, Sesame, rice, Mung,			Gram, Safflower,Groundnut, Bajara, Sugarcane, Wheat, Other Pulses
		Bajara, Safflower,Wheat, Sugarcace, Flax Linseed			
Beed	14	Jowar, Tur, Cotton, Other	Beed	15	Jowar, Cotton, Tur, Sunflower, Other Oilseeds, Rice, Mung,
		Oilseeds,Groundnut,Sunflower, Other Pulses, Rice,			Sesame, Groundnut, Gram, Bajara, Sugarcane, Safflower, Other Pulses, Other Cereals
		Sesame, Mung, Other Cereals, Bajara, Sugarcane, Wheat			
Hingoli	--	--	Hingoli	15	Jower, Tur, Sunflower, Rice, Other Oilseeds,Groundnut,
					Cotton, Sugarcane, Gram, Safflower, Wheat, Sesame, Other Cereals, Maize, Other Pulses
Latur	--	--	Latur	14	Jowar, Tur, Sunflower, Gram, Safflower, Other Oilseeds,
					Groundnut, Rice, Mung, Sugarcane, Bajara, Wheat, Sesame, Other Pulses
Jalna	15	Jowar, Tur, Other Oilseeds, Cotton, Sunflower,	Jalna	16	Jower, Tur, Sunflower, Mung, Cotton, Other Oilseeds, Rice,
		Other Pulses, Groundnut, Sesame, rice, Mung,			Wheat, Safflower, Gram, Sesame, Bajara, Sugarcane, Other Pulses, Other Cereals, Flax Linseed
		Bajara, Safflower,Wheat, Sugarcace, Flax Linseed			

Marathwada	15	Jowar, Tur, Other Oilseeds, Other Pulses,		14	Jowar, Tur, Sunflower, Other Oilseeds, Mung, Cotton, Rice,
		Sunflower, Groundnut, Cotton, Mung, Gram, Rice,			Gram, Sugarcane, Wheat, Safflower, Groundnut, Sesame, Bajara.
		Wheat, Sesame, Safflower, Other Pulses, Flax Linseed			

Source: *Computed by the Researcher.*

Table No. 01 reveals there are sixteen crop combinations in Aurangabad district in 1961-2001 as per weaver‟s minimum deviation method viz. Jowar, Sunflower, Other Pulses, Tur, Other Oil seeds, Mung, Wheat, Safflower, Flax Linseed, Gram, Rice Sesame, Sugar, Safflower, Bajara, Maize and there were fifteen crop combination in 1981-2001 viz. Jowar, Tur, Sugar, Sunflower, Other Oilseed, Mung, Wheat, Rice, Groundnut, Gram, Sesame, Other Pulses, Bajara. There are fifteen crop combinations in Nanded district in 19612001 as per weaver‟s minimum deviation method viz. Jowar, Tur, Cotton, Other Oilseed, Groundnut, Other Pulses, Sunflower, Rice, Sesame, Mung, Safflower, Bajara, Flax linseed, Other Pulses, Maize and there were fourteen crop combinations in 1981-2001 viz. Jowar, Sunflower, Tur, Other Oilseeds, Mung, Cotton, Sesame, Rice, Sugar, Groundnut, Rice, Bajara, Flax linseed, Other Pulses.There are sixteen crop combinations in Osmanabad district in 1961-2001 as per weaver‟s minimum deviation method viz. Jowar, Other oilseeds, Sunflower, Tur, Other Pulses, Gram, Wheat, Mung, Safflower, Groundnut, Flax linseed, sugarcane, Bajara, Sesame, Other Cereals, Maize and there were sixteen crop combinations in 1981-2001 viz. Jowar, Tur, Sunflower, Wheat, Other Oilseed, Gram, Mung, Other Pulses, Safflower, Sugarcane, Rice, Flax Linseed Sesame, Bajara, Other cereals, Maize.

There are fifteen crop combinations in Parbhani district in 19612001 as per weaver‟s minimum deviation method viz. Jowar, Tur, Other Oilseeds, Cotton, Sunflower, Other Pulses, Groundnut, Sesame, Rice, Mung, Bajara, Safflower, Wheat, Sugarcane, Flax Linseed and there were fourteen crop combinations in 1981-2001 viz.Jowar, Tur, Mung, Cotton, sunflower, other Oilseeds, Rice, Gram, Safflower, Groundnut, Bajara, Sugarcane, Wheat, Other Pulses.

Conclusion

There are fifteen crop combinations in the region in as per weaver‟s minimum deviation method viz. Jowar, Tur, Other Oilseeds, Other Pulses, Sunflower, Groundnut, Cotton, Mung, Gram, Rice, Wheat, Sesame, Safflower, Other Pulses, Flax Linseed and there were fourteen crop combinations in viz.Jowar, Tur, Sunflower, Other Oilseeds, Mung, Cotton, Rice, Gram, Sugarcane, Wheat, Safflower, Groundnut, Sesame, Bajara.

References :

1. Ahmed A. and Siddiqui M.F. (1967), „Crop Combination Patterns in Luni Basins‟ Geographer (M.U.A.) Vol. XIV., Pp. 69-80.
2. Bhatia S.S. (1965), „Patterns of Crop Concentration and Diversification in India‟, Economic Geography., Pp. 40,41,53,55 & 56.
3. Chisholm (1962), „Rural Settlement and Landuse: An Essay on Location,‟ (Quoted from Agricultural Geography by W.B. Morgon and others, Pp.40,41,53.).
4. Coppock J.T. (1968), „Changes in landuse in Great Britain,‟ Landuse and Resources Studies in Applied Geography, Institute of Britain Geographer, Landon, special publication. No. 1, P.111
5. Doi K. (1957), „The Industrial Structure of Japanese Prefecture,‟ Pro-ceedings I. G. U. Regional Conference in Japan, Pp.310.316.
6. Florence P.S.(1948), „Investment Location and Size of Plant,‟ (Quoted from Agricultural Geography Jasbir Singh and Dhillon S.S.P. (217).
7. Jasbir Sing and Dhillon S.S. (1997), „Agricultural Geography‟, Tata McGraw Hill Publishing Co. Ltd., Delhi. P.210.
8. Jasbir Singh & Dhillon S.S. (1997), „ Agricultural Geography‟, Tata McGraw Hill Publishing Co. Ltd., Delhi .P. 216.
9. Jasbir Singh and Dhillon S.S. (1947): “Agricultural Geography”, Tata McGraw Hill publishing co. ltd. New Delhi. p.220.

Government Initiatives and its Present Scenario to Prevent Malnutrition in India

Puja Kumari
Research Scholar, Department of Home Science Veer Kunwar Singh University, Ara, Bihar

The early stage of life is a golden time of swift mental and physical development. Specifically, 1000 days are the important days of one's life. In early childhood due to lack of appropriate care, they suffer from malnutrition and other diseases causing delayed mental and physical development. India has the maximum number of malnourished children in the world. Reports of World Health Organization, United Nations International Children's Emergency Fund and National Health & Family Survey have highlighted that rates of malnutrition among children, adolescent girls, pregnant and lactating women are alarming high in India. There are so many factors responsible for malnutrition in the country includes socio-economic status, women's education, lactation behavior and sanitation etc. With an aim to prevent malnutrition, Government of India has implemented so many programmes like ICDS, National Food Security scheme, Mid-Day Meal, Poshan Abhiyan etc. Even with good plans and programmes, dietary diversity and malnutrition have not improved up to the mark. The Government needs to improve their system effectively to tackle malnutrition.

Keywords: Malnutrition, Child Development, Nutrition Programme and Health

Introduction:

The first and foremost requirement for the growth of children is adequate nutrition. It is more crucial during the first five years of life when rapid growth is occurring and the child is fully dependent on his mother for food. Early childhood is the most critical period of life when the foundations are laid. A proper diet is essential from the early stages of life for their growth and development. The main reason of malnutrition is lack of balance nutrients in the diet Thus, adequate nutrition is essential for human development.An estimated 41 million children under the age of 5 years are overweight, while 159 million are stunned and 50 million are wasted. As per Global Nutrition Report (2018), India is a home to 46.6 million stunned children. According to Global Hunger Index (2020), India ranks 94 out of 107 countries. Around 60 percent of child deaths in India are due to malnutrition, as weaker child has very low immunity.

As per UNICEF Report (2019), 69 per cent death of children below the age of five years caused by malnutrition in India. Report also highlighted that every second child in that particular age group is affected by some form of malnutrition. This includes 35 percent (stunning), 17 per cent (wasting) and 2 per cent (overweight). Report also highlighted that Government initiative Poshan Abhiyan or National Nutrition Mission is playing a vital role in improving nutritional condition across India.1st phase of National Health & Family Survey (NHFS-5) reports for 22 states/UTs released on 12th December, 2020. NHFS-5 report shows that several states in India have either meager improvements or sustained reversals on child malnutrition parameters such as child stunning, child wasting and children underweight status. Child stunning worsened in states like Goa, Kerala, Telangana, Gujarat and Tripura saw the increase in stunning from 24.3% to 32.3%. Child wasting reflects acute undernutirtion. The available data shows an increase in child wasting in state like Assam, Bihar, Kerala and Telengana compared to the previous round of the same survey in 2015-16. In Kerala, the wasting increased by 0.1%, however, in Ladakh wasting went up by 8.2%. On other hand, Karnataka showed improvement where wasting rate came down by 6.6%. In case of underweight children, Kerala showed increase from 16.1% to 19.7%. Telangana also showed deterioration from 26.6% to 28.9%. In Bihar and Gujarat, 40% or more of the children under the age of five years are under weight.

Understanding of Malnutrition:

Malnutrition is a condition that happens when diet doesn't contain the proper amount of nutrients. Types of malnutrition include:

1. **Overnutrition:** This type of malnutrition results from over consumption of proteins, calories or fat can also lead to malnutrition. Overnutrition leads to obesity.
2. **Undernutrition**: This type of malnutrition results from not getting proper diet such as protein, calories or micronutrients. It results wasting, stunting and underweight. Undernutrition leads to poor growth and development.

Government Initiatives to Address Undernutrition:

Malnutrition is a major health problem in Indian children. Malnutrition being a comprehensive problem, a combination of approaches like supplementary feeding, nutrition education, fortification and enrichment of foods, extending the existing food supplies and health measures are being emphasized in policy making and programme implementation. The following programmes and schemes have been implemented by Government of India for improving nutrition and combating malnutrition.

The Food & Nutrition Board:

The Food & Nutrition Board was established in 1964 and later merged into Ministry of Women and Child Development in 1993. The Board strives to improve nutritional status of the people in the country by creating nutritional awareness campaigns, development and promotion of locally available food to prevent and control various nutritional deficiencies.

Integrated Child Development Scheme (ICDS):

Integrated Child Development Scheme was launched in 1975 by the Government of India. The beneficiaries of the programme are children under 6 years of age, school going children, adolescent girls, pregnant and lactating mothers and women. Anganwadi Centres provide supplementary nutrition, immunization, health check up, referral services, nutrition and health education to women and non-formal pre-school education under this scheme. It is intended primarily to bridge the gap between the Recommended Dietary Allowance and the Average Daily Intake.

Special Nutrition Programme:

The Special Nutrition Programme was launched in 1970-71 by Government of India. This programme provides supplementary feeding about 300 calories and 10 gm of proteins to pre-school children and about 500 calories and 20 gm of protein to nursing mothers for 300 days a year. At present, Special Nutrition Programme is operated as a part of the Minimum Needs Programme in the various states.

National Nutritional Policy:

The National Nutritional Policy was introduced by the Government India in 1993 under the aegis of Department Women and Child Development. India was among the first countries to articulate a national policy of nutrition. It aims to address undernutirtion problem by utilizing direct and indirect intervention. This policy had paid special attention towards many nutritional programme to improve the health and status of the children, adolescent, pregnant and nursing mother.

Mid-Day Meal Scheme:

The National Programme of Nutritional Support to Primary Education (NP-NSPE) was launched on 15th August, 1995. Mid Day Meal was started to provide a cooked mid-day meal on every school day with the nutritional content of 450 calorie, 13 grm proteins and other micro-nutrient to all children studying in class I-VIII. The main purpose of this programme was to improve enrolment, retention and attendance of the children in the school and simultaneously improving nutritional level among them.

National Food Security Act (NFSA):

Government of India launched National Food Security Act (NFSA) in July, 2013. Under the Act, beneficiaries are entitled to 5 kg per person per month cereals at subsidized prices. Another programme under this Act, the Antyodaya Anna Yojana (AAY). In this category, beneficiaries are entitled to receive 35 kg foodgrains per family per month at a highly subsidized for nutria-cereals, wheat and rice respectively.

National Nutritional Anemia Prophylaxis Programme (NNAPP):

Government of India launched National Nutritional Anemia Prophylaxis Programme in 1970 as a measure to prevent anemia. This programme was revised and expanded to include beneficiaries from all age groups i.e. children age 6-59 months, 5-10 years, adolescent age 10-19 years, pregnant and lactating women and women in reproductive age group under the National Iron Pulse Initiative Programme (NIPI) in 2011. A diet deficient in iron food is the most common cause of anemia in children.

Mother Absolute's Affection (MAA):

Mother Absolute's Affection is a nationwide programme launched in 2016 to bring focus on promotion of breastfeeding and provision of counseling services for supporting breastfeeding through health system. The programme has been name 'MAA' to signify the support a lactating mother. Breast milk is the best food and drink for an infant for the first six months of life. No other food or drink, not even water is usually needed during this period.

Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (RGSEAG) or SABALA Scheme:

The Ministry of Women and child Development started implementation of SABLA for the Government of India on 1st April, 2011. This programme is also known as Rajiv Gandhi Scheme for Empowerment of Adolescent Girls. It has two main components i.e. Nutrition and Non-nutrition. In this scheme, all Adolescent Girl will be given Supplementary Nutrition containing 600 calorie, 18-20 grams of protein and micronutrients per day for 300 days. SABLA replaced Kishori Shakti Yojana and Nutrition Programme for Adolescent Girls.

National Health Mission:

National Health Mission was launched in 2005. National Health Mission covers both the National Rural Health Mission and National Urban Health Mission. The main objective of the NHP was to achieve an acceptable standard of good health for the general population of India The main components include Health System Strengthening, Reproductive Maternal, Neonatal Child and Adolescent Health and Communicable and Non-communicable Diseases.

Poshan Abhiyan:

Poshan Abhiyan was launched by Government of India in 2018. The main focus of this abhiyan to lay emphase on nutritional status of children from the age 0-6 years, adolescent girls, pregnant and lactating women. This abhiyan targets to reduce stunning, undernutirtion and anemia. Under Poshan Abhiyan, every year the month of September is observed as Rashtirya Poshan Maah to ensure community mobilization and participation for addressing malnutrition among children. Every year from 1^{st} -7^{th} September also celebrated as National Nutrition Week to raise public awareness about nutritional and healthy eating habits.

Conclusion:

There are so many reasons for malnutrition in India. One of the major reasons for malnutrition in India is economic inequality. As per UNICEF, malnutrition was the case of 69% of deaths of children under the age of five years in India. As per recent first phase of NHFS- 5 report (2019-20) which covers 17 states and five Union Territories, several states like Bihar, Assam, Kerala and Telangana saw an increase in the number of malnutrition among children compared to NFHS 2015-16. Multiple initiatives have been taken up by Government of India to address malnutrition including welfare schemes, poshan abhiyan, health schemes etc to improve nutritional status but malnutrition among children in India remains high. Despite so many challenges, India has made considerable progress in tackling malnutrition.

Reference:

1. National Nutritional Policy (1993), Government of India, Department of Women and Child Development, Ministry of Human Resource Development, New Delhi
2. Global Nutrition Report (2018): Shining a light to spur action on nutrition.
3. Global Hunger Index (2020): One Decade to Zero Hunger: Linking Health and Sustainable Food Systems, DFS Druck Brecher GmbH, Germany.
4. UNICEF Report's The State of the World's Children (2019): Children, Food and Nutirtion
5. National Family Health Survey -5 (2019-20), Ministry of Health and Family Welfare, Government of India, New Delhi.
6. World Bank Report on Malnutrition in India, Washington, DC: The World Bank, 2009
7. National Food Security Act (2013) : Directorate of Printing, Government of India Press, Minto Raod, New Delhi and Published by the Controller of Publications, Delhi
8. National Health Mission (2005): Ministry of Health and Family Welfare, Government of India, New Delhi
9. Annual Report (2020-21), Department of Health & Family Welfare, Ministry of Health & Family Welfare, Government of India, New Delhi
10. Narayan J, John D, Ramadas N (2019): Malnutrition in India: status and government initiatives, J Public Health Policy 40(1): 126-141.
11. Ravi S, Singh R (2016): Nutrition in India: Targeting the First 1000 Days of a Child's Life. Policy Brief. Brookings India, October 2016, Vol -1
12. National Nutrition Mission (2017-18), Press Information Bureau, Government of India
13. Annual Report (2019-20): Department of Food & Public Distribution (Ministry of Consumer Affairs, Food & Public Distribution), Government of India.
14. Vir, S., K. C. Sreenath, V. Bose, K. Chauhan, S. Mathur and S. Menon. (2014): National Policies and Strategic Plans to Tackle Undernutrition in India: A Review. POSHAN Report No. 2. New Delhi: International Food Policy Research Institute.

Role Of Government Schemes In Rural Development

Dr. Choudhari Rekha Laxmanrao
Assistant Professor Dept. of Commerce Vaishnavi Mahavidyalaya, Wadwani.
Tq, Wadwani. Dist. Beed.

Introduction:

Rural Development in India is one of the most important factors for the growth of the Indian economy. Rural development focuses upon the development of the sections of rural economies, that experience serious poverty issues and effectively aims at developing their productivity. Rural Development It also emphasizes the need to address various pressing issues of village economies that hinder growth and improve these areas. An agriculture sector is one of the most important primary activity in rural India and about two-third of India's population depends on agriculture, the main problem lies in the fact that the share in GDP of agriculture sector in on a constant decline. Rural development in India has witnessed several changes over the years in its emphasis, approaches, strategies and programmers. It has affected a new dimension and perspectives as a consequence. Rural development can be richer and more meaningful only through the participation of clienteles of development. Just as implementation is the touchstone for planning, people's participation is the center-point in rural development. People's participation is one of the foremost pre-requisites of development process both from procedural and philosophical perspectives. Development planners and administrators it is important to register the participation of different groups of rural people and involve them in the schemes. The Government has planned several programs pertaining to Rural Development in India. The Ministry of Rural Development in India is the apex body for formulating policies, regulations and acts pertaining to the development of the rural sector.

Rural Development in India:

Rural development still remains the core of the overall development of the country. More than two-third of the country's people is dependent on agriculture for their livelihood, and one-third of rural India is still below the poverty line. Therefore, it is important for the government to be productive and provide enough facilities to upgrade their standard of living.

The main objectives composed by the government in the sixth five-year plan for rural development are: improve productivity and wages of rural people, guarantee increased and quick employment possibilities, demolish unemployment and bring a notable decline in underemployment, guarantee an increase in the standard of living of the underprivileged population, provide the basic needs: elementary education, healthcare, clean drinking water, rural roads, etc.

Objective Of The Study:

1. To understand the Rural Development in India.
2. The main objective of the study is to understand the Role of Government Schemes in Rural development in India.

Scope Of The Study:

Rural development has been accorded the highest priority in the country's planning process. The Government of India has been lunched the various schemes for the Rural development of India. The present study confine to only seven schemesonly which are Indira Awaas Yojana, Pradhan Mantri Awaas Yoiana Gramin (PMAY-G) scheme is to provide houses, Pradhan Manthi Gram Sadak Yoiana (PMGSY) to build roads and Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) to provide employment to rural people, Aajeevika Skills, Swaranjayanti Gram Swarozgar Yojana (SGSY), and Sampoorna Grameen Rozgar Yojana.

Research Methodology:

To conduct the research study descriptive research method has been used. For the purpose of the study secondary data is used. The secondary data collected from the published books, research papers in journals and annual reports and website.

Government Schemes For Rural Development:

Indira Awaas Yojana:

The Indira Awaas Yojana (IAY) launched in 1985-86, This is the main plan of the Ministryflagship scheme of the Ministry of Rural Development to provide houses to the poor in the rural areas. The objective of the Indira Awaas Yojana is primarily to help construction/up gradation of dwelling units of members of Scheduled Castes/Scheduled Tribes, freed bonded labourers, minorities in the below poverty line and other below poverty line non-SC/ ST rural households by providing

Pradhan Mantri Gram Sadak Yojana:

Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched on 25th December 2000 as a fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the

country.This scheme is launched by the Ministry of Rural Development. The main aim of this scheme is to provide all weather road connectivity to the rural areas whose population is more than 500 persons and in terms of hilly areas it is 250 persons.

Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS):

The National Rural Employment Guarantee Act, (MNREGA) was notified on September 7, 2005. This scheme is an Indian labour law and social security measure that aims to provide 'right to work' to the people falling Below Poverty Line. It guarantees 100 days employment in a year to the village people. In this Fifty percent workers should be women. The scheme is 90% funded by the central Government and 10% by the State Government.

National Rural Health Mission:

National Health Mission is initiated on 12 April, 2005. Main aim of this plan is to provide accessible, affordable and accountable quality health services even to the poorest households in the remotest rural regions. Accredited social health activists (ASHA) scheme is also operational under this scheme. The scheme is run by the Ministry of Health and family welfare.

Aajeevika Skills:

Its origins in the 'Special Projects' component of the Swarnajayanti Gram SwarozgarYojana (SGSY). Besides helping to reduce poverty, it rides on the hopes and aspirations for a better quality of life in large sections of the rural poor. Ajeevika Skills aimed at imparting to rural youth, who are poor. They should be paid regular monthly wages or according to their ability. Aajeevika Skills involves eight distinct steps: Awareness building within the community on the opportunities, identifying rural youth who are poor, Mobilizingrural youth who are interested, counseling of youth and parents, Selection based on aptitude, To Impart knowledge related to the industry.

Swaranjayanti Gram Swarozgar Yojana(SGSY):

Assisting the rural poor in self-employment by encouraging group and cluster activities, providing skill development opportunities, credit linkages and subsidies and creation of marketing opportunities, there is a huge opportunity of production to eradicate Poverty. The scheme was launched on 1st April 1999. SGSY is an integrated scheme for providing opportunities of self-employment to the rural poor.

Sampoorna Grameen Rozgar Yojana

It is a scheme by the Government of India to provide employment for the rural poor. The Panchayati Raj institution maintains this scheme. In this scheme the Employment Assurance Scheme and Jawahar Gram Samridhi Yojana merged and led to the establishment of SGRY in 2003.The programme aims to provide employment and food in rural areas to BPL families. It comes under the Ministry of Rural Development.

Pradhan Mantri Adarsh Gram Yojana

It is a rural development programme by the central government that began in 2009. It is mainly for the development of villages with a higher SC/ST ratio, over 50%. The idea is to merge several central government schemes to develop these villages. Bharat Nirman, Pradhan Mantri Gram Sadak Yojana, Sarva Shiksha Abhiyan, MGNREGA, Integrated Child Development Services, and more. This program is applicable to villages SC/ST population above 50%. It comes under the Ministry of Social Justice and Empowerment.

Suggestions:

Suggestions:

Educate the RuralEntrepreneur, offer finance with low rate of interest, Labour Intensive Techniques, Exploitation of Village resource, Micro credit schemes, Infrastructure facilities, Marketing management skillsshould be improved, Management training is to be imparted, SWOT Analysis, Pastexperiencesandotherobservation, Labour Intensive Techniques.

Conclusions:

This government is faced with the challenge of completing a large number of unfinished works. Government has many programmes for agricultural and rural development which have not reached the target groups up to a satisfactory level. Therefore, by using proper methods attempts should be made to motivate them through an emphasis on the deprived need areas. We know that Indian economy is based on agriculture with a vasts on segment of its population engaged in agriculture and allied pursuit growth of the Indian agriculture determines is on the overall development of the national economy.Promotion of entrepreneurship is extremely important in the context of producing gainful employment and reducing the widening disparities between the rural and urban. Monitoring rural development programmes by supplying right information at the right time, providing timely and adequate credit and

continuous motivation of bankers, Panchayat union leaders and voluntary service organizations will lead to the development of rural entrepreneurship and in turn rural development. All round development is possible only if all the above plans are implemented for the overall development of the nation.

References:

1. Arora R. C. Integrated Roral Development, S. Chand and Com, New Delhi.
2. Dr. P. SRINIVASA RAO, (2018) Rural Development Schemes in India – A Study. International Journal of Research and Analytical Reviews (IJRAR) www.ijrar.org Volume 06, Issue 1.p. no.1072
3. Dr. Arpita Sharma. Kurukshetra February 2014. The Monthly Journal, MINISTRY OF RURAL DEVELOPMENT Vol. 62 No. 4 Pages 13-14.
4. Dr. Vijay Kumar Sarabu. Rural development in India: Way-Forward, Hanamkonda,FormerMember ofBoardofStudiesKakatiyaUniversity, Warangal.
5. Dr. Narendrasinh B. Chauhan Professor and Head Department of Extension Education UNIT: IV RURAL DEVELOPMENT B.A.College of Agriculture, AAU, Anand.
6. Santhi N. and Rajesh Kumar S. (2011), Entrepreneurship Challenges and Opportunities in India
7. Annual Report 2013-14, Ministry of Rural Development.
8. http://mospi.nic.in
9. https://data-flair.training/blogs/important-government-schemes-of-india/

Impact of agriculture on Indian rural development-an overview

Tulasi B.V[1], Punitha S. J[2,] Dr. M.C. Shivakumar[3]

[1]Asst Prof in Commerce, Maharani's Women's Commerce &MgtCollege,Paduvarahalli, Mysore-570012
[2]Asst Prof in Commerce, Maharani's Women's Commerce &MgtCollege,Paduvarahalli, Mysore-570012
[3]Asst Profe in Commerce, Maharani's Women's Commerce &MgtCollege,Paduvarahalli, Mysore-570012
[1]venkitulasi2004@gmail.com, [2]punithasree6@gmail.com, [3]dr.mcshiva@gmail.com

Abstract :

Agriculture is the art and science of cultivating the soil, growing crops and raising livestock. It includes the preparation of plant and animal products for people to use and their distribution to markets. Agriculture provides most of the world's food and fabrics. Agriculture plays a critical role in the entire life of a given economy. Agriculture is the backbone for a country. The importance of agricultural biodiversity encompasses socio-cultural, economic and environmental elements. All domesticated crops and animals result from human management of biodiversity, which is constantly responding to new challenges to maintain and increase productivity under constantly varying conditions. In addition to providing food and raw material, agriculture also provides employment opportunities to a very large percentage of the population. Agriculture is an important sector of Indian economy as it contributes about 17% to the total GDP and provides employment to over 60% of the population. Indian agriculture has registered impressive growth over last few decades. In the field of rural credit, the Reserve Bank played a unique role in the development of agriculture in the Rural Sector. The importance of agriculture and rural development was also well recognized in the successive Five Year Plans, since growth in this sector helped to improve food security, nutritional standards and the supply of wage goods at reasonable prices. This paper is based on only secondary data and focused only on the Impact of agriculture in Indian Rural development.

Key Words: Agriculture, Rural Development, GDP, Economy, Opportunities

Introduction:

Agriculture is an important part of India's economy & at present it is among the top two farm producers in the world. Agriculture provides food, clothing, and shelter. It helps people to enjoy a higher quality of life. Farming creates opportunities to lift people out of poverty in developing nations. This sector provides approximately 52 % of the total number of jobs available in Indiaand contributes around 18.1% to the GDP. Agriculture is the only means of living for almost two-thirds of the employed class in India.Modern agronomy, plant breeding, agrochemicals such as pesticides and fertilizers, and technological developments have sharply increased crop yields, while causing widespread ecological and environmental damage. Selective breeding and modern practices in animal husbandry have similarly increased the output of meat, but have raised concerns about animal welfare and environmental damage. Environmental issues include contributions to global warming, depletion of aquifers, deforestation, antibiotic resistance, and growth hormones in industrial meat production. Agriculture is both a cause of and sensitive to environmental degradation, such as biodiversity loss, desertification, soil degradation and global warming, all of which can cause decreases in crop yield. Genetically modified organisms are widely used, although some are banned in certain countries. . Over 60 % of the world's working poor works in agriculture. Farming creates more jobs, beginning with farmers, and continuing with farm equipment makers, food processing plants, transportation, infrastructure and manufacturing.The major agricultural products can be broadly grouped into foods, fibers, fuels and raw materials. Food classes include cereals, vegetables, fruits, oils, meat, milk, fungi and eggs. Over one-third of the world's workers are employed in agriculture, second only to the service sector, although in recent decades, the global trend of a decreasing number of agricultural workers continues, especially in developing countries where small holding is being overtaken by industrial agriculture and mechanization. India is the second largest producer of wheat and rice, the world's major food staples. India is currently the world's second largest producer of several dry fruits, agriculture-based textile raw materials, roots and tuber crops, pulses, farmed fish, eggs, coconut, sugarcane and numerous vegetables. It is the world's largest producer of milk, pulses, and spices, and has the world's largest cattle herd (buffaloes), as well as the largest area under wheat, rice and cotton. It is the second largest producer of rice, wheat, cotton, sugarcane, farmed fish, sheep & goat meat, fruit, vegetables and tea.

Indian Agriculture:

India is a global agricultural powerhouse. It is the world's largest producer of milk, pulses, and spices, and has the world's largest cattle herd (buffaloes), as well as the largest area under wheat, rice and cotton. It is the second largest producer of rice, wheat, cotton, sugarcane, farmed fish, sheep & goat meat, fruit, vegetables and tea.As per experts' opinion the factors which contribute to the poor performance of the Indian agricultural sector are multi-dimensional, such as: poor access to reliable and timely market

information to the farmers, absence of supply and demand forecasting, poorly structured and inefficient supply chains, inadequate cold**.** The rapid growth has helped Indian agriculture mark its presence at global level. India stands among top three in terms of production of various agricultural commodities like paddy, wheat, pulses, groundnut, rapeseeds, fruits, vegetables, sugarcane, tea, jute, cotton, tobacco leaves, etc. However, on marketing front, Indian agriculture is still facing the problems such as low degree of market integration and connectivity, accessibility of reliable and timely information required by farmers on various issues in agriculture. Also, the agricultural marketing sector is characterized by fragmented supply chain. Huge postharvest losses, multiple market intermediaries; higher transaction cost, lack of awareness and several other socio-economic factors are some of the acute problems being faced by the Indian agriculture.Agricultural commodities produced have to undergo a series of operations such as harvesting, threshing, winnowing, bagging, transportation, storage, processing and exchange before they reach the market, and as evident from several studies across the country, there are considerable losses in crop output at all these stages. A recent estimate by the Ministry of Food and Civil Supplies, Government of India, puts the total preventable post-harvest losses of food grains at 10 per cent of the total production or about 20 million Mt, which is equivalent to the total food grains produced in Australia annually.

Common Problems in Agriculture:

The significant cost of power or electricity that is shouldering by our farmers are a big problem.. This is one of the leading issues that they are facing every day. The cost is too expensive and sometimes lost half of the farmer's profit. It was all started about the tax that laborers are shouldering.

Major Agricultural Problems facing by the farmers in India:

1. Small and fragmented land-holdings
2. Seeds,Manures, Fertilizers and Biocide
3. Irrigation, Soil erosion
4. Lack of mechanization
5. Agricultural Marketing
6. Inadequate storage facilities
7. Non-Implementation of Government Policies
8. Lack of Modernization and Mechanization
9. Illiteracy, Ignorance
10. Lack of Funds,Poor Infrastructure,
11. Absence of Modern Storage/Processing Facilities
12. Loss of Land to Natural Disaster
13. The Biggest challenge facing today by Indian farmers is to gain a clearer perspective of the scale of challenge, here are some important issues that are currently facing modern farmers**:**
14. Climate change.
15. The ongoing trade war between the countries.
16. Rapidly depleting reserves of freshwater around the world.
17. The looming food crisis.
18. Economic insecurity in the country.

Role of Agriculture in Indian Economy:

1. Share in national income.
2. Largest employment providing sector.
3. Contribution to capital formation
4. Providing Raw Material Industries
5. Market for industrial products

Objectives of the study:

To study about the agriculture in Indian Rural Development.

Scope of the Study

The present study if only confined to the Impact of agriculture in Indian Rural Development

Research Methodology

The present work is based on secondary data. The secondary data is sourced from published journals, books, articles, and websites.

Rural development:

Around 70% of India's population live in rural areas and their major activity is agriculture, and major productive asset land. Sustainable Water resource development and management and watershed management is still the most widespread and robust source of expanding and enhancing rural livelihoods.

Agriculture is the largest provider of livelihood in rural India .It contributes 25 percent to India's GDP. It isstill dependent primarily on the monsoons. The growth in agricultural production has been stagnant for the past several years.

Agriculture in Rural Development:

In the field of rural credit, the Reserve Bank played a unique role since its inception. The critical importance of agriculture and rural development was also well recognized in the successive Five Year Plans, since growth in this sector helped to improve food security, nutritional standards and the supply of wage goods at reasonable prices. Around the turn of the 1980s, an urgent need was felt for broad-based agricultural and rural development that gave an impetus to allied activities in rural areas, both to generate employment and to alleviate poverty. This prompted the establishment of a specialized apex institution for agriculture and rural development,namely, the national Bank for Agriculture and Rural Development (NABARD) in 1982. Given its statutory responsibility, the Reserve Bank continued to guide the financial system and exercise overall regulation over rural financial institutions in co-ordination with the Government.

Conclusion:

Change is happening in rural India but it has still a long way to go Agriculture has benefited from improved farming techniques but the growth is not equitable. Land use is changing in rural areas as armers are getting good valuefortheir holdings. The effort should be to stop the migration to urban areas. Wholesale prices are primarily used to monitor the weekly price movements. The number of essential commodities should be reduced to an absolute minimum, especiallythenon-foodcrops.

References:

1.An Introduction to Agricultural Social - Subhash Chandra, New Visha.
2.Current State of Agriculture in India-in India-2012- Golden Peacock.
3.Agriculture in India- B Sambasiva Rao, Serials Publications.
4.Agriculture- Muniraj S Rathore, Jain Brothers.

Climate Change And Its Impact On Agricultural Productivity In India

Mr.K.S.Gaikwad
Asst.prof. of Geography,KVP'S Kisan Arts, Commerce & Science College, Parola Dist-Jalgaon

Abstract

Climate change is a growing global problem & concern calling for concerted efforts by the developed as well as developing countries. Climate change has a serious impact on the availability of various resources on the earth especially water, which sustains life on this planet. Changes in the biosphere, biodiversity & natural resources are adversely affecting human health & quality of life. Throughout the 21st century, India is projected to experience warming above global level. India will also begin to experience more seasonal variation in temperature with more warming in the winters than summers. The average temperature change is predicted to be 2.33°C-4.78°C with a doubling in CO2 concentrations. These heat waves will lead to increased variability in summer monsoon precipitation, which will result in drastic effects on the agriculture sector in India.

Keywords: Climate change, Agriculture, Rainfall,Productivity,climate Change Impact.

Introduction:

The overall effects of climate change on agriculture will depend on the balance of these effects. The atmosphere surrounding the earth is made up of Nitrogen (78%), Oxygen (21%) & the remaining 1% is made up of trace gases that include carbon dioxide, methane & nitrous oxide. These increasinggreenhouse gases resulted in global warming by 0.74^0c over past 100 years & 11 of the 12 warmest years were recorded during 1995- 2006 .The IPCC projections on temperature predicates an increase of 1.8^0c to 4.0^0c by the end of this century. A study reveals that out of the 100% GHG emissions, sector wise, agriculture&related sectors account for 23% according to India's contribution to global warming is 4%.Agriculture sector is the Achilles need of the Indian economy contributing 17.18% of GDP & 60% OF labour. Agriculture production is directly dependent on climate changeand weather.Possible changes in temperature, precipitation and CO2 concentration are expected to significantly impact crop growth. The overall impact of climate change on worldwide food production isconsidered to be low to moderate with successful adaptation and adequate irrigation. Global agricultural production could be increased due to the doubling of CO2 fertilization effect. India will also begin to experience more seasonal variation in temperature with more warming in the winters thansummers. India has experienced 23 large scale droughts starting from 1891 to 2009 and the frequency of droughts is increasing. Climate change is posing a great threat to agriculture and foodsecurity.

Objectives:

1) To study climate change meaning.
2) To study climate change variability.
3) To study the climate change impact on Indian agriculture sector.
4) Some strategic suggestion's for climate change control

Data & Research Methodology:

The present research paper is fully based on secondary data which is collected from different sources such as different reference books, articles, periodicals, journals & websites

Climate Change&Cropproductivity:

Agricultural productivity can be affected by climate change in two ways: first, directly, due to changes in temperature, precipitation and/or CO2 levels and second, indirectly, through changes in soil, distribution and frequency of infestation by pests, insects, diseases or weeds. Acute water shortage conditions, combined with thermal stress, could adversely affect wheat and, more severely, rice productivity in India even under the positive effects of elevated CO2 in the future. The mean temperature in India is projected to increase by 0.10 C to 0.30C in *kharif* (summer) and 0.30C to 0.70C in *rabi* (winter) by 2010 and to 0.40C to 2.00C in *kharif* and 1.10C to 4.50C in *rabi* by 2070 (IPCC, 1996). Mean rainfall is projected not to change by 2010 but may increase by 10% during *rabi* by 2070. At the same time, there is an increased possibility of climate extremes, such as the timing of onset of monsoon and intensities and frequencies of droughts and floods. India is a predominantly agriculture oriented economy as 52% of the population directly depends on agriculture either as farmers or agricultural laborers & their concentration is higher at 76% in the villages variation in climate will have a direct impact on the majority of the livelihood of the people. Any change in monsoon trends drastically affects agriculture. Even the increasing temperature is affecting Indian agriculture. In the states of Jharkhand, Odisha and Chhattisgarh alone, rice production losses during severe droughts (about one year in five) average about 40% of total production, with an estimated value of $800 million.Increase in $C0_2$ to 550 ppm increases yields of rice, legumes and oilseeds by 10 to 20%. A 1^0c increases in temperature may reduce yields of wheat, soybeans, mustards,

groundnuts and potatoes by 3 to 7 percent. There would be higher losses at higher temperatures. Productivity of most crops decreases only marginally by 2100 due to increases in temperature, rainfall variability & decreases in irrigation water. Recent studies done at the Indian agricultural research institute indicate the possibility of a loss of between 4 and 5 million tons in wheat production in the future with every rise of 10^0c temperature throughout the growing period. Rice production is slated to decrease by almost a tone / hectare if the temperature rises by 2^0c in temperature was estimated to reduce production of pearl millet by 10 to 15 percentGlobal warming is predicted to affect agricultural production (Table1)

Country	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
India	89090	95980	105310	104000	108000
China	136570	137000	140700	143000	144000
Bangladesh	31000	31700	33700	34000	34200
United States	7133	7593	5866	6334	6038
World Total	440638	449299	465808	470219	479261

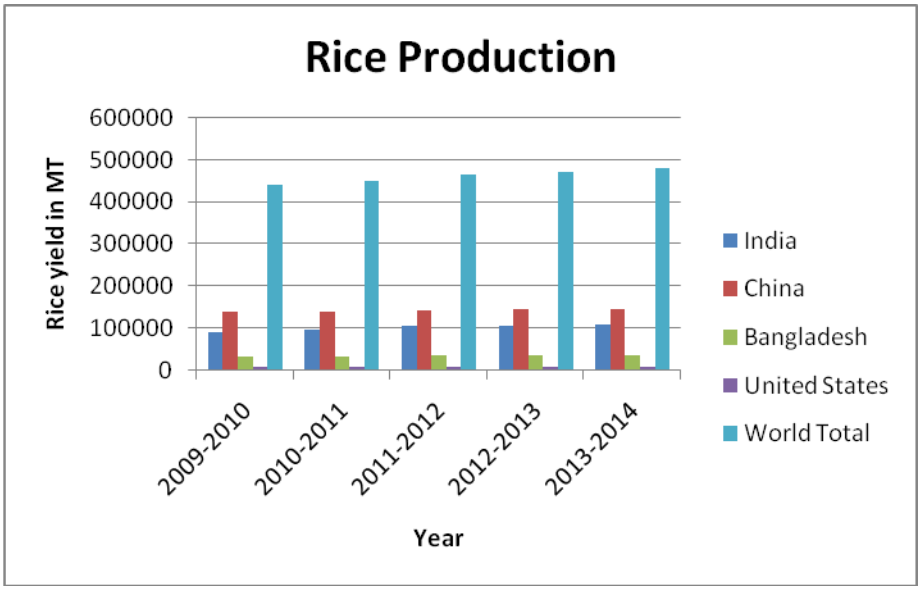


Table1.Rice yield in MT (Source-USDA, Foreign Agricultural Service)

Impacts Of Climate Change On Indian Agriculture:

1) IPCC report & a few other global studies indicate a probability of 10-40% loss in crop production in India with increases in temperature by 2080-2100.

2) The overall impact of climate change on worldwide food production is considered to be low to moderate with successful adoption & irrigation global agricultural production could be increased due to the doubling of CO_2 fertilization effect.

3) Rainfall in India has a direct relationship with the monsoon which originate from the Indian & Arabian seas. Warm air holds more moisture & it will result in an increase in evaporation of surface moisture. Climate change has direct impact on crop evapotranspiration change in climate will affect the soil moisture, groundwater recharge & frequency of flood or drought & finally groundwater level in different areas.

4) The major impacts of climate change will be on rained or unirrigated crops, which are cultivated on nearly 60% of crop land. A temperature rise by 0.50^0c in winter temperature is projected to reduce rained wheat yield by 0.45 tons per hectare.

Suggestions:

1. Improvement in irrigation facility 2. Creating community based forest management & afforestation

projects 3. Improvement in forecasting& early warning systems 4.Develop less polluting energy generation, transport & other industry 5. New agricultural methods 6. Re-forestation 7. Increasing efforts for the recovery of ozone layer 8 Strict control population growth that can add "fuel to the fire" 9. Encouraging organic farming & use of bio- fertilizers& biomass fuel.

Conclusion:

Global climate change is not a new phenomenon. The effect of climate changes poses many threats one of the important consequence is bringing about changes in the quality & quantity water resources & crop productivity. We all need to realize that ecological balance through sustainability & climate stability is as important as national security & public health. It can be concluded that the Indian region is highly sensitive to climate change. Agriculture sector is the most prone sector as it will have a direct bearing on the living of 1.2 billion people. India has set a target of halving greenhouse gas emissions by 2050.

References:

1. IPCC (1998) Principles governing IPCC work, Approved at the 14thsession of the IPCC.
2. Gautam HR, Kumar R (2007) - Need for rainwater harvesting in agriculture
3. Mall R.K, Singh RS (2006) - Impact of climate change on Indian agriculture: A review
4. Gautam H R (2009) Preserving the future. In; Joy of Life- The MightyAqua". Bennett, Coleman & Co. Ltd., the Times of India, Chandigarh.
5. Christensen JH, Hewitson B, Busuioc A, Chen A, Gao X, et al. (2007) Regional Climate Projections. In: Climate Change 2007: The PhysicalScience Basis. Cambridge University Press. Cambridge, United Kingdom.
6. Cruz RV, Harasawa H, Lal M, Wu S, Anokhin Y, et al. Asia. ClimateChange 2007: Impacts, Adaptation and Vulnerability. Contribution ofWorking Group II to the Fourth Assessment Report of theIntergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK.
7. Mall RK, Gupta A, Singh R, Singh RS, Rathore LS (2005) Water resourcesand climate change: An Indian perspective. Current Science 90:1610-1626.
8. Mall RK, Singh R, Gupta A, Singh RS, Srinivasan G, et al. (2006) Impactof climate change on Indian agriculture: A review. Climate Change 78:445-478.
9. IPCC (2001) Climate Change 2001: Impacts, Adaptation &Vulnerability: Contribution of Working Group II to the Third Assessment Report ofthe IPCC. Cambridge University Press, Cambridge, UK.
10. IPCC (2007) Summary for Policy-makers, Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the IPCC. Cambridge University Press,
1. Cambridge, United.

Crop Combination In Chandrapur District (Maharashtra): A Geographical Analysis

Dr. Pramod M. Wasake
Head & Assistant Professor, Dept Of Geography Shree Shivaji Arts,Commerce & Science College, Rajura Dist. Chandrapur
Eamil – pramodwasake@gmail.com

Abstract:

Agriculture being a basic activity plays a vital role in Indian economy, but still it gambles with the monsoon, causes high fluctuations in production. Inadequate rainfall of monsoon and frequent drought conditions hampered the development of agriculture, particularly, in drought prone area of Maharashtra. In this paper the Chandrapur district, which falls, in drought prone area of Maharashtra is selected for study. The major objective of this paper is to find out and analyze the crop combination region. Weaver technique, which is known as 'Maximum positive deviation method, has used to identify the crop combinations. In the eastern part of study area, where generally the rain feed crops are the major crops, cropping pattern is one crop to three-crop combination.

Key Words : Crop combination**,** Agriculture, Production, Irrigation, Soil

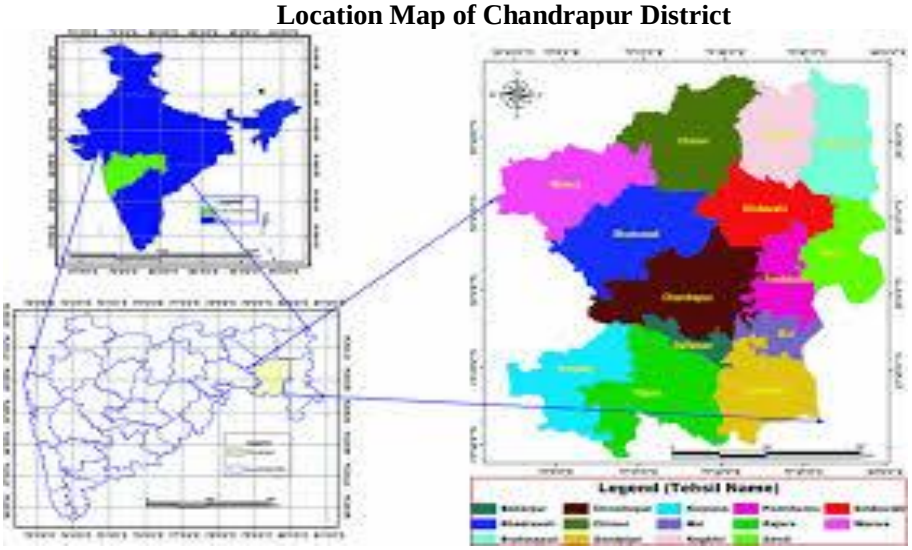
Introduction:

In Indian context, agricultural is a basic activity, which accounts one fourth of the National income and provides employment to 65% of working population, and still Indian agriculture gambles with the monsoon as inadequate water resources irrigate about 40% area. The Indian agricultural is totally depending upon the southwest monsoon, which is uncertain, causes high fluctuations in the agricultural production. Though the state of Maharashtra is known as a most urbanized & having remarkable development in industrial sector, yet the agricultural activity remains fundamental one. However inadequate rainfall of monsoon and frequent drought conditions hampered the development of agriculture, particularly in the drought prone areas of Maharashtra. The Chandrapur district falls in rain shadow zone of the Maharashtra, where agricultural as well as animal life is mostly affected by the frequent occurrence of the droughts. Agriculture is the main economic activity of this region.

The Study Region. :

Chandrapur district is located in the eastern edge of Maharashtra in Nagpur division and forms the eastern part of **'Vidarbha'** region. It is located between $19^0.30'$ N and $20^0.45'$ N latitude and $78^0.46'$ E longitude. It is the easternmost district of the state of Maharashtra. The district is bounded by Nagpur, Bhandara and Wardha on the northen side, Yevatmal on the western side, Gadchiroli on the eastern side and Adilabad district of the Andra Pradesh on the southern side. Physiographically, the district is situated the Wainganga and Wardha river basin.The eastern and western boundaries of the district are well defined by rivers Wainganga and Wardha, the tributaries of Godawari. Chandrapur district occupies an area of 11**,**443sq.km. Which constitutes 3.72 percent of the total area of the state. Chandrapur district comprises fifteen talukas, namely Chandrapur, Bllarpur, Rajura, Bhadrawati Warora, , Chimur, Nagbhid , Bramhapuri, Sindewahi, Mul, Sawali, , Gondpipari, , Korpana, , Pomburna & Jiwati. The district headquarter is Chandrapur , 1836 villages of the district, 4870 sq.kms.of area is under agriculture in Chandrapur district 3810 sq. kms. Area is under forest and industrial area 32.34 sq. kms. Support population of 2194262 in 20011.

Location Map of Chandrapur District



Objectives:

Main objective of the paper is to find out and analyses the crop combination of study region.

Research Methodology:

The primary and secondary data have been collected from different sources. The primary data is collected through interview technique and discussions method Secondary data is collected from published and unpublished reports of Government and Non- Government Organizations. The tehsil is considered as areal unit of investigation. Percentage of area under various crops in both seasons is considered. Agricultural land use information on cadastral map, land record and field notes are also used for the study. To understand the crop combination of the study area, following Weaver method modified formula (1959) has been used.

$$\sigma = \sum (d)^2 \div n$$

Where

σ = Standard deviation

d^2 = is the deviation from mean square

$\sum$ = Summation value of d^2 in an areal unit.

n = No. of crops or functions. Information and results are presented through Tables and appropriate diagrams. obtained results by using the Weaver Method are also shown in Table 1

G.C.A. – (Gross Crop Area) Weaver standard theoretical distribution.

Table: 1- The Crop Combination in Chandrapur District

Sr. No.	Taluka	Value	No. of Crop	Crops
1	Warora	181.57	Six crop	S, C, J, W, T, R
2	Chimur	70.16	Three crop	S, R, J
3	Nagbhir	474.80	Mono crop	R
4	Bramhapuri	139.71	Mono crop	R
5	Sawali	330.15	Mono crop	R
6	Sindewahi	200.22	Mono crop	R
7	Bhadrawati	107.71	Five crop	S, C, W, R, T
8	Chandrapur	408.85	Three crop	S, R, T
9	Mul	235.64	Three crop	R, T, J
10	Pombhurna	85.70	Four crop	J, R, S, T
11	Ballarpur	107.56	Four crop	J, S, T, R
12	Korpana	118.39	Two crop	C, S
13	Rajura	106.92	Four crop	C, J, S, T
14	Gondpipari	86.81	Three crop	S, R, J
15	Jiwati	N.A.	N.A.	N.A.

Source – by Author, N.A. – Not Available

Analysis:

With the observation of crop combination in Chandrapur district, we came to know that natural factors like rainfall, land shape of form, pattern of land can affect the crop combination. In the same way some factors created by man, like land ownership, the cost of production and the personal factors also affect the crop combination. Cropping pattern are find out by using Weaver method formula, to find out the crop combination value. Less value is taken, while finding crop value. In Nagbhir tahasil crop combination value is 478.80 and we can see, farmer are growing mono crop in their tahasil. In Chimur tahasil crop combination value is very low because of three crop combination i.e. 70.16.In Warora tahasil very high crop combination is seen. Farmer are growing six crop combination of Soyabin, Cotton, Jowar, Wheat, Tur, and Rice. But the crop combination value is 181.57. Simultaneously in Bhadrawati tahasil crop combination value is 107.71 and we can see here five crop combinations i.e. Soyabin, Cotton, Wheat, Rice and Tur.When we study the number of crop combination in Chandrapur district, farmer those who are growing mono crop those tahasil are Nagbhir, Bramhapur, Sawali and Sindewahi. In Korpana tahasil farmer are growing two crops. In Chimur, Chandrapur, Mul and Gondpipari tahasil,farmer are growing three crops. Where are the farmer are growing four crops in Ballarpur and Rajura tahasil. In Bhadrawati and Warora tahasil farmers are growing sequencely five and six crops with the high crop combination.

Conclusions:

1. Natural, socio-economic and other technological factors affect the cropping Pattern of any area.

2. The Chandrapur district falls in drought prone area which affects the cropping pattern in resulting the one crop to three crop combination.
3. Generally, the rain fed crops are the major crops in study area i.e. Rice, Wheat, Cotton, Soyabin, Jowar, Tur and other pulses.
4. The cropping pattern of this area hampered frequently through the frequent drought conditions.
5. High pe rcent of the cultivated land is Rice irrigation and canal. Specifically middle and western part of the study area and soyabean, Cotton, Wheat, Jowar and Tur is dominant crop.

References:

1. Arora R. C. (1976) Development of Agriculture and Allied Sector, S. Chand and Co., New Delhi
2. Arunachalam B.[1967] Maharashtra-A Study in Physical and Regional Setting and Resource Development, A R
1. Seth Publication,Bombay
2. Bhatia S.S. (1965) Pattern of Crop Concentration and Diversification in India, Economic Geography, Vol. 41, No.
3. 1.
4. B.B. Tripathi & C.B. Mamoria [1989] – Agricultural Problems of India.
5. Census of India (2001) District Census Hand Book, Sangli, Bombay.
6. Govt. of Maharashtra (1984) Report of Fact-Finding Committee for Survey of Scarcity Area of Maharashtra State
7. Govt. of Maharashtra (2001) Report of Fact Finding Committee for Survey of Scarcity Area of Maharashtra State,
8. vol – I.
9. Government of Maharashtra (1969) Maharashtra State Gazetteer, Sangli District.
10. Pol N.S. (2008) Agricultural Problems and Prospects in Drought Prone Area : A Case Study of Kavathe-
11. Mahankal, Dist. Sangli.Unpublished M. Phil Dissertation .
12. 10. Pawar C.T. (1989) Impact of Irrigation: A Regional Perspective ,Himaiaya Publishing House, Bombay.
13. 11. Singh, Jasbir (1974) An agricultural Atlas of India. A Geographical Analysis, Kurukshetra ,Vishal Publication,
14. Kurukshetra.
15. 12. Singh, Jasbir & S.S. Dhillon (1984) Agricultural Geography, Tata Mcgraw Hill Publishing Co. Ltd., New Delhi,
16. 2nd Edition.
17. 13. Singh R. L. (1975) New Perspective in Agricultural Geography,National Geography ,Vol. II.
18. 14. Government of Maharashtra (2005-2006) Socio- Economic Review and District Statistical Abstract of Sangli.

Rural Entrepreneurship as a source of Rural Tourism

Kavya M. B.
Research Scholar P.G. Department of Economics Field Marshal K M Cariappa College Madikeri-571201
kavyamadikeri12@gmail.com

Abstract

The subject of the research in this paper is the development and the application of entrepreneurship from rural tourism. The aim of the paper is to identify key forms of rural entrepreneurship as a source of rural tourism.Entrepreneurs play an important role in sustaining rural tourism and formulation of sustainable strategies being the initiators of the tourism business and the engine of the local development. Therefore, it is necessary to stimulate the development of entrepreneurial activities for the recovery of rural tourism potential and regional traditions, maintaining local employment growth and increase living standards in line with identifies needs and priorities of regional human resources development.This article aims to discuss the involvement of local communities in development of rural tourism entrepreneurship as well as addressing the issue of entrepreneurship in rural tourism.The development of rural tourism should be based on effective investment in the tourism offer through entrepreneurial projects that are in accordance with modern trends of demand. Investment into tourism offer in rural tourism destinations would influence the growth of income made from rural tourism, and therefore, the economic development of those areas. Rural tourism entrepreneurship is a crucial mechanism to bring rural development. Rural tourism is capable of generating alternative entrepreneurial opportunities for rural community in order to bring out rural development.

Keywords: Entrepreneurship, Employment, Rural tourism, Income, Development.

Introduction

Tourism is considered as a potentially sustainable industry and plays a significant role in the development of the society at different levels and is seen as an important step to achieve sustainable development. Rural development has always been an important issue in all discussions pertaining to economic development throughout the world.'Rural development as an overall improvement in the economic and social well-being of rural residents and the institutional and physical environment in which they live' (JasmaetaI , 1981) . This definition seems to include everything that is relevant to rural development including tourism activity. So, tourism is increased development in the rural sector. There is a renewed degree of interest in rural development.Rural tourism has long been considered a means of achieving economic and social development and regeneration. Entrepreneurs play an important role in sustaining rural tourism and formulation of sustainable strategies being the initiators of the tourism business and the engine of the local development. Therefore, it is necessary to stimulate the development of entrepreneurial activities for the recovery of rural tourism potential and regional traditions, maintaining local employment growth and increase living standards in line with identifies needs and priorities of regional human resources development.

Literature Review

Stephen (2006) was explained the potential of tourism industry in employment generation and examined the various determinants of employment creation in tourism, particularly the types of tourism. Similarly, tourism industry has lot of potentially in generating employment opportunities, forced earing to achieve higher economic growth (Sandeep Das, 2011).Lassey (1977) was described that rural development should be on preservation of ecological integrity with a view to providing a continuous supply of life supporting resources. Also that appropriate land use, healthy living conditions and pleasing environment are to be taken care of beside socio-economic welfare measures. The U.N. Report on Rural Development (1966) had viewed that efforts of the people was emphasized to improve the economic, social and cultural conditions in the life of the nation. It means that this change would bring about a change in their socioeconomic status, and improve their living conditions.

Research Gap

Tourism industry has emerged as one of the important and fastest growing service industry contributing to the economy. Though several researchers have studied tourism sector from different perspectives, very few of attempted to understand how the rural tourism has impacts on the rural development and entrepreneurship. It is important to analyse how tourism activity effected on rural entrepreneurship. In order to fill this gap the present study has been undertaken.

Objectives

1. rural tourism as a source of rural entrepreneurship.
2. To know the importance of rural tourism.
3. To examine the

Methodology The present study is based on the as secondary data. Secondary data were collect from the research articles published in peer reviewed journals, reports of State and Central Governmentand published projects and thesis.

Rural Tourism

Rural Tourism is being admired all over the world because such form of tourism can shape up rural society both by economic and social terms. It brings both monetary and social benefits to the rural people. Rural Tourism cannot be flourished without the involvement of local people in it. Accommodation facilities are being provided by local hotel owners whereas local suppliers supply food and beverages to the local hotels. Local producers produce locally made products as per tourists demand and earn money by selling them in the local market. The tourism industry needs energetic and enthusiastic young people. Rural Tourism has increased career options for these young entrepreneurs.

Rural development and Tourism

Table: Effects of tourism on rural development:-

Sl.No.	Effects of tourism on Rural Development
1	Change in employment opportunities (i.e. increase in job availability which draws on expertise of local people)
2	Foreign revenue for the local and regional development
3	Increase in money in the local economy (i.e. increase in wealth in the local communities)
4	Increase in money for local development
5	Increase in economic benefits for the livelihood improvement of local households
6	Increase in and development of local small, medium, and micro economy enterprises
7	Increased markets for local products and services
8	Increased schools and educations
9	Increased infrastructure
10	Awareness about natural resources
11	Awareness about scientific agriculture

Source: Shivaraju(2016)

Findings

The challenges in rural tourism entrepreneurship:-

1. Community mobilization- The rural community mobilization of the village to implement the Entrepreneurship Development Programs (EDP) plans and various developmental strategies formulated by govt. in association with various affiliated agencies was real challenging as the local community lack in awareness, cooperation and coordination, knowledge concerning rural tourism economic significance and insufficient skill base talented human resource to execute the plan successfully.
2. Lack of Basic Infrastructure- Deficiency of basic infrastructure facilities such as connectivity to the village through various mode of transportation was insufficient, lack of sufficient power supply, communication facilities and acute shortage of safe drinking water supply in the village was some major issues, which delayed to carry out the developmental plan effectively. The inadequacy of sufficient infrastructural facilities are the major huddles or obstacles in executing entrepreneurial developmental plan , as it deviated and delayed implementation of EDP strategies and plan.
3. Inadequacy of available Resources- Inadequacy of various economic resources such financial support, talented skilled labors, modern technical equipment to implement any development strategy effectively and efficiently.

Opportunities for Rural Entrepreneurship:

1. The existence of a period of economic growth, favorable to the development of tourism.
2. The increase of the number of investments interested in the industry of rural tourism.
3. The appearance and development of some clusters with role in the sustenance and promotion of tourism corroborated with other industries from a certain region.
4. Creating and developing some forms of promoting the local and regional identity.
5. Creating some alternatives of capitalization of opportunities for the niche tourism.

6. The appearance of some programs meant for the development of female entrepreneurship in the rural area.
7. The growth of the degree of awareness of the value of patrimony and the need to protect it.
8. Implementing the principles of stable management of lands / grounds.
9. The increase of the degree of flexibility and adapt ability of offer in the rural tourism domain to the always changing customer's requirements through the development of organizations of a handicraft type.
10. The capitalization of the limited level of impact on the environment due to the handicraft feature of the entrepreneurs in the rural tourism.

Conclusion

Tourism is significantly contributed to economic development and it is expected to promote rural tourism entrepreneurship. Rural Tourism is a kind of sustainable revenue generating activity that ensures inflow of money from urban to the rural economy and side by side it also prevents the tendency of migration from rural villages to urban cities in search of better livelihood. Such form of tourism motivates host community to stay in their own soil offering them alternative opportunities of earning. It is an important instrument for sustainable human resource development. Rural tourism is an important segment of tourism and economic development in rural areas. However, despite steadily growing interest in rural tourism, this form of tourism is faced with certain developmental and managerial as well as economic issues. The greatest benefits of the research results are associated with the proactive development of micro entrepreneurship with the aim of ensuring the quality of entrepreneurial programmes and taking into consideration the sustainable development of rural regions to improve the wellbeing of local residents and enhance market competitiveness. The interest, and some positive action at various levels, there is little by way of a successful blueprint for rural entrepreneurship by the way of Rural Tourism.

Suggestions

1. Widening of opportunities in tourism entrepreneurship.
2. Introduce academic and certificate courses to be study about entrepreneurship.
3. To be create awareness among youths about financial assistance given by Central Government to New entrepreneurs.
4. Even national and private banks extend loan facilities to them, and also low interest rate of loans.
5. Extend subsidy facilities.
6. Eradicate 'Gender Bias' in entrepreneurship.
7. More important give to ecofriendly and sustainable entrepreneurship.
8. Create awareness about job opportunities in this field.
9. Conduct seminars, workshops, conferences at school and college level to give information and be encouraging young entrepreneurs.

References

1. Nissan,E. , Galindo,M. and Mendez,M. (2010) *Relationship between tourism and economic growth.* The Services Industries Journal:31(10).
2. World Travel and Tourism Council (WTTC, 2002)
3. WTTC Travel and Tourism Economic Impact 2015
4. Commission of the European Communities (1990) *Rural Development: Adoption of the Community Support Framework. Communication of the Agriculture and Rural Development Commissioner.*Brussels: European Commission.
5. Ali,Nursadh.(2007)Natural Resource Management And Sustainable Development in North East India. New Delhi. KrishanMittan for Mittal publication.
6. Singh,K.K. and Tomar, Alka (2007) Sustainable Resource Management. NewDelhi. MD Pvt.Lmt.
7. Srivastava, S.P.(1998) The Development Debate – Critical perspectives. Jaipur. PremRawat for Rawat.
8. Chaudhary, C.M.(2009) Rural Economics. Jaipur. Subline.
9. Raijada, M.J.(2015) Rural Development in Globalized Era. Jaipur.Aadi publication.
10. Nayak,K.B.(2008) Rural Development and Underdevelopment.NewDelhi.Sarup and Sons.
11. Bhatia,A.K.(2003) Tourism Development Principles and Practices. NewDelhi. StrelingPub.private.lmt.
12. B.S.,Badan and Bhatt,Harish(2014)Tourism planning and Development.NewDelhi. AjayVarma Common Wealth.
13. C, Surugiu(2009) Development of Rural Tourism Through Entrepreneurship, Journal of Tourism.
14. http://www.aercafrica.org
15. http://www.virgingalactic.com
16. www.indiastate.com

The Issues And Challenges Of Rural Development:Some Reflection On Tribes In India

Ms. Divya M B
Assistant Professor Department Of Political Science Government First Grade College,Virajpet Tq. Kodagu Dist.-571218
Mail:divyamadikeri123@gmail.com

Abstract

The Rural development generally refers to the process of improving the quality of life and economic welfare of people who are living in relatively isolated and sparsely populated areas of a land.This rural development should then be viewed as a multidimensional process involving major changes in social structures,popular attitudes and a national condition of life from unsatisfactory to satisfactory level.Therefore government also takes initiative and various programs to the development of rural areas.It helps to promoting cooperation and community works instilling enthusiasm among rural people to participate both in planning and execution of development works.People living in the rural areas have to struggle to earn daily wages or are forced to migrate to urban areas. The migration pattern varies with the region, opportunities and social-economic status of the families. The poorest families,particularly the landless and marginal holders owning poor quality land tend to migrate with the entire family. Many tribal families migrate to cities as construction workers and return at the onset of the rains. Such migrations severely affect the quality of life, due to poor health, lack of education and social pressures leading to erosion of moral values.Gradually it affects on socio-economic development of a nation.In this background,this paper is mainly focused on someissues and challenges of tribes which are discuss in a part of rural development.Also try to emphasis on the importance of inclusive development which helps to survival of tribes and contribute to the overall development of our country.

Keywords: Rural development,Tribes,Issues and challenges,Inclusive development,Sustainability

Introduction

The concept of development is extended its traditional component from socio-economic to political development, inclusive development, participatory development, human development, sustainable development, gender development, tourism development, tribal development etc. And each approaches has follows its own goals and objectives.Rural development is Rural development is the backbone for any country's economic development and its helps the economy to grow and sustain .Rural development is the axis of the economy involving the labor ethics impacting the potential of economic development of a country.It is a popular belief that economic development takes place because of rapid industrialization. But the industrial development itself cannot take place without agriculture.This sector of development of the economy is important to feed the nation also.The people in the rural sector are facing the problems ofpoverty, unemployment,lack of skill,financial issues,man power ,managerial resources,exploitation,lack of awareness etc which are impacting the total productivity of our nation.If we observe from last few years the concept of tribal development plays very important role in the process of rural development. Because the contributions of tribes also contributes to the development of a country in a larger context.And it emphasis on the balance between environmental aspects which is integral part of tribes life and rural development.To create opportunities of gainful self-employment for the rural families, especiallydisadvantaged sections, ensuring sustainable livelihood, enriched environment, improved quality of life and good human values are greatest challenges to rural development.

Constitutional References Of Tribals

After India's independence, our constitution makers of stuck to the use of the term ‘tribe' to set aside a section of India's population to be scheduled under the article 342 of the constitution. Article 365(25) described ‘Scheduled Tribes' as such tribes or tribal communities as are deemed under Article 342 to be scheduled for the purpose of the constitution .Article 342 prescribes the procedure to be followed in the matter of identification of ‘Scheduled Tribes'.The Scheduled Tribe population represents one of the most economically impoverished groups in India.There are more than 400 tribal groups among the Schedule Tribes population,each with their distinct cultures,social practices,religions,dialects and occupations.Thus the different tribal groups are highly heterogeneous and their differences are a function of the environment in which they live,the degree of exposure to the mainstream of the society,government involved in their daily lives,their economic status and past history,these tribes are scattered in allover India.

Objectives of Rural Development

Following are the primary objectives of rural development:

1. To improve the living standards by providing food, shelter, clothing, employment and education.
2. To Increase productivity in rural areas and reduce poverty.

3. To involve people in planning and development through their participation in decision making and through centralization of administration.
4. To ensure distributive Justice and equalization of opportunities in the society.

The Issues And Problems Of Rural Development

The problems in rural development are can be categorized as People related,Agricultural related , Infrastructure related,Economic,Leadership related and Administrative problems etc. These problems are interdependent and influence the complete rural system, these challenges must be addressed for the development of the overall rural system.But here highlighted people related problems which connected with rural development.

Human Perspective

The rural development of a country focus issues like;

1. Health:

From the time of independence to date, several urban developments and growth-oriented programs were implemented in India, but still half of the population of rural areas are below the poverty line. The health of the rural population is decreasing due to the most hazardous atmosphere, living conditions, unsafe and unhygienic birth practices, no proper sanitation, non-availability of potable water, poor nutrition. The majority of the rural population has limited resources, they spend minimal amounts on food and necessities.

Lack of knowledge plays an important role in the health of the individuals of rural areas most of the people have their own beliefs and practices regarding health, they prefer unprescribed and traditional medicines without consulting doctors. The majority of rural deaths are due to infections and communicable, waterborne infections, marriages in early ages,very early pregnancy,lack of health facilities are effects on their health.

2. Poverty

India's poverty is primarily rural it comprises 1/3 of the poverty-stricken individuals. Scheduled caste, Scheduled tribes, Landless laborers and casual workers are mostly prevailing in the conditions of poverty. The conditions of poverty among rural communities are characterized by a lack of financial resources, land, assets, propertyand other resources. The majority of the poverty-stricken people are employed in the agriculture sector and other activities such as animal husbandry, fisheriesand daily workers. Poverty is a complex phenomenon and it overlaps and is interlinked with political, social, economic systems.

3. Illiteracy

Rural areas do not possess adequate resources required for their livelihood opportunities, lack of social infrastructure facilities such as schools, colleges are completely absent or barely available, and affordability of the people is also low in rural areas leading to fewer literacy rates. Lack of financial resources, educational facilities, teaching-learning methods, transport facilities, social disputes are the identified main causes of illiteracy in India.

4. Unemployment

Individuals in rural areas are dependent on agricultural activities or small and marginal works in nearby urban areas. The unemployment in the rural areas is mainly three types they are open unemployment, disguised unemployment, educated rural unemployment. In rural communities, the problem of unemployment is severe. As the opportunities in rural areas are limited, they start migrating to the cities for jobs. When individuals are looking for employment opportunities, they need to ensure that they possess adequate skills and abilities to put into practice their job duties in a well-organized manner.

5. Homelessness

As the population of the country increases the housing shortage of the people is also increasing in India. Types of homelessness in rural areas are mainly Displaced persons, migrants, Inmates of Institutions, slum squatter residents, Itinerant groups.In present days its huge challenge to re shelter process of tribes.

6. Crime and Violence

Crime and violence in rural areas are also increasing particularly against marginalized communities, minorities, and women.All individuals irrespective of gender, age, caste, race, ethnicity, and socio-economic background have been the victims of crime and violence. The important types of violence that are identified in the rural areas are Verbal abuse, Physical abuse, Trafficking, Exploitation, Theft and Robbery, Sexual Harassment, Dowry deaths, Domestic violence etc.In recent days we heard these kind of violence also in tribes society .

The Challenges Of Rural Development And Tribes

Now a day,rural development is facing massive challenges along with inclusive tribes participation in developmental activities. The following are the challenges and require to design and implement better solutions from state and various stakeholders of the development.

1. The nature of competition has become global,necessity of update in tribes.
2. The rate of change is accelerating out of control,so have to prepare tribes for accept the new things.
3. The rural people have been impacted by the changes through the media,so its important toeducate them also.
4. The rural economy is expanding,so have to involve tribes in that.
5. New markets of rural sector through market penetration strategies,enable new development to tribal areas.
6. The inclusiveness of tribes who are also part of rural development,therefore its a responsibility of the state to take care of welfare of all the people.
7. Lack of problems in properly using of financial resources
8. Loopholes in some government policies and programs,so have to be work from the root level.

Suggestions

1. Literacy campaign to tribes are very important,because it helps to promote their participation assurance in rural development.
2. Increase the number and quality of education among the tribes in rural area,it extends their talent into global development.
3. Provide employment opportunities and encourage skill development among them.
4. Advice appropriate usages of financial sources
5. Government take some efforts to improve their Social security and removal of social bias
6. Given importance to health,physical fitness and eradicate epidemics.
7. Special attention for women empowerment and education
8. Secure their traditional knowledge and traditional occupation
9. Involve their representation of them into implementation of tribal and rural developmental plannings and programs.
10. Try to encourage and involve NGO's,any agencies from civil society.

Conclusion

When we are adopts globalization in development approach ,gradually it reaches all the areas including tribes who lives in rural areas.The government has realized that they need to put their resources in front to support a strategic changes happening in the rural environment. The rural development is a comprehensive approach which provides seamless integration of every area of rural society. The rural economic development touches the life of people and integrates the people, process and technology, taking advantage of the revolutionary impact of the information technology.The government is facing massive challenges in today's highly competitive world and strives to acquire the maximum possible development. The rural development can be successful if thedesign and implementation of the government's processes are according to the changes happening in the environment. The overall development of the rural environment can be by the government through the establishment, development, maintenance and optimization of long term mutually valuable relationships between the economy and environment.Therefore its necessity to keep in a mind of state to balance rural development and suitability.

References

1. Blowers A. 1993. THE TIME FOR CHANGE.IN PLANNING FOR A SUSTAINABLE ENVIRONMENT.Blowers A (ed). Earthscan: London; 1–18.
2. Daly H. 1993. Sustainable growth: an impossibility theorem. In Valuing the Earth: Economics, Ecology Ethics, Daly H, Townsend K (eds). MIT Press: Cambridge,
3. MARanganatha,S.,TRIBAL Identity And The Implications For Political And Cultural Developmnt:A Sociological Analysis.April 2014,Ijase.
4. Aayog, N. I. T. I. "Changing structure of rural economy of India implications for employment and growth."National Institution for Transforming India, Government of India (2017).
5. Chintakula,Bhagya Sri.Problems of Rural System in India, Need for Addressing Them in Rural Development Planning .International Journal of Engineering Research & Technology (IJERT.)ISSN: 2278-0181 IJERTV9IS110119,Vol. 9 Issue 11, November-2020
6. http://www.ijert.org
7. Yakanna,Annepu.Issues and Challenges of Rural Development in India.Indian Journal Of Applied Research.Volume-7 | Issue-10 | October-2017 | ISSN - 2249-555X | IF : 4.894 | IC Value : 79.96

8. Pyakuryal,Kailash.Community development as a strategy to rural development. Research Gate.03.Feb.2015
9. Httpss://www.researchgate.net/publication/250192072
10. Basumatary,Monjita.Issue, Challenge and Development Problems in Socio, Economic and Culture of Tribal People in Assam.International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8 Issue-5, January 2020
11. https://pib.gov.in/PressReleasePage.aspx?PRID=1647439

"A Study of Agricultures Development & its Impact on India Economy"

Dr. M. B. Biradar
Assi. Professor Dept. of Commerce Siddharth Arts' Commerce & Science College Jafrabad Dist Jalna (M.S.)

Introduction:-

India is known as an agricultural country. Agriculture is of paramount importance in the Indian economy if the share of agriculture in the gross national product of any country is high, then that country is known as an agricultural country today, more than 60 per cent of India's population is dependent on agriculture. Agriculture is said to be the backbone of the Indian economy Despite the rise of post-independence industrialization in India, the share of agriculture has not diminished The loss of agricultural crops in India during the food year will create an imbalance in the economy as a whole In the future, economic growth will accelerate and the number of people dependent on agriculture will decrease However, as India's economic growth is heavily dependent on agriculture, it is clear that agriculture will continue to be important In India, the Five Year Plan started from 1951. Apart from the 12 Five Year Plans, the importance of agriculture has been given importance in all the Five Year Plans in India. This means that if India is to develop, it must first develop the agricultural sector But even at the beginning of the 21st century, the Indian agricultural sector has not developed as it should have so it is necessary to development of agricultural sectors.

The development of any country depends on its economy and its agriculture and industry if agriculture is developed, then the various researches available in the country are used wisely and as a result the life expectancy of the farmers increases. And increase in agribusiness eliminates the overall fiscal deficit and contributes to the balanced development of the country As a result, the country becomes self-reliant and the country's economic development begins on a large scale Therefore, in today's society, giving importance to the agricultural sector and providing various government schemes to the agricultural sector has become the need of the hour. India is known as an agricultural country. India gained independence from the British rule on 15 August 1947. And then on January 26, 1950, India adopted a constitutional republic Prior to that, India was facing a dire poverty-stricken industry, illiteracy and various difficulties Later, India started moving towards a welfare state. From 1951, the country adopted the scheme Agriculture is the basic sector and industry, rural development, education, poverty alleviation and job creation, energy, etc. Deciding to make radical changes in various fields, the government continued to participate in development till the 1990 And encouraging the account sector by adopting a new industrial policy after 1991 to increase the competitive sector To increase international trade, to make radical changes in the fields of information technology and engineering However, in the face of the current crisis in the country, agriculture and the peasantry are on the rise.

Impact of Agriculture on Indian Economy:-

The impact of the Indian economy on the agricultural sector to some extent is evident from the following points.

1. The most important challenge facing the agricultural sector in India is the availability of markets although farmers in India are taking over the manufacturing sector, they do not have a near market to sell their produce so the market is a big challenge for them.
2. The availability of agricultural labor for agriculture in India has become a major challenge for farmers This is because the younger generation has changed their view of agriculture Also, there has been a significant increase in the wages of agricultural laborers, which has led to an increase in the cost of agricultural production Due to the increase in migration of people from rural to urban areas, the availability of agricultural labor in rural areas has decreased.
3. It has become imperative to increase productivity as agricultural productivity in India is very low compared to other developed countries.
4. In India, the number of farmer suicides in the agricultural sector has increased dramatically If this is to be stopped, the government needs to give fair prices to agricultural and farmers' products and implement various agricultural schemes for farmers.
5. To improve the agricultural sector, farmers have to ask for different types of loans And as loans are not available to the farmers, the government should provide various types of expenses to the farmers.
6. India's regional development is unbalanced. Some regions or states are developed while some states are underdeveloped therefore, by developing the agricultural sector, we can achieve balanced regional development. This is a big challenge for the farmers and the state as a whole.

Objective of the Study:-

1. To find out what are the problems facing the Indian economy.
2. To study the impact of the Indian economy on the agricultural sector.
3. To finding solutions to the problems facing the Indian economy.
4. To make a comparative study of the favorable or unfavorable effects of the agricultural sector on the Indian economy.
5. To study the impact of agriculture on the Indian economy.

Importance of the Study:-

the Indian economy will not falter And economic growth can be achieved by overcoming various obstacles in the Indian economy and overall, it contributes to the economic growth of the country by increasing the national income and per capita income as a result, the country becomes self-reliant and the economy as a whole creates a positive environment and runs smoothly. Therefore, the development of the economy of any country depends on the agricultural development of that country and the development of the agricultural sector is important for the smooth running of the economy in any country. India is known as an agricultural country and the agricultural sector in India has not developed as it should similarly, the agricultural sector has a huge impact on the Indian economy it is very important to know that this result is unfavorable when it is favorable if the result is favorable,

Research methodology:-

For this study primary data had collected from the responded through the questionnaire and personal interview by the various types of responded. The secondary data has been collected from journal books, study report, published government report, website and varies other publication and also from personal discussion with the various types of agriculture agencies group.

Conclusion of the Study:-

. The impact on the agricultural sector is affecting the entire economy the adversity facing the Indian agricultural sector needs to be addressed The Government of India must acknowledge the need to address such adversities It is the first duty of the Government of India to provide all kinds of assistance. This adversity cannot be overcome without the help of the Government providing various schemes to the farmers as well as flooding various schemes to the farmers will adversely affect the Indian economy. Therefore, the Government of India and the State Government should develop the agricultural sector and provide various facilities to agriculture and the agricultural sector the above study proves that it has a positive impact on the Indian economy similarly, if India's economy is well-organized, people's living standards will increase significantly. The Indian agricultural sector has had an impact on the Indian economy in various ways The Indian agricultural sector is spread all over the country

Reference:

1.Prof. Lalchndra R. Snate, Dept. Of Economies, Shantarambhau Gholap Arts & Science And Gotirambhau, Commerce College Shivale Ta. Murbad District Thane (M.S.) Indian Agriculture Sector: Suitability And Adversity Issn 2455-314x Vol 3, Issue 5 An International Multidisciplinary Journal.
2.There Is A Need For Work On Cost-Effective Technologies With Environmental Protection And On Conserving Our Natural Resources By The Madhu Sharma Published: Thursday 04 February 2021
3.Weakipidia.Com
4.Research Mythology- Kothari
5.Dic
6.Online Journal Of Commerce & Management.

Agriculture Sector in India: An Analysis of Agricultural Policies

Dr. Surappa Naik
Assistant Professor of Economics, LBS Government First Grade College, R.T. Nagar, Bangalore-560032,
email: surappanaik@yahoo.in,

Introduction:

Agricultural policies in India are intended and executed by a complex system of institutions. States have constitutional responsibility for many aspects of agriculture, but the central Government plays an important role by developing national approaches to policy and providing the necessary funds for implementation at the state level. Nevertheless, no sufficiently strong mechanism exists to bring state and central level policy makers together to discuss problems, design solutions, and monitor performance. Agriculture has formed the backbone of India's economy for many decades and remains crucial to providing food security for the country's growing population. It constitutes a major pillar of India's economic growth and a significant contributor to its growing exports sector. Indian agriculture is the country's largest employer with one hundred and forty million smallholder farmers and an additional sixty million people employed directly or indirectly in farming operations. Together, these two hundred million people represent more than 40 percent of India's working population.India is one of the top five agricultural economies in the world, Indian agriculture is at a serious inflection point. This sector faces multiple challenges, including lagging yields in key crops as compared to global averages, restricted market access, lack of competitive prices for produce and limited water availability. Even today, benefits of our agricultural policies are not reaching cent percent to farmers.

Framework for policy implementation:

1. Constitutional responsibilities and policy planning

Although Indian Constitution lists agriculture only as a state subject, the central Government, on grounds of agriculture being a subject of national significance, is an important factor in agricultural policy. It acts both in developing and implementing national policy and in co-operating with and funding much of the policy effort implemented by the states. The Constitution also allows the states to devolve their authority in some subjects, including agriculture, to a lower level of Government (panchayat, sometimes called village-level Government). The administration of agricultural and food policy in India is therefore complex and involves many ministries, agencies and other institutions at both the central, state and other levels, such as districts within a state. From 1950 until 2014 India's Planning Commission, a senior body chaired by the prime minister, outlined national plans and policy priorities. From 1951 it launched a series of five-year plans, the last one for 2012-17.

2. Central Government roles in administering policy

The central Government's Ministry of Agriculture, which in 2015 became the Ministry of Agriculture and Farmers' Welfare (MAFW), provides broad guidelines for agricultural policies. The implementation and administration of many policies remain the responsibility of the state Governments. Agencies of the central Government directly administer central schemes (CS) and state Government agencies administer state sector schemes (schemes are also called programs). Centrally sponsored schemes (CSS) operate in subjects that are constitutionally the domain of the states.

3. State Government roles in administering policy

Many state Governments have ministries or departments of agriculture, animal husbandry, irrigation or the like. While they implement central and centrally sponsored schemes in co-operation with, e.g. the center's DACFW and DFPD, many state ministries and departments also implement state-specific agricultural policies in line with their own priorities and availability of own funds. The effectiveness of shared or delegated implementation of many policies relies in many instances on how effective is the work of a committee comprising officials from both the central and state Governments. Co-operation with officials of lower levels of Government, such as districts where the policy benefits are actually delivered, is also essential for effective administration. There are large differences among states and regions in India in terms of natural resource endowments, level of economic development, and potential for growth in production and income in agriculture. The central Government has over time sought to address such disparities in its policy development by monitoring regional and state-to-state differences, identifying problems and opportunities in specific states, and paying special attention to states characterized by relatively lower levels of economic development. The central Government's budget planning allocates resources by taking into account the situation of specific states and regions and providing expenditures and investment incentives accordingly.

New Agricultural Reforms:

The Covid-19 global pandemic and the resulting challenges have highlighted the importance of agriculture in ensuring food security worldwide. The pandemic has affected everyone, but developing nations and rural farming communities face a far greater risk. As an immediate response to the crisis, India's Government introduced several short-term fiscal stimulus measures to support farmers and rural communities. Further, in June 2020, the Government introduced long-term amendments to three critical farm sector laws which have been around for more than five decades: The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Ordinance, the Farmers' (Empowerment and Protection) Agreement on Price Assurance and Farm Services Ordinance, and the Essential Commodities (Amendment) Ordinance Act. These watershed reforms will provide farmers better market accessibility and price for their produce.The new reforms are likely to provide farmers with an environment where they can sell their agricultural produce in any part of the country. So far, farmers have relied on their respective state mandates to sell their produce; however, the new legislation establishes infrastructure that will ultimately reduce the reliance of farmers on selective mandis. Also, the new legislation ensures that the minimum support price mechanism and land tenure security will remain in place to protect the interests of farmers. The following table shows about the glance of new agricultural policies.

Evolution of agricultural policies in India:

The evolution of Indian agricultural policy may be analyzed in the context of the role of agriculture in the development process and the factors affecting agricultural growth. In the development process of a country, agriculture serves mainly three functions i) to provide initial surpluses for other sectors of the economy ii) to provide wage goods to the industrial sector iii) to promote growth through forward linkages (provide inputs to industrial sector) and backward linkages (use outputs from industrial sector in agriculture). The first and the third functions require a robust overall agricultural growth whereas the second requires adequate food supplies. Therefore, for sustained economic growth, both overall agricultural growth and growth in food production are indispensable.

Table-1: Evolution of agricultural policies in India

Sl. No	Approximate years	Key sector features	Major policy initiatives
1	1950-65	Expansion of area main source of growth.	1.Agrarian reforms (abolition of intermediary landlord ship, imposition of land ceiling acts). 2.Strengthening of co-operative credit institutions.
2	1965-80	Increase in productivity main source of growth.	1.Develop pathways for the adoption of technological breakthroughs in rice and wheat production. 2.Policy support for marketing, research and credit; introduction and formalization of lending to priority sectors, including agriculture. 3.New institutions, e.g. State Agricultural Universities, Food Corporation of India, Agricultural Prices Commission.
3	1980s	Widespread use of technology in major crop areas.	1.Some delicensing and deregulation. 2.Increase in subsidies and support to agriculture.
4	1990s	Economic liberalization in agriculture lags behind general economic reforms.	1.Cautious relaxation of trade protection in some products, e.g. sugar, cotton, edible oils, wheat &rice. 2.Increases in input subsidies. 3.Targeting of beneficiaries of public distribution system of food grains.
5	2000s	Demand-driven shift towards producing fruit, vegetables and livestock.	1.Alternate tightening and loosening of market and trade regulations. 2.Large increases in input subsidies, including credit. 3.Gene revolution in seeds, including cotton.
6	2010s	Major participant in world markets for some commodities.	1.More structured interaction between central and state level authorities. 2.Expansion of food subsidies.

7	2020s	Efficient use of resources and conservation of soil, water and biodiversity.	1.Strategies to be differentiated based on the agri-climatic conditions. 2.Developent of rural infrastructure. 3.More focus on the economic well-being of farmers rather than just on production.

Significance Parts for Support:

1. Enhancing agricultural productivity, competitiveness, and rural growth

A. Promoting new technologies and reforming agricultural research and extension: Major reform and strengthening of India's agricultural research and extension systems is one of the most important needs for agricultural growth. These services have declined over time due to chronic underfunding of infrastructure and operations, no replacement of aging researchers or broad access to state-of-the-art technologies. Research now has little to provide beyond the time-worn packages of the past. Public extension services are struggling and offer little new knowledge to farmers.

B. Improving Water Resources and Irrigation/Drainage Management: Agriculture is India's largest user of water. However, increasing competition for water between industry, domestic use and agriculture has highlighted the need to plan and manage water on a river basin and multi-sectoral basis. As urban and other demands multiply, less water is likely to be available for irrigation. Ways to radically enhance the productivity of irrigation ("more crop per drop") need to be found. Piped conveyance, better on-farm management of water, and use of more efficient delivery mechanisms such as drip irrigation are among the actions that could be taken. There is also a need to manage as opposed to exploit the use of groundwater. Incentives to pump less water such as levying electricity charges or community monitoring of use have not yet succeeded beyond sporadic initiatives.

C. Facilitating agricultural diversification to higher-value commodities: Encouraging farmers to diversify to higher value commodities will be a significant factor for higher agricultural growth, particularly in rain-fed areas where poverty is high. Moreover, considerable potential exists for expanding agro-processing and building competitive value chains from producers to urban centers and export markets.

D. Promoting high growth commodities: Some agricultural sub-sectors have particularly high potential for expansion, notably dairy. The livestock sector, primarily due to dairy, contributes over a quarter of agricultural GDP and is a source of income for 70 percent of India's rural families, mostly those who are poor and headed by women. Growth in milk production, at about 4 percent per annum, has been brisk, but future domestic demand is expected to grow by at least 5 percent per annum.

E. Developing markets, agricultural credit and public expenditures: India's legacy of extensive Government involvement in agricultural marketing has created restrictions in internal and external trade, resulting in cumbersome and high-cost marketing and transport options for agricultural commodities. Even so, private sector investment in marketing, value chains and agro-processing is growing, but much slower than potential. While some restrictions are being lifted, considerably more needs to be done to enable diversification and minimize consumer prices.

2. Poverty alleviation and community actions

While agricultural growth will, in itself, provide the base for increasing incomes, for the 170 million or so rural persons that are below the poverty line, additional measures are required to make this growth inclusive. For instance, a rural livelihoods program that empowers communities to become self-reliant has been found to be particularly effective and well-suited for scaling-up. This program promotes the formation of self-help groups, increases community savings, and promotes local initiatives to increase incomes and employment. By federating to become larger entities, these institutions of the poor gain the strength to negotiate better prices and market access for their products, and also gain the political power over local Governments to provide them with better technical and social services.

3. Sustaining the environment and future agricultural productivity

In parts of India, the over-pumping of water for agricultural use is leading to falling groundwater levels. Conversely, water-logging is leading to the build-up of salts in the soils of some irrigated areas. In rain-fed areas on the other hand, where the majority of the rural population live, agricultural practices need adapting to reduce soil erosion and increase the absorption of rainfall. Overexploited and degrading forest land need mitigation measures. There are proven solutions to nearly all of these problems.

Significant approaches to boost Indian agriculture:

In the years since independence, India has made immense progress towards achieving food security. Its population has tripled, but food-grain production has more than quadrupled; there has thus been a substantial increase in available food-grain per capita. Crop yields in India are still just 30 percent to 60

percent of the best sustainable crop yields achievable in the farms of developed and other developing countries. And poor infrastructure and unorganized retail means India has one of the world's highest levels of post-harvest food loss. The following significant steps are useful to boost the Indian agriculture sector.

1. Investing in smarter value chains

The PPPs could help spur the development of the food processing industry, one of the newest sectors in Indian agriculture. The food processing industry must do more than just increase the shelf life of food, preserve food nutrients and provide fortified products. Instead, supported by Government and private investments, it should also look at providing farm extension services, enhance price realization, cut out intermediaries and improve the supply chain through forward and backward linkages.

2. Improving access to credit, technology and markets

The PPPs could help bring cutting-edge technologies and approaches to India's agricultural sector. IT and biotech stand to transform agriculture, raising its production levels and outputs. We need PPPs focused on getting farmers access to vital information, methodologies and the latest technology to help them in areas such as crop rotation, weather patterns, fertilizer use and going organic - all at the click of a button or a simple SMS on their mobile phones.

3. Building farmer resilience to environmental shocks

Indian farmers are constantly threatened by adverse weather and environmental conditions that spell disaster for their produce. Extreme situations such as flooding and droughts constantly plague India's farming community. PPPs that protect the agricultural sector against the vagaries of nature can be life savers. In fact, in a country where farmer suicides are common, such interventions can actually save lives.

Major Policy Recommendations:

India is one of the fastest growing G20 economies, largely reflecting an ambitious reform agenda under implementation since 2014. Against this background, agriculture is a key sector in terms of its contribution to both employment and GDP. Sustained by improved access to inputs such as fertilizers and seeds, as well as better irrigation and credit coverage, production has been increasing on average at about 3.6% annually since 2011.Many policy initiatives are already underway or in the pipeline and these should be continued or reinforced. The following key initiatives are the steps to improve the real situation of Indian agricultural sector and farmers.

Rebalance the policy package to foster sustainable productivity growth:

1. Strengthen the regulatory environment governing land issues.
2. Reform market regulations and strengthen market functioning across states.
3. Encourage efficient and sustainable use of variable inputs such as fertilizers.
4. Enlist all concerned actors in developing collective-action groundwater and watershed management schemes and correcting perverse incentives to over-use of scarce water, including a review of electricity pricing.
5. Strengthen the overall access to credit and particularly encourage long-term loans.
6. Re-focus investments on fostering the agriculture enabling environment, such as infrastructure and education in rural areas.
7. Harness innovation for sustainable productivity growth and climate change adaptation and mitigation.

Strengthen the role of agriculture in enhancing food and nutrition security:

1. Scale back the public distribution system as incomes and the share of the middle class in the population rises.
2. Move gradually to targeted lump sum transfers (Direct Benefit Transfers) or food stamp type mechanisms.
3. Allow the private sector to play a role in managing remaining stocking operations.

Improve agricultural institutions and governance systems:

1. Clarify roles and responsibilities at central level by bringing key policy areas under a single umbrella.
2. Strengthen co-ordination among central ministries and agencies and between the center and the states.
3. Prioritize institutional reforms to allow development of a single market for agricultural products.

Making trade work for Indian agriculture:

1. Streamline and clarify trade policy roles and responsibilities across the different ministries and agencies to iron out inconsistencies and simplify procedures.
2. Reduce tariffs and relax the other restrictions on imports which are applied from time to time, with a view to creating a more open and predictable import regime.
3. Move away from the use of export restrictions in order to create a stable and predictable market environment.
4. Statement a range of supply-side constraints in the application of sanitary and non-sanitary measures.

Conclusion:

India managed to attain food self-sufficiency through a combination of technology-policy-institution framework. However, other functions of agriculture, namely providing surpluses and forward and backward linkages to non-agricultural sectors have largely remained unrealized. A policy reorientation to increase rural industrialization and skill improvement of the rural labor force is needed to move labor out of agriculture and increase productivity in agriculture.Agricultural policies in India are designed and implemented by a complex system of institutions. States have constitutional responsibility for many aspects of agriculture, but the central Government plays an important role by developing national approaches to policy and providing the necessary funds for implementation at the state level. Nevertheless, no sufficiently strong mechanism exists to bring state and central level policy-makers together to discuss problems, design solutions, and monitor performance. But finally, these three recent amended agricultural bills should be modified based on priority, welfare of farmers and survival of agriculture sector in India.

References:

1. World Bank (2014), India: Accelerating Agricultural Productivity Growth, World Bank Group.
2. 10. Behera, Bhagirath and Pulak Mishra (2007), Acceleration of Agricultural Growth in India: Suggestive Policy Framework, Economic and Political Weekly, Vol. 42, No. 42.
3. Government of India (2017), Post-production Agri-logistics: Maximizing Gains for Farmers, Document prepared by the Committee for Doubling Farmers' Income, Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture & Farmers' Welfare, Volume III.
4. Gulati, A. (2009), Emerging Trends in Indian Agriculture: What can we learn from these? Agricultural Economics Research Review, Vol. 22, July-December, pp. 171-184.
5. Gulati, A. and S. Saini (2017), Making Indian Agriculture Profitable, Productive and Sustainable, NABARD Working Paper.
6. Hoda, A. and P. Terway (2015), Credit Policy for Agriculture in India - An Evaluation, Working Paper 302, Indian Council for Research on International Economic Relations (ICRIER).
7. ICAR - NIAP (National Institute of Agricultural Economics and Policy Research) (2017), Agricultural R&D Policy in India: The Funding, Institutions and Impact, ed. Pal, Suresh.
8. Martini, R. (2011), Long Term Trends in Agricultural Policy Impacts, OECD Food, Agriculture and Fisheries Papers, No. 45, OECD Publishing, Paris.
9. MAFW (2016), All India Report on Input Survey 2011-12, Agriculture Census Division, Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers' Welfare.
10. Gulati A., S. Saini, A. Hoda and P. Terway (2016), Background report prepared for the OECD-ICRIER Review of Agricultural Policies, Indian Council for Research on International Economic Relations.
11. GOI (2017), Strategy for doubling farmers' income by 2022, Report of the Expert Committee Vol 1, Vol.2, Government of India.

Rural Development and Tribes: Issues and Challenges some Reflection on Kodagu District.

Dr. Deepa M.B
Assistant Professors Department of Political Science GFGC Saragur, Mysore, Karnataka
Email:deepabasappa123@gmail.com

Abstract

Development is referred to a process of continuous progress. It is a process of transformation that involves the whole society-its economic, social, political and physical structure-as well as value system and way of life of people. In this affair rural development keeps an important position because majority of Indian population reside in rural areas. Rural development is a process which leads to a continuous rise in the capacity of rural people to control their environment accompanied by a wider distribution of benefits resulting from such control. P.R Bose says, "Rural development thus means development of rural areas in such a way that social, economic and technological components of rural life change in a desired direction and within framework of national goals and objectives without prejudice to the development of the urban area of the country." Right from the inception of the five year plans the tribal development has been a subject of only avoidance and it has been undermined in various development schemes. It has been left to a mere subsistence level.

The present paper outlines the different dimensions of tribal development in Kodagu district of Karnataka. The goal of complete rural development is achieved only when tribal involvement is included in rural development.

Key Words: Tribes, Development, Rural Development, ITDP.

Introduction

Tribal Development in India is a subject which is being discussed among personnel of higher ranks, statesmen, academic experts and scholars for over six decades. During this period, it has become a subject which drew serious and widespread concern and pronounced attention from several quarters ranging from policy makers and development planners to academic experts providing material for all of them. Tribal population is concentrated in almost all union territories and states of India including Karnataka. As per 2011 census the tribal population of Karnataka was 42, 48,987 lakhs (6.95%) of the total population. Kodagu district is a great evident for living with 38 tribal communities in its territorial background.As per 2001 census report, Tribal population in Kodagu district was 46,115 among 5,48,561 of overall population of the district. It is 8.41% of the overall population rate of the district. According to the 2011 census there are 58,054 tribals in Kodagu district with 28,510 males and 29,544 females. The tribal constitute 10.5% of the total population of Kodagu district. Even today also tribal communities' in present's days also who still live savagely.They are deprived facilities of proper shelter, education, health, potable water, road, transport and many others. They are far from 'Development' process. Those tribes are considered as aborigines of the district, even though their development initiatives taken by very recently.

Public policy and tribal development are crucial issue areas in contemporary politics. Their impact on identity and human rights of the tribal population is immense. However, Indian constitution and legislations mandate governments and their agencies to address their developmental needs. Ministries, Departments of tribal affairs and NGO's have also responsibility toward them. Panchayathraj institutions as micro level agencies of grass root democracy and public policy also have an inescapable responsibility.

Integrated Tribal Development Projects/Agencies (ITDPs/ITDAs)

The ITDPs are generally contiguous areas of the size of a Tehsil or Block or more in which the ST population is 50% or more of the total. On account of demographic reasons, however ITDPs in Assam, Karnataka, Tamil Nadu, and West Bengal may be smaller or not contiguous. Andhra Pradesh and Orissa have opted for an Agency model under the Registration of Societies Act and the ITDPs there are known as ITD Agencies (ITDAs). So far 194 ITDPs/ITDAs have been delineated in the country in the states of Andhra Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Orissa, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal and Union Territories of Andaman & Nicobar Island and Daman & Diu. In Jammu and Kashmir though no ITDP has been delineated yet the areas having ST Population in the State are treated as covered under the TSP strategy. In eight states having scheduled areas the ITDPs/ITDAs are generally co terminus with TSP areas. The ITDPs/ITDAs are headed by Project Officer though they may be designated Project Administrators or Project Directors.

ITDP Progress Report in Kodagu District 2004 to 2014

Year	Under article 275(1) of the Indian constitution			Under by special central aid		
	The specified grant (in lakhs)	Released grant (in lakhs)	Cost of grant (in lakhs)	The specified grant (in lakhs)	Released gran (in lakhs)	Cost of grant (in lakhs)
2004-05	90.00	90.00	84.94	89.66	89.66	89.66
2005-06	94.14	94.14	75.96	14.50	14.49	-
2006-07	168	168	88.00	26.00	26.00	26.00
2007-08	22.50	22.50	22.50	16.65	16.65	16.65
2008-09	137.00	137.00	121.72	23.00	23.00	23.00
2009-10	139.98	139.98	84.48	32.75	32.75	32.75
2010-11	124.00	124.00	102.12	21.00	21.00	21.00
2011-12	697.00	697.00	471.45	40.00	40.00	-
2012-13	478.94	478.94	293.77	46.00	46.00	28.75
2013-14	539.35	539.35	216.28	-	-	-

Source: ITDP centerMadikeriKodagu.

Kodagu is the origin of the Kaveri River. Kodagu district has administratively divided into 3 taluks named as Somwarpet, Virajpet, Madikeri. Kodagu being a hill station is Famous for Western Ghats, forests, coffee, cardamoms and pepper Plantation. It has added attraction with its fauna and flora with above all these Kodagu is famous for its rich culture. The major tribes are Bettakurba,Jenukuruba, Malekudiya, Yerava, Meda, Soliga etc. ITDP plays an important role in tribal development. This article tries to highlights achievements of the ITDP in Kodagu district.

Article 275(1) of Indian constitution and special centralized fund provided special financial support to tribal development in the form of ITDP project. This paper analyses works and progress of the ITDP for the last 10 decades.As per the report of ITDP in Kodagu district in the year 2004-05 under article 275(1) of the Indian constitution for the sake of ITDP scheme it sanctioned 90 lakh of money and under the special centralized fund it sanctioned 89.66 lakh of money for tribal development. Through this money ITDP initiated many tribal developmental programs like constructions of roads, potable drinking water, drainage system, harvesting facility, sprinklers sets, provided agricultural equipments commercial crops and trees in Yuvakapadi village of Madikeritaluk. Koturu and Reshmehadlu in Virajpettaluk and Malambi village in Somwarpet taluk.174.6 lakh Rs. utilized for these programs.In the year 2005-06 under article 275(1) and special centralized fund, ITDP introduce and sanctioned 108.63lakh and utilized 75.96 lakh of amount for the tribal development programs under this scheme. Naladi, Chelavara village of Madikeri, Devarakadu village of VirajpettalukKabbinagadde, Meenukolli, Nanjarayapattana village of Somwarpettaluk were benefited from this scheme basic facilities and infrastructure provided for them.

In the year 2006-07 article 275(1) of Indian constitution and special centralized fund sanctioned 194 lakh amount of money for the work of ITDP project. Chennanahalli,Seethakaloni of SomwarpettalukDevamacchi, Karehadlu, Dyadahadlu, Doddareshme, Hosakere these village from Virajpettaluk and Chettukaya village of Madikeritaluk benefited from ITDP scheme. In this year ITDP scheme encouraged and provided rain water harvesting system and its units, sprinkler sets, animal husbandry, provided grants for the empowerment of tribal womens. 114 lakh Rs. utilized for these programs. In the year 2007-08 under article 275(1) of Indian constitution and special centralized fund sanctioned 39.15 lakh Rs. of money for the ITDP project. Makkandurgirijana colony of Madikeritaluk, Adinadoor colony of Somwerpettaluk.Chottepare, Nittur colony of Virajpettaluk benefited from this scheme. Drainage system, constructions of roads in tribal area these are all programs helped and full amount utilized under the ITDP scheme in Kodagu district. In the year 2008-09 under article 275(1) of Indian constitution and special centralized fund sanctioned 160 lakh Rs. money for the ITDP scheme and 144.72 lakh Rs. utilized in total granted money. Chikkareshme, Diddalli, Dubare, Avaregunda, Tattalli, Kaarekadi, Nanabbe, Gaddehadi, Bommadu, Thattekere, Chottepare, Sinkona, Nalkeri these are all villages from Virajpettaluk. Hunasepare, Balegundi, Sulebavi, Mavinahadllu, NakooruShiranga villages from Somwerpettaluk. Nidyamale, Kudrepaaya villages of Madikeritaluk took many constructions for tribal development. In the year 2009-10 under article 275(1) of Indian constitution and special centralized fund sanctioned 172.73 lakh rs money for the ITDP scheme and 144.72 lakh Rs. utilized in total granted money.In the year 2010-11 under article 275(1) of Indian constitution and special centralized fund sanctioned 145 lakh rs money for the ITDP scheme and 123.12 lakh Rs. utilized in total granted money.In

the year 2011-12 under article 275(1) of Indian constitution and special centralized fund sanctioned 737 lakh Rs. money for the ITDP scheme and 471.45 lakh Rs utilized in total granted money.

In the year 2012-13 under the article 275(1) of the Indian constitution, special central aid and tribal sub plan (SCA and TSP) sanctioned 524.94 lakh and utilized 322.52 lakh. Nakur, Shrimangala, Igooru, Doddamalte, Nanjarayapattana, Allursiddapura, Koodumangaluru, Koodige, Ganaguru.Kodagarahalli, villages from Somwerpettaluk. Nitturu, Chennayanakote, Thithimathi, Shreemangala, Birunani, Kutta, Devarapura, Nalkeri, T.settageri, Nanuru, Mayamudi villages from Virajpettaluk.Kakkabe, Chembu, Bettageri, Kunjila, Peraje, Iguru, Karike villages from Madikeritaluk benefited from this scheme.In the year 2013-14 article 275(1) of the Indian constitution under the ITDP scheme sanctioned 539.35 lakh Rs. of money for tribal development and 216.28 lakh of money expenditure by total grant amount.

Suggestion

The following suggestions have been made:

1. Majority of tribes are not aware with the Tribal Development Schemes and there is no proper system to educate the tribal people about various schemes and their importance. Meeting and seminars may also be organized with those people at village level.
2. The schemes were made by the government and implemented, but there was no participation of the rural people in it. Emphasis should be given on the formulation of perspective plans, which must be followed by action on the original beneficiaries and people should give their full co-operation and participation for the success of the scheme.
3. There should be criteria to analyse the performance of the officials of Tribal Development Schemes.
4. Working committees and vigilance committees may be formed at village level for the monitoring of Tribal Development Schemes. The government should ensure the transparency in the implementation of Tribal Development Schemes.
5. The efforts should be made to simplify the procedure to get the benefits of Tribal Development Schemes and the formalities should be minimized according to the knowledge and understanding of the rural people.
6. The amount of the scheme should be adequate according to the estimate and proper verification of the scheme.
7. To connect the remote tribal areas of the district with transport services, the state government has to construct proper roads to tribal areas.
8. The tribal areas of Kodagu naturally blessed with hilly and mountainous beauty. Therefore it is centre for attraction of tourism. But district administration also responsibility of avoid exploitation on tribals in the name of tourism development.

Conclusion

India is an agrarian based country. Only rural development can eliminate the problems of urban migration, poverty, unemployment and slums. The ITDP project has taken a step forward in rural development with the development of the tribal people in the Kodagudistrict. Tribes that remain away from the main channel of society have been made to face the development of inclusion.

Reference:

1. Henry Maddick – Democracy Decentrlization and Devolopment- Published by P.S Jayasinghe, Asia publishing house Bombay-1966.
2. V.N Shukla Constitution of india – estern book company, lucknow-2001
3. Elwin Verrier ,The Religion of an India Tribal Bombay .Oxford university press 1955
4. Kroeber.A.L.(1948)-'Anthropology Race Language ,culture psychology New York Rarcowr
5. AnanthkrishanIryer L.K. Cochin and Tribes of and castes (vol5) Madras, 1909-1912.
6. Krishna Iyer .L.K. and Balaratnam L.K. Anthropology in India Bombay BharatiyaVidyaBhavan 1961(clanitian)
7. ITDP project source: Kodagu district
8. S.Narayan – Perspectives on Tribal Development –Commonwealth Publishers,New Delhi 1997
9. https://www.censusindia.co.in/district/kodagu-district-karnataka-576
10. http://censuskarnataka.gov.in/data%20high%20lights-karnataka-pca-2011.pdf

A Study of Agriculture marketing in India

Dr. Magar Jyoti Popat
Asst. Professor B J S College, Wagholi, Pune-412207
E-mail- jmagar406@gmail.com

Abstract

India is an agricultural country, and agriculture plays an essential role in the Indian economy. The purpose of agriculture in our country is to enhance national income, employment, capital formation, foreign trade, and industries. **Agriculture marketing in India** includes storage, processing, and marketing of forestry, gardening, and other agricultural products. Distribution of farm machinery and the movement of farm products at the regional level.

About 70 percent of the Indian population is dependent on agriculture, and near about 64 percent of the workers employed in the agriculture sector. Agricultural marketing activities like transportation, processing, storage, grading, etc. is become a help to the farmers. These activities play a vital role in the economy of all countries.

Key word - Indian economy, Indian population, Agriculture, Farmers, Marketing

Introduction

Agricultural marketing system is an efficient way by which the farmers can dispose their surplus produce at a fair and reasonable price. Improvement in the condition of farmers and their agriculture depends to a large extent on the comparable arrangements of agricultural marketing. Agricultural marketing include all those activities which are mostly related to the procurement, grading, storing, transporting and selling of the agricultural produce. Agricultural marketing comprises all operations involved in the movement of farm produce from the producer to the ultimate consumer. Thus, agricultural marketing includes the operations like collecting, grading, processing, preserving, transportation and financing.

Objectives of the study

1) To understand the Present State of Agricultural Marketing in India.
2) To study the Defects of Agricultural Marketing in India.
3) To study the Remedial Measures for Improvement of Agricultural Marketing.
4) To study the Government has adopted many measures to improve the system of agriculture marketing in India.

Limitation of research

Research subject is limited to **"A Study of Agriculture marketing in India"**

Research Methodology

The present research paper is a study of **"A Study of Agriculture marketing in India"** based on secondary data collected from the published research paper, report and individuals in India. Specifically, the secondary sources include journals, and websites.

Present State of Agricultural Marketing in India:

In India four different systems of agricultural marketing are prevalent:

1. Sale in Villages:

The first method open to the farmers in India is to sell away their surplus produce to the village moneylenders and traders at a very low price. The moneylender and traders may buy independently or work as an agent of a bigger merchant of the nearly mandi. In India more than 50 per cent of the agricultural produce is sold in these village markets in the absence of organized markets.

2. Sale in Markets:

The second method of disposing surplus of the Indian farmers is to sell their produce in the weekly village markets popularly known as bajar.

3. Sale in Mandis:

The third form of agricultural marketing in India is to sell the surplus produce though mandis located in various small and large towns. There are nearly 1700 mandis which are distribute all over the country. As these mandis are located in a distant place, thus the farmers will have to carry their produce to the mandi and sell those produce to the wholesalers with the help of brokers or 'dalals'. These wholesalers of mahajans again sell those farm produce to the mills and factories and to the retailers who in turn sell these goods to the consumers directly in the retail markets.

4. Co-operative Marketing:

The fourth form of marketing is the co-operative marketing where marketing societies are formed by farmers to sell the output collectively to take the advantage of collective bargaining for obtaining a better price.

Defects of Agricultural Marketing in India:

Following are some of the main defects of the agricultural marketing in India:

1. Lack of Storage Facility:

There is no proper storage or warehousing facilities for farmers in the villages where they can store their agriculture produce. Every year 15 to 30 per cent of the agricultural produce are damaged either by rats or rains due to the absence of proper storage facilities. Thus, the farmers are forced to sell their surplus produce just after harvests at a very low and un-remunerative price.

2. Distress Sale:

Most of the Indian farmers are very poor and thus have no capacity to wait for better price of his produce in the absence of proper credit facilities. Farmers often have to go for even distress sale of their output to the village moneylenders-cum-traders at a very poor price.

3. Lack of Transportation:

In the absence of proper road transportation facilities in the rural areas, Indian farmers cannot reach nearby mandis to sell their produce at a fair price. Thus, they prefer to sell their produce at the village markets itself.

4. Unfavorable Mandis:

The condition of the mandis is also not at all favorable to the farmers. In the mandis, the farmers have to wait for disposing their produce for which there is no storage facilities. Thus, the farmers will have to lake help of the middleman or dalal who lake away a major share of the profit, and finalizes the deal either in his favor or in favor of arhatiya or wholesalers.

5. Moderators:

A large number of moderators exist between the cultivator and the consumer. All these middlemen and dalals claim a good amount of margin and thus reduce the returns of the cultivators.

6. Unregulated Market's:

There are huge number of unregulated markets which adopt various malpractices. Prevalence of false weights and measures and lack of grading and standardization of products in village markets in India are always going against the interest of ignorance, small and poor farmers.

7. Lack of Market Interaction:

There is absence of market interaction or information system in India. Indian farmers are not aware of the ruling prices of their produce prevailing in big markets. Thus, they have to accept any un-remunerative price for their produce as offered by traders or middlemen.

8. Lack of Organization:

There is lack of collective organization on the part of Indian farmers. A very small amount of marketable surplus is being brought to the markets by a huge number of small farmers leading to a high transportation cost.

9. Lack of Grading:

Indian farmers do not give importance to grading of their produce. They hesitate to separate the qualitatively good crops from bad crops. Therefore, they fail to fetch a good price of their quality product.

10. Lack of Institutional Finance:

In the absence of adequate institutional finance, Indian farmers have to come under the clutches of traders and moneylenders for taking loan. After harvest they have to sell their produce to those moneylenders at unfavorable terms.

11. Aggregate Conditions:

Farmers are marketing their product under advice circumstances. A huge number of small and marginal farmers are forced by the rich farmers, traders and moneylenders to fall into their trap to go for distress sale of their produce by involving them into a vicious circle of indebtedness. All these worsen the income distribution pattern of the village economy of the country.

Remedial Measures for Improvement of Agricultural Marketing:

The following are some of the measures to be followed for improving the existing system of agricultural marketing in the country:

1. Foundation of regulated markets.
2. Foundation of co-operative marketing societies.
3. Extension and construction of additional storage and warehousing facilities for agricultural produce of the farmers.
4. Expansion of market yards and other allied facilities for the new and existing markets.
5. Provision is made for extending adequate amount of credit facilities to the farmers.
6. Timely supply of marketing information's to the farmers.

7. Improvement and extension of road and transportation facilities for connecting the villages with mandis.
8. Provision for standardization and grading of the produce for ensuring good quality to the consumers and better prices for the farmers.
9. Formulating suitable agricultural price policy by the Government for making a provision for remunerative prices of agricultural produce of the country.

Upgrade system of Agriculture Marketing

The Government has adopted many measures to improve the system of agriculture marketing in India, that is:

1. Organization of the regular market

Regular markets are established only to protect the farmer's exploitation from vendors and intermediaries. These markets are managed by a market committee, and this candidate appointed by the state government, local bodies, mediators, and farmers. Thus, the committees are representative on the interests of all.

2. Use of Standard Weights

Under this, the products are weights through the right measurement weights. Farmers got the right price for their products. The Government's focus on this measurement allows a standard weight for better agriculture marketing in India.

3. Grading and Standardization

Agriculture marketing in India has to improve classification and standardization.

4. Dissemination of Market Information

The recent market price is available to the farmers. This information system makes it an important rate/price of crops in the market.

5. Warehousing and Storage Facilities

The Government provides facilities to the farmers. They have to collect the value of their products. This kind of warehousing and storage facility helps to grow the farmer's capacity. So that, the value addition of the crops can be make good advantage.

Government Prepares Procurement & Pricing

Every year the Government declares the minimum support price of food grains. In this, the farmers can be encouraged to produce more and more crops of high production. Farmers are receiving the right amount of food grains.

Conclusion

The agricultural marketing plays a vital role in easy way agro produce distribution to the customers. Like all the marketing activities, it also aims in profit making. It helps the farmers to reach their customers within very short lead time. In order to avoid isolation of small-scale farmers from the benefits of agricultural produce they need to be integrated and informed with the market knowledge like fluctuations, demand and supply concepts which are the core of economy. The government must examine its policies and regulations with view to strength the marketing network and ensure that prices are being determined on competitive basis and markets are being manipulated.

References

1. Problems and Prospects of Agricultural Marketing in India: An Overview International Journal of Agricultural and Food Science
2. Agricultural Marketing: A National Level Quarterly Journal on Agricultural Marketing:
3. Problems and Prospects of Agricultural Marketing in India: An Overview International Journal of Agricultural and Food Science
4. Kashyap, P., & Raut, S. (2006). The rural marketing book. Biztantra, New Delhi, India.
5. Pathak, N. (2009). Contribution of agriculture to the development of Indian economy. The Journal of Indian Management and strategy, 14(1), 52-57.
6. Reardon, T., & Barret, C. B. (2000). Agro Industrialization, Globalization and International Development: An Overview of Issues, Patterns and Determinants. Agricultural Economics, 23(3), 195-205.
7. Sivanappan, R. K. (2000). Agri-business development in India. Kisan World, 27(5), 55-57.

Analytical Compilation of Agriculture Waste Management System(Maharashtra)

Dr. Pakdhane Smita
Assistant Professor Department of Commerce MVP's KSKW College, CIDCO, Nashik

Abstract:

Agricultural wastes are extracted from the growing and processing of agricultural products such as fruits, vegetables, crops, meat, poultry, dairy products, etc. They are outputs of production and processing of agricultural products that may contain material beneficial for humans but the economic values of it are less than the cost of its collection, transportation, and processing, therefore it creates garbage and pollutes the area. As agriculture is the main stray and it produces near about 40% waste from crops which required systematic disposal or a well-designed recycling system.

Key terms: organic waste, Agri-waste, biomass, Inorganic fertilizers, biofuel, ethanol, biochemical oxygen demand (BOD), Agri-commodities, biochar

Introduction:

Environment-friendly living, green living, and sustainable living are the buzzwords of this century. Hardly a day goes by when we do not hear about these topics, and we seek to draw the attention of our readers to a related subject of agriculture waste management via this paper and endeavor to present data and examples in support of why such systems bring benefits socially and financially and there is a need to constantly further enhance such systems by concerned stakeholders for the benefit of all. This analysis starts with collecting data and information on the waste generated from various agricultural activities and their adverse impacts on society and even on the farming sector. From the data analysed we create brief and compact points to help our readers understand how to put waste to use with a planned waste management system.

Agriculture sector Maharashtra State:

Agriculture and allied activities sector are the primary components of the state economy, in recent decades innovations in the sector has been emphasized and actions are being taken to remove the dependency on seasonal rainfall to improve the production. The share of the agriculture sector in Maharashtra state income was 31% during 1961 and the population directly dependent on farm income was 65%. And currently, the population directly dependent on farm income directly or indirectly is still 52% of the total state population and the state income from the sector is about 12% in 2020.In Maharashtra, farming is conducted by the traditional method. Farmer conserves crop seeds for the next session. Farmers are dependent on the natural environment, especially the rainy season as irrigation and technical facilities are not available for farmers. This has changed with, advanced techniques applied in the agriculture sector. Such as organic farming, tissue culture, seed development bank, biotechnology, aquaculture, sericulture, hydroponics, etc. Greenhouse farming and sustainable agriculture techniques for better productivity. Growth of population, increasing urbanization, rising standards of living due to technological innovations, and increase in food demands have contributed to an increase in the quantity and variety of solid wastes generated by agricultural activities. India generates more than five hundred million tonnes of agricultural waste every year. The country so far failed to find its productive use in the absence of enough government push and business model to work for farmers.1 There is a growing concern for agricultural wastes, which are mostly burnt thereby contributing to adverse climate change and air pollution.

Agricultural wastes

Agricultural wastes are extracted from the growing and processing of agricultural products such as fruits, vegetables, crops, meat, poultry, dairy products, etc. They are outputs of production and processing of agricultural products that may contain material beneficial for humans but the economic value of it is less than the cost of its collection, transportation, and processing. Waste generated includes Bagasse, Rice and wheat straw and husk, Cotton stalk, Sawmill waste, ground nutshell, banana stalk and jute, sisal, and vegetable residues, sugarcane bagasse, paddy, and wheat straw and husk, wastes of vegetables, food products, tea, oil production, jute fiber, groundnut shell, wooden mill waste, coconut husk, cotton stalk, etc. to name a few.The composition of such wastes will depend on the cultivation system and type of agricultural activities, and it may be in the form of liquids, slurries, or solids. Agricultural waste also called agro-waste may contain animal waste like manure, animal carcasses, etc., the food processing waste of maize is huge as only 20% of maize is preserved and 80% forms the waste, dangerous wastes such as hazardous and toxic agricultural waste from pesticides, insecticides, and herbicides, etc. A 2012 study by IIT-Kharagpur said that since most farmers do not find buyers for their waste and due to lack of knowledge, they burn it — which results in air pollutants emission — or dump it possibly leading to soil and water contamination.

Table 1
Agriculture waste burning in India

S.N.	States	Residue generation	Residue surplus	Residue burned
1	Andhra Pradesh	43.89	6.96	2.73
2	Bihar	25.29	5.08	3.19
3	Chhattisgarh	11.25	2.12	0.83
4	Gujarat	28.73	8.90	3.81
5	Haryana	27.83	11.22	9.08
6	Karnataka	33.94	8.98	5.66
7	Madhya Pradesh	33.18	10.22	6.91
8	Maharashtra	46.45	14.67	7.42
9	Orissa	20.07	3.68	1.34
10	Punjab	50.75	24.83	19.65
11	Rajasthan	29.32	8.52	1.78
12	Tamil Nadu	19.93	7.05	4.08
13	Uttar Pradesh	59.97	13.53	11.92
14	West Bengal	35.93	4.29	4.96

Source: Article- Emission of Air Pollutants from Crop Residue Burning in India

The above table clearly shows that the residue or waste generate from agriculture in Maharashtra is 46.45% and from which 7.42 % was burn by farmers which increases air pollution.In general variability of 21.46% in annual emission of air pollutants were observed from 1995 to 2009 which is a very number.

Photo 1. Burning of Agriculture waste

Agricultural waste poses a huge problem if not properly disposed of as it can have a visibly negative impact on the environment. In addition to the dangers of landfills and incineration overload, the chemicals used in farming and agriculture can cause pollution if they end up in the wrong places. For example, pesticides that allow fields to flourish can cause mass levels of pollution in rivers, lakes, and streams. Polluted water damages the ecosystem and can lead to the death of animals and can also damage drinking water tables.

Objectives:

1. Collect data on waste generated by Agriculture activities
2. Outline a standard agricultural waste management system.
3. Create guidelines for a localized optimal agriculture waste management system

Limitations of the Study:

1. Very little data and information are available on waste management.
2. There is no standardized policy for Agricultural Waste Management.
3. There are gaps in the information received.
4. This has led to confining of the Study based on the data gathered from various periods.

Assumptions

We exclude livestock waste generation from this discussion for sake of limiting the scope of this study. The study is also limited to the geographical area of Maharashtra State and only related to agriculture waste.

Research Methodology:

The data both numeric and theoretical collected for the quantitative and qualitative research was from previous research papers written on the topic and published books and journals on the topic. Collected Data analysis via excel sheets statistical and graph functions helped to draw inferences and suggestions. The research article is a pure analysis of secondary available data.

Wastes from Cultivation Activities

Innovative farming techniques and a favorable climate for growing crops also support the generation and development of insects and weeds. This situation creates a high demand for pesticides to protect the crop

from diseases. After using pesticides, most of the bottles and packages holding are thrown into fields or ponds. According to an estimate, about 1.8% of the chemicals remain in their packaging. In addition, many farmers apply chemical fertilizers for crops in large quantity causing soil degradation. These wastes have caused unpredictable environmental penalties like food poisoning, food hygiene due to the toxic chemicals. The below table lists common waste items from farming and related activities:

Wastes generated by agriculture activities

Green waste	Waste silage
Pesticide	Bio beds waste
Waste oil	Empty pesticide containers
Weeds, insects	Waste medical containers/equipment
fluids	Fertiliser bags
Animal medicines	Anything used on animals including syringes

Table 2

Crop wise waste generated in India

States	Crop residue generated (Mt/yr)			
	Cereal crops	Fiber crops	Oilseed crops	Sugarcane
Andhra Pradesh	33.07	16.07	2.50	5.80
Arunanchal Pradesh	0.56	0.00	0.06	0.01
Assam	8.15	2.01	0.29	0.41
Bihar	19.87	3.27	0.20	1.87
Chhattisgarh	8.87	0.01	0.11	0.01
Goa	0.24	0.00	0.01	0.02
Gujarat	8.18	28.62	5.06	5.85
Haryana	24.73	7.58	2.15	1.93
Himachal Pradesh	1.95	0.00	0.01	0.02
Jammu & Kashmir	2.76	0.00	0.11	0.00
Jharkhand	7.34	0.00	0.09	0.13
Karnataka	11.73	3.55	0.81	8.80
Kerela	1.14	0.01	0.00	0.10
Madhya Pradesh	16.05	3.51	2.13	1.12
Maharashtra	8.75	19.51	0.57	22.87
Manipur	0.78	0.00	0.00	0.01

Source: Article- Emission of Air Pollutants from Crop Residue Burning in India

Agri-losses

The Central Institute of Post-Harvest Engineering and Technology, Ludhiana (CIPHET), an institution of the Indian Council of Agricultural Research (ICAR) has conducted two detailed studies of Agri-losses. The losses incurred at various stages of production and movement in cereals, pulses, oilseeds, plantation crops, spices, vegetables, fruitswere studied.

Table 3

Losses in harvest and post-harvest operations

Crop Study on harvest and post-harvest losses [2012-13] in percent					
No.	**Commodity**	**loss at farm operations**	**loss at storage**	**Total loss**	
1	Wheat	4.07	0.86	4.93	
2	Paddy	4.67	0.86	5.53	
3	Potato	6.54	0.78	7.32	
4	Soybean	8.95	1	9.95	
5	Tomato	9.41	3.03	12.44	
6	Mango	6.92	2.24	9.16	
7	Apple	9.08	1.31	10.39	

Source: Report on the assessment of quantitative losses ICAR-CIPET March 2015

30 percent of the fruits and vegetables produced by farmers are wasted due to the lack of food processing units across Maharashtra. The state with a processing capacity of one lakh metric tonnes has failed to exploit the surplus vegetables and fruits produced in local markets following infrastructure shortage namely cold storage and processing units and up-gradation of technical knowledge to enhance the varieties of white onion, tomatoes, and winery grapes.

Waste from food processing:

Agricultural / Food waste or loss refers to the decrease in edible food products throughout the part of the supply chain and hence unavailable for human consumption. Food losses take place at production,

marketing, post-harvest, and processing stages in the food supply chain. Food losses occurring at the end of the food chain (retail and final consumption) are called "food waste," which relates to retailers' and consumers' behavior. (Parfitt et al., 2010).

Loss of crops in the Food Supply Chain occurs as follows –

1. Harvest: losses due to mechanical damage or spillage during harvest operation (e.g., threshing or fruit picking), crops sorted out post-harvest, etc.
2. Post-harvest handling and storage: including losses due to spillage and degradation during handling, storage, and transportation between farm and distribution.
3. Marketing: including losses and waste in the market system, e.g., wholesale markets, supermarkets, retailers, and wet markets.
4. Processing: including losses due to spillage and degradation during food industry or domestic processing, e.g., juice production, canning, and bread baking.
5. Sorting: Losses may occur when crops are sorted out if not suitable to process or during washing, peeling, slicing, and boiling or during process interruptions and accidental spillage.
6. Consumption: including losses and waste during consumption at the household level.

The chemical properties of the waste must be determined before a waste handling system can be implemented. If the waste is biological, it can be treated and managed much the same as livestock waste. Waste treatment lagoons are used for some food processing waste. The material must be analysed for its volatile solids content or its biochemical oxygen demand (BOD) concentration so that volumetric or areal loading rates can be determined. Because some canneries are seasonal, lagoons may need to be oversized to accept anticipated periodic heavy organic loading. Co-mixing food waste with animal manure can significantly increase methane production in an anaerobic digester. Special permits are required for creating a waste management system. Many permits require ongoing monitoring of groundwater and soil and plant matter. Waste management systems often ignore Hydraulic loading. If the site has a high-water table or low permeability, the amount of water that can be applied is reduced. In some food processing waste, the level of salt is too high, or the pH is too high or too low for land application.

Wastes in APMC's

APMC's are responsible for sale of agriculture produce at all over country but they not kept up with time leading to fragmented supply chain and lack of storage, grading, and proper packaging, which causes a lot of wastes of Agri-commodities being generated in these marketplaces. The majority of the wastes generated in the APMCs are disposed of as garbage. Seldom is used as earth filling or feed. Hence the entire volume of food waste is unutilized and results in food loss and hence the economic loss also.

Wasteshandling at some APMC's such as:

1. APMC Mumbai utilize the agricultural waste generated within the market yard (specifically fruit, vegetable, onion, potato and other Agri commodity) for power generation and biogas production.
2. Satara district has processing sugarcane molasses for twin benefits - generate electricity for the grid and fertilizer for fields.

AWMS (Agricultural Waste Management System)

An agricultural waste management system (AWMS) is a planned system in which all necessary components are installed and managed to control and use by-products of agricultural production in a manner that sustains or enhances the quality of air, water, soil, plant, animal, and energy resources. Such a system must involve and interact with waste generated from all phases of activities from production to utilization on a farm or an agriculture enterprise and must include all types of waste whether solid, liquid, slurry, semi-solid or other material types. A typical basic AWMS would consist of Waste generation, waste collection, Waste transfer, Waste treatment or Storage, and Waste Utilization.

Defining optimal AWMS

Since agriculture production involves a different variety of activities and equipment and land sizes there is no standard AWMS system that would work for all farmers. Each design would have to independently identify what sort of waste would have to be managed and then define the steps required for management, implementation, operation, and maintenance to complete the AWMS system.

We want to highlight some examples of Waste management systems.

Photo 2:

'Happy Seeder' for direct drilling of seeds in the presence of surface residues (Courtesy: CSISA, CIMMYT-IRRI, New Delhi)

Photo 3

Low-cost pyrolysis klin for preparation of biochar (Courtesy: T.J. Purakayastha, IARI, New Delhi)

Photo 4

Thermal plant of Kalpataru Power Transmission Limited producing energy from crop residues at Tonk, Rajasthan (Courtesy: N. Gupta, IARI, New Delhi)

Photo 5 Electricity Generation from Biomass Plant

Biomass based decentralized electricity generation system at village Mana, Raisen District

The '3R'Approach to Agriculture Waste Management

The concept of minimizing waste reduces the quantity and ill-effects of waste generation by reducing the number of wastes, reusing the waste products with simple treatments, and recycling the wastes by using them as resources to produce the same or modified products. This is usually referred to as '3R'. Some waste products can be consumed as resources for the production of different goods or the same product, meaning recycling the same resource. When wastes are reused repeatedly, it offsets the harvesting of new similar or same products. This saves fresh resources exploitation and reduces waste generation. Overall, the 3Rs individually or collectively save fresh resources exploitation, add value to the already exploited resources, and very importantly minimize the waste quantity and its ill effects. The principle of reducing waste, reusing, and recycling resources and products (3Rs) aims at achieving efficient minimization of waste generation by • Choosing to use items with care to reduce the amount of waste generated. • Repeated use of items or parts of items that still have usable aspects. • The use of waste itself as resources

Awareness Creation: To take the cause of waste management further it is essential to spread awareness among the farmers. Awareness creation of the farmers regarding proper in-cultivation, post-harvest management techniques so that they can harvest such that waste could be reduced and reused effectively. Communication mediums such as newspapers, TV, radios, the internet, social media could be used effectively to spread awareness. Local market mandis could be used to train farmers in their area on techniques on waste management and its implementations.

Other action items:

1. Showcasing as an additional source of income for farmers; Linking farmers to companies that utilize biomass like crop residues for producing biofuel, paper/board/panel, packing materials, feed, brick making, etc. to sell crop residues can be showcased as a profitable and valuable source of additional income. Initiatives should be encouraged for recycling and reusing the food wastes generated through biomass utilization
2. Utilizing the Agricultural wastes for productive uses
3. Encouragement of private companies and Public-Private Partnerships (PPP) in biomass-based energy and fuel plants
4. Encourage manufacturing biochar from residue to improve soil fertility and crop yield
5. Eco-friendly and Sustainable Wastewater Treatment for Safe Reuse in Agriculture
6. Investment in infrastructure and cool chain facilities, transportation, and storage.
7. Practice Direct Marketing and Contract Farming there-by involving corporates in the farming process to industrialize waste management practices
8. Encouraging the development of Food processing facilities that could use Agri-waste as raw material
9. State Government initiatives at a local level for Waste management.
10. A policy framework for subsidy system for farmers implementing waste management systems
11. Governing bodies must encourage financial assistance to farmers for waste management such as providing Central Financial Assistance for (already implemented in some states as Punjab and Maharashtra)
12. Increase Biogas, bio-CNG production from agriculture waste
13. Increasing Power generation or production of bio-CNG from biogas produced from agricultural wastes through bio methanation
14. Installation of biomass co-generation projects (excluding bagasse co-generation) in the industry for meeting the requirement of captive power and thermal energy
15. Methane gas can be generated from agricultural wastes, particularly manures. The gas is best suited for heating purposes as in broiler operation, water heating, grain drying, etc.

AWMS Guidelines Based on our data inferences we highlight key points

1. Planning Phase: Focus must be on the landowner's requirements and social and environmental concerns when planning
2. First Input to AWMS: Determine the type and quantity of waste as well as nutrients and chemical components generated at the owner's farm or enterprise
3. Second input to AWMS: Determine the land, equipment's, and facilities available at the location (land for storage, ponds, liquid storage tank, equipment such as pipes, pumps for transfer, distribution equipment)
4. Third input to AWMS: Determine the utilization and alternatives for application of the processed waste. Agricultural wastes may be used as a source of energy, bedding, mulch, organic matter, or plant nutrients. Properly treated, they can be marketable
5. Costs: Any system design must do a cost-benefit analysis at the earliest.
6. Implementation Plan: A system is not useful unless it is implemented and made operational, an implementation plan should be prepared for the AWMS where all the inputs and processing details are laid out in a diagram showing the entire system (sample AWMS shown below)
7. Always consider future expansion of the system if required and keep options for expanding operations of waste management systems.

Conclusion

These wastes when managed properly through the application of "3Rs" can be transformed into beneficial materials. Proper waste utilization will assist in developing our agricultural sector and provide viable biofuel resources for many The agro-waste produced on the farm must be managed in a very economical and efficient way. The agro-waste is also considered as a second source of income for the farmer which leadsrevenue. Most of the farmers prefer burning agro-waste. Also burning agro-waste causes loss of vital components in the soil. The main objective of a waste management system is to

maximize economic benefits and at the same time protection of the environment. Waste can be used to manufacture particle boards, insulation boards, wall panels, printing paper, and corrugating medium. roofing sheets, fuel, binder, fibrous building panels, bricks, acid-proof cement, coir fiber, reinforced composite, polymer composites, cement board. In the case of using agro-industrial wastes in various building materials as a substitute for asbestos fiber, timber, and mica significant amount of energy can be saved that would go towards processing them. The reduction of pollutants from major building material industries is related to the conservation of limestones, clays, and other minerals. The use of some of the wastes as cementitious materials/raw materials or additives could be realized in manufacturing blended cement, concrete, bricks, and aggregates. This would contribute to the control and reduction of the release of undesirable gases and pollutants to the environment.I would conclude on a positive note that waste should not be seen as a problem, we each have a responsibility to ensure that we both minimize waste and find a way to ensure we properly dispose of any waste we do produce.

References

1. Hindustan Times E-paper 4 Oct. 2015 Agri/Article%20hindu.%20Times%202015.html
2. NIAM Report on Handling of Agricultural waste in APMCs 2011 -12
3. F. O. Obi1, B. O. Ugwuishiwu2, and J. N Nwakaire3, *," Agricultural Waste Concept, Generation, Utilization and Management" Nigerian Journal of Technology (NIJOTECH) Vol. 35, No. 4, October 2016, pp. 957 – 964 Copyright© Faculty of Engineering, University of Nigeria, Nsukka, Print ISSN: 0331-8443, Electronic ISSN: 2467-8821.
4. Vinita Gaikwad, Pankaj Mudholkar, Rasika Phatak. Study of Agro-Waste Management by Farmers in the State of Maharashtra. Research & Reviews: Journal of Crop Science and Technology. 2019; 8(1): 24–29p.
5. Article by Dr. Rajendra Prasad Central Agricultural University
6. Article Emission of Air Pollutants from Crop Residue Burning in India by Niveta Jain Indian Agricultural Research Institute
7. https://www.researchgate.net/
8. https://indianexpress.com/article/india/maharashtra/maharashtra-wastes-30-per-cent-fruits-and-vegetables/
9. Asokan Pappua, _, Mohini Saxenaa, Shyam R. Asolekarb "Solid wastes generation in India and their recycling potential in building materials", Regional Research Laboratory (CSIR), Habib Ganj Naka, Bhopal–462026, India. CESE, Indian Institute of Technology, Mumbai-400076, India
10. Agricultural Waste Management Field Handbook by USDA NRCS (Natural Resources Conservation Service)
11. Indian council of Food and agriculture Report on "Crop Residue burning Challenges and Solutions"

Scope of formal financial Sector in Indian Agri-Financing: A case study on Farmart India.

Prof. Kamlesh P. Thote
Assistant Professor (BBA) G. S. College of Commerce and Economics, Nagpur.
Email Id:-Kamleshthote@gmail.com

Abstract:-

Around 1.7 billion adults, worldwide, have inadequate access to formal financial services and do not hold accounts with a financial institution or mobile money provider. This leaves them unable to access reliable credit. According to some experts, the returns earned by farmers, who have access to formal credit, are on an average 17 percent higher than what farmers, who are dependent on informal sources earn. In India, with around 49% of the workforce in the agriculture sector, contribution is just 17% -18% to our country's GDP. The share of Agriculture and allied sectors in India's GDP has declined to 13.7 % in 2011 from 51.9 % in 1951. More people engaged in farming re shifting towards the alternative ways of earning. National Sample survey office (NSSO) and census surveys pointed out that increasing number of people want to give up farming.One of the primary issues that the farmer faces is access to formal financial credit. A survey conducted by IFPRI in three eastern states- Bihar, Jharkhand and east Uttar Pradesh- Showed that farmers are increasingly dependent on informal sources of credit which comes at very interest high rates and keeps them running into the vicious credit cycle season after season. Through the government's policies cater to the issues faced by the agriculturists yet the true benefits of these policies do not reach the intended beneficiary.

Keywords: - Agri-Finance, Formal Financial Sector, Farmart, Rural Development.

Introduction

According to a 2011 census there are now nearly nine million fewer farmers than there were in 2001. Working on these lines, Government has realized the importance of information and communication technology (ICT) in providing financial assistance to the farmers. This lead to RBI directing the banks to issue smart debit cards in 2013 replacing magnetic strip cards as smart .cards require PIN to authorize payments. If we look at west Bengal, it has beenmissing its agriculture disbursement target for three years in a row. In 2018-2019 the state was able to achieve only around 71 percent of its targeted disbursement under the agriculture sector.

Objective of the study

01. To find out ways to encourage farmers to opt for formal agri-financing sector than informal financial sector.
02. Suggest ways on how formal financial sector can be made more farmer- friendly.

Research Methodology

Descriptive and exploratory research methodology with secondary data sourcing has been followed.

Case study on 'Farmart'

This is a unique model of customer sourcing for the formal financial sector by connecting with the prospective borrowers through offering equipment's and other agricultural inputs on low rent. Here the target group is the small holder farmer, CEO of Farmart 'Mr. Alekhsanghera' rightly points out that even with more than 11 Lakhscrores fund allocation towards Agri credit under priority sector lending , less than 20% of small holding farmers are able to get credit from banking institutions hence leaving around 100 million farmers to the mercy of informal channels, thereby getting them into vicious cycle of credit running due to exorbitant interest rates. So Farmart created a unique model with the target customer being farmer with landholding less than 2 hectare with the mission of "*HarKisanKaHaq, UskeKhetTak*" starting up as rent a tractor/ equipment provider similar to Uber in 2016, they soon realized that the small farmer needs access to cash to be truly benefitted. So in 2018 they came up with Agri-Fintech model of they call a 'concoction of finance and technology' which provides low cost digital loans to small holder farmers through the virtual credit card that can be used to buy high quality seeds, fertilizers etc on credit through their retail channel partners.

FARMART Model

Being a NBFCit has tie up with financial services providers like 'Arthaimpact', Happy loan etc Farmart operates on a proprietary credit underwriting model which analysis over 50 alternative data points to determine the credit worthiness of a farmer. These data points are collected across four areas.

01. Personal profiling; Family background , Age , gender, geography among others.
02. Agricultural profiling; includes the acreage od land whether the farmer owns it or is renting it, among others, to avoid the risk of migration.

03. Income diversification ; another factor taken into account is the dependence on agriculture for the farmer. Ideally farmers should rear livestock or poultry, or have income in the family from sources other than agriculture.
04. Asset Profiling; Farmart also takes into account a farmer's financial strength , loan repayment capability , previous loans status etc.

Combating Risk of NPA

Like in the microfinance industry, Farmart offers loans by using a closed-user-group lending model wherein loans are given to a group of individuals within an area. In the case of Nonpayment of dues by any one farmer, the community can help the company recover loans. Mr. Sanghera emphasized that Farmart is not only solving the credit problem for farmers but also solving NPA problems for banks and financial institutions.

Strength

High quality inputs convenient renting of machinery – productivity enhancing machineries like rotary tillers, potato planters, laser land levelers, combine harvesters being made available, easy access to credit – quick paperless loan via financial partners "Arthaimpact".

Opportunities

01. Farmers also have the option to pay in the form of produce to Farmart's market linkage partners. According to Mr. Sanghera for a farmer the produce is also currency.
02. With Farmart's no cash model, fund usage can be tracked to the level of Expenditure in seeds, fertilizers, Agri- medicine etc. hence putting a check on fund diversification on non-agriculture purposes.
03. All the collection point farmers are offered flexible repayment option that allows them to pay back their loans in any amount throughout the loan term, which is typically one crop season equivalent to three months, as farmers have seasonal cash flows.
04. Favorable Government policy enabling players like Farmart to create opportunities which didn't exist before- Aadhaar enabled KYC, jandhan Bank accounts, and NPCI cashless payment infrastructure. The deeper penetration of mobile and internet are further helping fintech startups digitize the entire ecosystem including agriculture.

Challenges

The biggest competition comes from the informal market which is deep rooted in agriculture and is currently financing and controlling almost the entire value chain. In order to scale it, Farmart needs to be better and easier to use than the offline market.

Findings

1. A smallholder farmer needs to be connected to the formal financial system to sustain the contribution of Agriculture in the country's GDP.
2. Availability of cash becomes a major issue for the farmer while repaying the loan due to the lead time of the produce being available for sale and actual receipt of sale proceeds.
3. Farmers need to be educated on their long term benefits by opting for the credit from formal sector as well as the schemes they can benefit form.

Suggestions

1. To increase share of formal sector in agrifinancing, the farmer need to be educated on long term as well as short term benefits of availing credit from formal sector.
2. Creating success stories among farmers as word of mouth and first-hand account helps sourcing more customers as rural societies are closer knit and follow each other's opinions more than outsiders.
3. Extensive campaigns about the cashless credit system.
4. Offering schemes related to covering risk associated with agriculture would also encourage the farmers move towards form lending system.

Conclusion

Ensuring food security, practicing climate smart agriculture and achieving the broader goal of sustainable agriculture has a bearing upon the achievement of the Sustainable Development Goals agenda of 2030. Each of these objectives in turn depends crucially upon access to agricultural credit. This emphasizes the importance of solving outstanding issues in the context of agricultural credit disbursement in India.

The perception towards the poor farmers in the country needs to change. Instead of looking at them as high-risk, low-quality credit assets, they must be viewed as an untapped credit market.

An important reason why poor farmers in India are high-risk, low-quality assets is because they are not insulated from the vagaries of nature and do not have the wherewithal to reduce the risk of loan failure.

Therefore, financial inclusion cannot stop at providing capital. It has to ensure that the probability of loan failure is minimized. Farmart's are ensuring to work towards this.

References

Weblinks:-

1. https://www.microsave.net/wp-content/uploads/2020/06/The-role-of-tech-enabled-formal-financing-in-agriculture-in-India-2.pdf
2. https://www.orfonline.org/research/improving-access-to-agricultural-credit-new-perspectives-59999/
3. https://bfaglobal.com/catalyst-fund/case-study-farmart-incorporates-metabase-discovers-insights-to-improve-retention/
4. https://www.farmart.co/
5. Books:-
6. Research Methodology by Philip Kotlar
7. Agricultural Finance and Management by P. Raghu Ram and S. Subba Reddy
8. Agricultural Value Chain Finance: Tools and LessonsBook by Calvin Miller and Linda Winstead Jones

Conversion of Coal Fly Ash (C.F.A.) Into Mcm-41 Mesoporous Molecular Sieves

S. B. Shete
S.G.B.Mahavidyalaya ,Purna
Email: s.bshete@rediffmail.com

Abstract :

Mesoporous molecular sieves in the hexagonal phase (MCM-41) is synthesized from fused coal fly ash (C.F.A.) solutions and CTAB surfactants. It is found that C.F.A. could be effectively transformed into mesoporous materials depending upon the hydrothermal conditions. It is also observed that a high concentration of Na- ions in the supernatant of the fused coal fly ash is not critical in the formation of MCM-41 when prepared under controlled pH of gel, calcinations temperature and calcinations duration conditions. We provide direct evidence of MCM-41 alumino-silicates with a homogeneous chemical composition of Si/Al=13.78 can be prepared with cationic surfactants. Our results resemble that coal combustion byproducts can be utilized for producing mesoporous molecular sieves even if containing significant amounts of impurities. The highest crystalline and well defined phase purity MCM-41 is obtained without hydrothermal treatment in short interval of time.

Keywords: Mesoporous material, surfactants, flies ash, hydrothermal synthesis

Introduction:

In India power sector has been receiving adequate priority ever since the process of planned development began in 1950. Hydro and coal based thermal power have been the main sources of generating electricity. In our country more than ninety million tones of coal fly ash (C.F.A.) is being generated annually with more than 6500 acres of land being occupied by ash-ponds and created environmental and health hazards. The recycling of C.F.A. has become an increasing concern in recent years due to increasing landfill costs and current interests in sustainable development of human society from view points of Energy economy and Environmental strategy, still about only 15% of total C.F.A. produced from coal combustion is reused in various applications i.e. in road construction, cement production, land reclamation and restoration of eroded soil.

Conversion of C.F.A. into useful Si-MCM-41 materials is one of the approaches to recycle C.F.A. which has extensive applications in basic sciences, petrochemical sciences, energy conservation, medicine, chemical sensor, air purification and waste remediation. This paper has reported A green, cost effective and fast method for production of Si-MCM 41 from Waste C.F.A.as an inorganic silica source & ethyl acetate as a mild acid hydrolyser. This method gives a high degree of crystallanity of Si-MCM 41 even in the comparatively short duration of time. This approach took 18 hrs at 298 K (R.T.) to produce Si-MCM 41 from C.F.A. which is so far as the knowledge, is the least time and lowest reaction temperature required to produce pure and ordered Si-MCM-41. However we came to conclusion that the change of pH of gel solution, change of calcinations duration, change of calcinations temperature results into the varying yields and crystallinity of synthesized material. FTIR, XRD, N_{2-} Adsorption-desorption resembles crystal structure and its porosity.

Porous solids are an important class of materials due to their wide applications in various separation, purification and catalytic processes. Although there are many kinds of amorphous porous materials which contain micro porous, mesoporous and macroporous, but there were no materials possessing uniform mesoporous until the early 1990s. Mobil corporation scientists first reported the M41S family of materials[1-3] with pore size from 2nm to 50 nm. Because of high specific areas and large uniform pore sizes, mesoporous Si-MCM-41 materials found a lot of applications in shape selective catalysis, adsorption of gases and liquids[4-7] etc. Perhaps the large scale production of Si-MCM-41 became very expensive due to costly silica sources and harmful due to toxic chemicals[8].

Resource recovery of the Si-MCM-41 materials in large scale from C.F.A. is one of the novel and green approach for reducing energy consumption and the waste generated in production process.

Materials And Methods:

Source materials

Coal Fly Ash

The coal fly ash (C.F.A.) was obtained from Thermal Power Stations at Chandrapur, and Parli (Vaidyanath) Maharashtra (India). The Chemical composition of fly ash collected from both the

places and also their XRD resembled that the required Si/Al ratio is more prominent in the coal fly ash (C.F.A.) obtained from Thermal Power Station at Chandrapur. Thus this C.F.A.is used in the present study. The Chemical composition of fly ash collected from T.P.S. at Chandrapur, is given in Table 1. The amounts of the main components of ash viz. both amorphous (mainly SiO_2, Al_2O_3) and crystalline components (mainly quartz and mullite) show few variations with the type of coal.

Table-1: CHEMICAL COMPOSITION OF AS COLLECTED COAL FLY ASH

Compound	Content (wt%)	CFA (mol/100g)
SiO_2	67.16	1.117
Al_2O_3	19.82	0.193
Fe_2O_3	5.95	0.039
CaO	3.06	0.053
K_2O	1.12	0.012
TiO_2	1.76	0.023
Na_2O	0.33	0.005
MgO	0.79	0.019

Chemicals

The chemicals used are Sodium Hydroxide Fisher Scientific, The surfactant solution Cetyl trimethyl ammonium bromide (CTAB), Spectrochem, ethyl acetate, sulfuric acid, de-ionized water. All chemicals were AR grade; hence they were used without further purification.

Synthesis method

The amorphous SiO_2 component in the C.F.A. was used as Si- source for the synthesis of Si-MCM-41. The synthesis was carried out as follows:

A known quantity of C.F.A. fused with 2M NaOH solution at 100^0C for 4 hrs under stirred condition (300 rpm) in stirred autoclave. The mixture is allowed to cool. The solution was separated from the mixture by a filtration process. This obtained supernatant solution was mixed with 1.1 gm of cetyl-trimethyl ammonium bromide (surfactant solution) and kept under stirring condition (300 rpm) at 85^0C. After 30 min. ethyl acetated was vigorously mixed and the solution kept under stirring at 600 rpm. For next 30 min. The obtained solution was allowed to cool to room temperature by natural convection and was adjusted to the selected pH by adding 5.25N H_2SO_4 solution under slow stirring. Precipitate obtained during pH adjustment was kept at room temperature for 18 hrs. The solid obtained after filtration was washed by deionised water number of times and dried at 100^0C for 2 hrs. This dried material was calcined under air from 500^0C to 800^0C at the interval of 50^0C at a heating rate of 1^0C/min.

Characterization techniques

Powder X-ray diffraction:

X-ray diffraction patterns of the collected CFA and synthesized materials were recorded on a Cu/30 kV/15 mA MiniFlex2 goniometer with a wave length of 1.540 A^0.

The powder patterns of synthesized samples were obtained using Cu Kα radiation on a Rigakau diffractometer. The samples were scanned for 2θ from 1 to 20^0 .

FT-IR spectra:

Infrared (FT-IR) spectra of the collected CFA and synthesized materials were recorded on Bruker ALPHA FT-IR spectrometer (ATR eco ZnSe) using dry KBr as standard reference in the range of 500-4000 cm^{-1}.

BET surface area:

Specific BET surface area was calculated using Surface area Analyzer Model SAA-2000 for all synthesized amples. pH values were measured with a digital pH meter

RESULTS AND DISCUSSION:FTIR

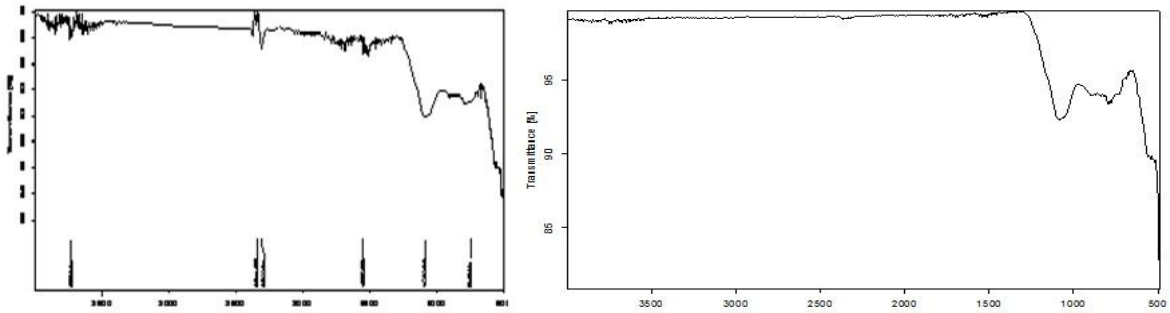


Fig. 1 : FT-IR spectra of CFA collected from Chandrapur (M.S.) India. A) As collected B) calcined at 800 ºC

FTIR spectra shown in the Fig. 1 provide valuable information about the basic characteristics of the molecule, namely, the nature of atoms, their spatial arrangement and their chemical linkage forces. Infrared spectroscopy has been extensively used for identifying the various functional groups of the support, as well as identifying the various functional groups of the active component. The mid infrared region of the spectrum contains the fundamental frame work vibration of $Si(Al)O_4$ grouping. The absorption band in between the wave numbers 980-1320 cm^{-1} in IR spectrum of fly ash and treated fly ash represent the presence of substitutated Al atoms in the tetrahydral forms of silica frame work.

XRD of collected fly ash :

The XRD pattern of Coal Fly Ash (CFA) collected from Chandrapur TPS shown in Fig. 2, The different minerals have different unit cell composition, therefore XRD technique allows for qualitative identification of the phases present in the collected mineral. The XRD peak information is important to quantity changes in the composition of Quartz and Mullite reactants that affecting reaction conditions of hydrothermal synthesis of materials and reaction products. From these XRD patterns it can be seen that the major crystalline phases found in the fly ash are common mineralogical phases such as quartz, mullite and alumino-silicate glass amorphous material forming during the combustion process.

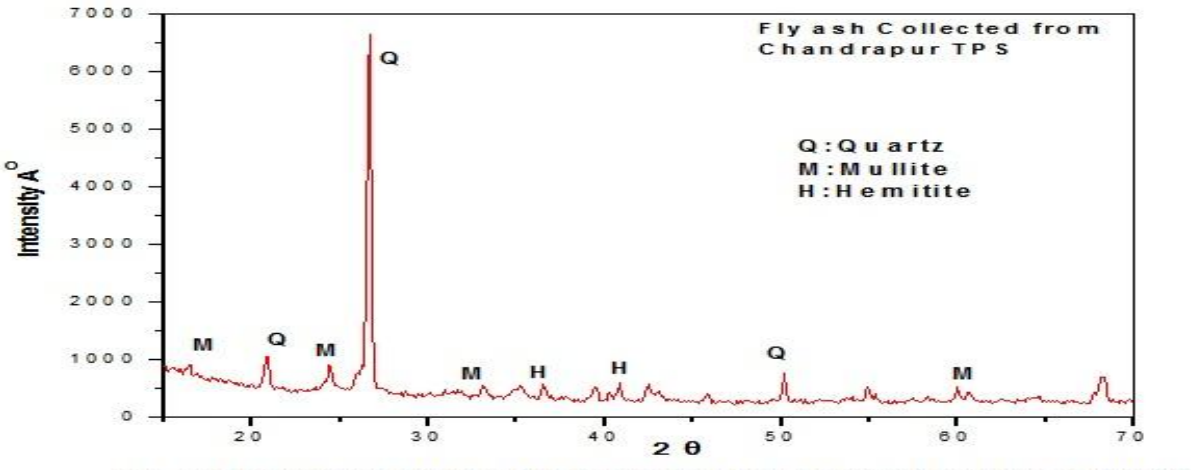
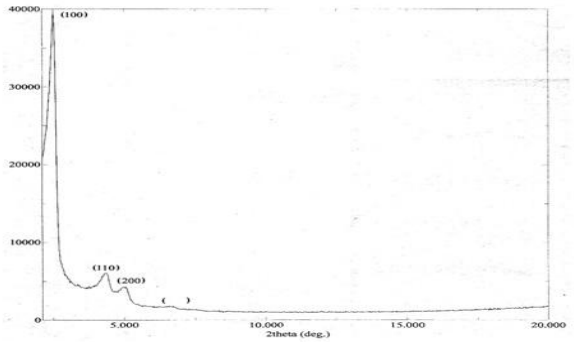


Fig. 2 : XRD pattern of Fly ash obtained from Chandrapur Super Power Station

The X-ray pattern of the synthesized mesoporous silica material is an highly periodic silica phases which is normally reflected by the distinct XRD signatures at low 2□□ angles from 1^0 to 30^0 as shown in Fig.3. Sharp signal in XRD spectra indicates the presence of long range order of uniform hexagonal phase in the mesoporous materials. The well defined reflections from [100] plane are a prime characteristics of the hexagonal lattice symmetry of the MCM-41 structure.

The observation of three higher angle reflections other than d_{100} indicates that the product is likely to possess the symmetrical hexagonal pore structure typical of MCM-41. X-ray diffraction data therefore indicates that the supernatant of the fly ash can be successfully used in the synthesis gel to prepare mesoporous materials.



d_{100} value = 35.3099; 2θ = 2.500

Unit cell parameter $a_0 = \frac{2}{\sqrt{3}} d_{100}$

$a_0 = 40.8$

Intensity (I) : 14163 cps I/I_o = 1

Fig. 3: XRD pattern of synthesized material with parameters (pH=6.9) temperature 550^{0}C and calcination time 4 hrs.

Study of various synthesis parameters for MCM-41 :

Effect of pH of synthesis gel

The pH of reaction mixture of the gel is also plays an important role in synthesis of MCM-41 phase. The effect of change of pH of gel shows that, when pH varies from 1.87 to 6.91 the crystalline nature and phase purity improves to highest level. The synthesis was carried out at constant calcinations temperature 550^{0}C for 4 h. The crystallinity reduces when pH of the gel is below 6.91 and above 6.91.

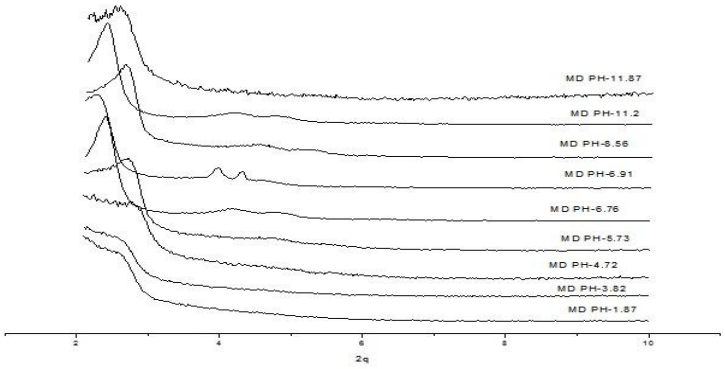


Fig. 4: XRD Patterns of MCM-41 at different pH of synthesis gel .

The XRD data further analyzed to calculate I/I_O, Unit Cell parameters $\mathbf{a_O}$, percent crystallinity and obtained data presented in Table 4. The hexagonal unit cell parameter a_0 in the calcined sample increased with pH of synthesis gel value.

Table 2: The effect of pH of gel prepared for synthesis of Si-MCM-41 at 550 ^{O}C for 4 h and on its physical properties.

Sample designation	pH of gel	2θ for d_{100}	d_{100}	I/I_O	a_0	% Crystallanity	BET Surface Area $m^2 g^{-1}$
MP_1	1.87	2.64	33.43	0.08	38.8	19	632.161
MP_2	3.82	2.66	33.18	0.06	38.5	28	---
MP_3	4.72	2.86	30.86	0.05	35.8	37	---
MP_4	5.73	2.28	38.71	0.16	44.9	38	1276.181
MP_5	6.76	2.39	35.91	0.28	41.7	84	----
MP_6	6.91	2.50	33.30	1	40.9	100	1801.788
MP_7	8.56	2.68	32.93	0.2	38.2	59	682.871

MP_8	**11.2**	**2.40**	**36.78**	**0.09**	**42.7**	**30**	**368.121**
MP_9	**11.87**	**2.60**	**33.95**	**0.03**	**39.4**	**25**	**14.274**

Therefore it is observed from presented data in the table 4 that pH of gel solution at 6.91 gives good results. The variation of pH of gel plays an important role in the formation of MCM-41.

Effect of Calcination Time

The crystallization kinetics was also studied by changing calcinations period from 1h to 12 h at constant temperature 550^0C .The different powder XRD patterns obtained in this time variation were plotted and given in Figure 7. It shows that at 4 h well crystalline and phase purity of MCM-41 was obtained.

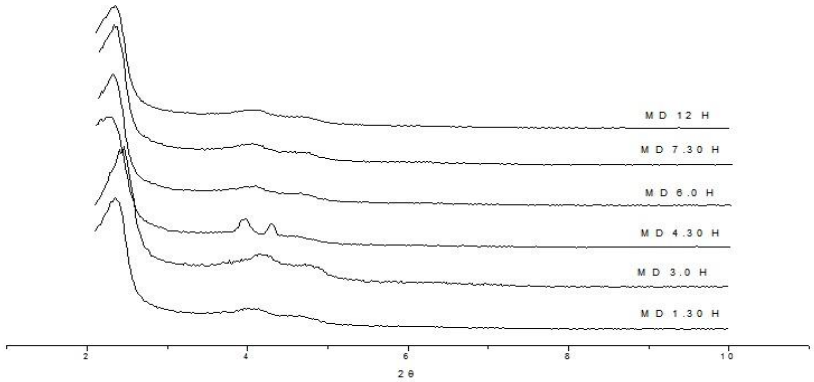


Fig. 5: XRD Patterns of MCM-41 at different calcinations time period

The XRD data further analyzed to calculate I/I_O, Unit Cell parameters $\mathbf{a_O}$, percent crystallinity and obtained data presented in Table 3.

Table - 3 : The effect of calcined period of Si-MCM-41 at 550 ^{O}C on its physical properties

Sample Name	Time (hours)	2θ for d_{100}	d_{100} a.u.	I/I_O	Unit cell parameter a.u. a_0	% Crystallanity	BET Surface Area $m^2 g^{-1}$
MH_1	**01.30**	**2.38**	**37.08**	**0.5**	**43.00**	**76**	**886.184**
MH_2	**03.00**	**2.46**	**35.88**	**0.25**	**41.60**	**99**	**----**
MH_3	**04.30**	**2.50**	**35.30**	**1**	**40.90**	**100**	**1801.788**
MH_4	**06.00**	**2.32**	**38.04**	**0.36**	**44.10**	**89**	**----**
MH_5	**07.30**	**2.32**	**38.04**	**0.36**	**44.10**	**70**	**620.702**
MH_6	**12.00**	**4.10**	**21.53**	**0.07**	**25.00**	**61**	**564.092**

The tabulated data shows that as calcinations time duration increases, percent crystalinity also increases up to 4.3 h then after decreases for the synthesis system under the study. During the change in calcinations time duration pH of the gel was kept constant at 6.9 and calcinatins temperature at 550^0C. The highest crystallinity sample was obtained at 4 h .

Effect of Calcination Temperature

The synthesized samples were calcined at different temperature from 500 to 800 ^{O}C to study change in crystalline nature of synthesized sample, thermal stability etc. All these samples of MCM-41 were calcined at various temperature for contsnt period of 4 h.

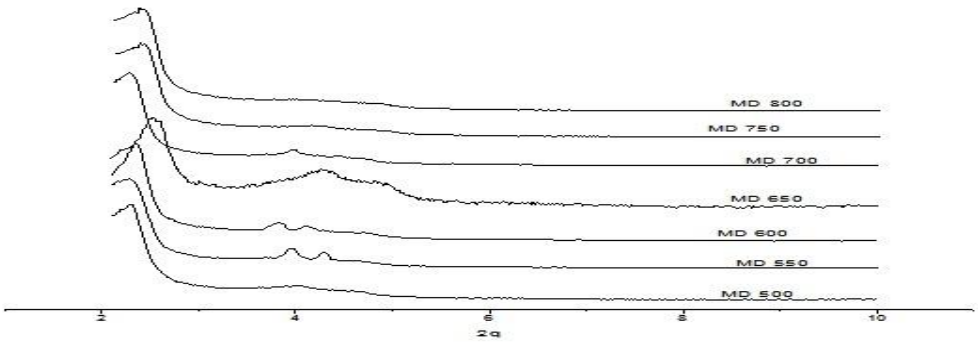


Fig. 6: XRD-Patterns of MCM-41 at different Calcination temperature .

The powder XRD patterns of calcined samples were recorded and presented in figure 4. The XRD data further analyzed to calculate I/I_O, Unit Cell parameters, percent crystallinity and obtained data presented in Table 2.

Table -4 : The effect of calcined temperature of Si-MCM-41 on its physical properties.

Sample Name	Calcination temp.	2θ for d_{100}	d_{100}	I/I_O	a_0	% Crystallanity	BET Surface Area $m^2 g^{-1}$
MT_1	500^0C	2.32	38.04	0.24	44.10	20	---
MT_2	550^0C	2.50	35.30	1	40.90	100	1801.788
MT_3	600^0C	2.46	38.19	0.26	44.30	76	1276.653
MT_4	650^0C	2.54	34.75	0.31	40.31	40	1101.316
MT_5	700^0C	2.38	37.08	0.35	43.02	29	----
MT_6	750^0C	2.42	36.47	0.33	42.31	19	---
MT_7	800^0C	2.41	36.17	0.33	41.90	15	767.130

The tabulated XRD data shows that at 550 ^{O}C the value of I/I_o is maximum and higher crystalline nature of MCM-41 is obtained. The effect of change of calcination temperature v/s percent crystallinity of MCM-41 was ploted and shown in the Figure 6. It shows that, at initial temperature increases upto **550^0C,** percent crystallinity also increases and after that it decreases from 100 % to 15 %. Hence **$550\ ^0$C** is optimized temperature to get highest crystalline MCM-41 in the given system of synthesis.

N_2-Adsorption Desorption Analysis Of Synthesized Mcm-41 Material:

Nitrogen physisorption probes the textural properties of materials i.e. surface area, pore volume, pore size and pore geometry. At very low relative pressures (p/p_0) a very large amount of nitrogen becomes physisorbed which assigns to condensation of nitrogen inside and outside on the surface of MCM-41. As the surface area is very high this corresponds monolayar adsorption. Upon monolayer adsorption multilayer of nitrogen starts to developed at higher relative pressures. Also in this case both the external surface area and mesopores contributes to the physisorption process.

The collected data from the N_2 adsorption desorption graph is used to calculate the surface of the material using BET method. (Tables 2, 3 & 4).

From the above tabular data it is confirmed that the maximum calculated surface area amounts to 1801 m^2/g. for the Si-MCM-41 materials keeping pH of gel 6.91, calcination time about 4 h. at 550^0C.

Ft-Ir Analysis :

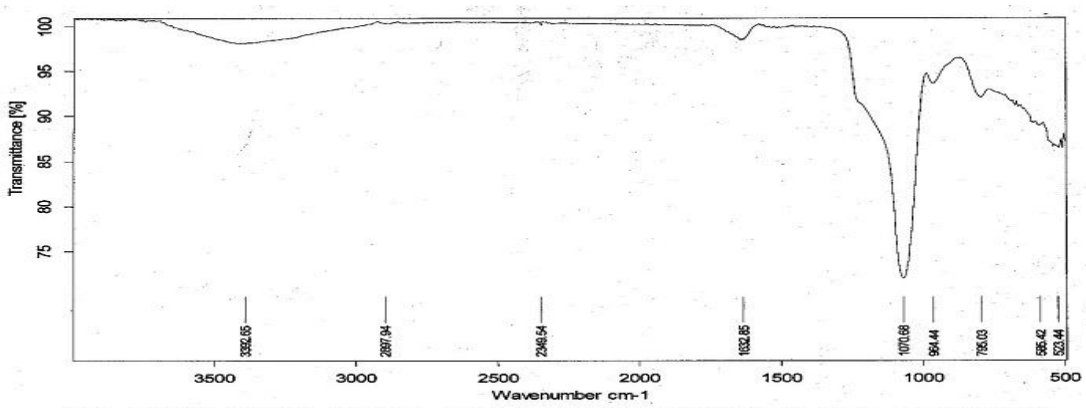


Fig. 7: The FT-IR spectra of as synthesized MCM-41 from coal fly ash

The FT-IR spectra of as synthesized MCM-41 from coal fly ash are shown in Fig. 10. From FT-IR spectra, the absorption bands around 2921 and 2851 cm^{-1} correspond to n-C-H and d-C-H vibrations of the surfactant molecules, such bands disappeared in the calcined sample indicating the total removal of organic material during calcinations. The broad band around 3392.65 cm^{-1} as observed due to surface silanols and O-H stretching frequency of adsorbed water molecule. Moreover the peaks in the range of 1500-1600 cm^{-1} are because of the deformation mode of surface hydroxyl group. A peak at 1070.63 cm^{-1} and 964.44 cm^{-1} corresponds to the asymmetric and symmetric Si-O groups, respectively. The peaks in the range 1010-1079 cm^{-1} are assigned to M-O-M bonding, the bands from 960 to 990 cm^{-1} appeared due to Si-O-M (M=metal ions) vibrations in metal incorporated silanols. The shift in the lattice vibration bands to lower wave numbers is due to the substitution of silicon by other metal ions.

Conclusions:

Based upon the experimental study it was concluded that pure and ordered MCM-41 material could be successfully synthesized from coal fly ash at room temperature during 18 hrs of reaction. The parametric variations such as change of calcination temperature, the change of calcination time duration and the change of initial pH value of gel suggested that from CFA the well ordered mesoporous material MCM-41 can be synthesized at 550^0C for 4 hrs. keeping pH of gel 6.91. The maximum calculated surface area amounts to 1801 m^2/g for the MCM-41 materials keeping pH of gel 6.91, calcination time about 4 h. at 550^0C.

This study demonstrates that converting CFA into mesoporous materials not only eliminates the disposal problem of CFA but also turns a waste material into a value added product. The synthesized MCM-41 materials may find applications in the waste water treatment, Chemical industries and Agriculture industry etc. The proposed method provides one of the ways of recycling CFA.

References :

1. C.T. Kresge, M.E. Leonowiez., W.J. Roth, J.C. Vartuli, J.S. Back, Ordered mesoporous molecular sieves synthesized by a liquid crystal template mechanism, Nature 359 (1992) 710-712.
2. J.S. Beck, J.C. Vartuli, W.J. Roth, M.E., Leonowicz, C.T. Kresge, K.D. Schmitt, C.T.W., Chu., D.H. Olson, E.W. Sheppard, S.B. Mc. Cullen, J.B. Higgins, J.L. Schlenker, A new family of mesoporous molecular sieves prepared with liquid crystal templates, J.Am. Chem. Soc114 (1992) 10834-10843.
3. R.Schmidt., M.Stocker., E. Hansen, D. Akporiaye, O.H. Ellestand, MCM-41-a model system for adsorption studies on mesoporous materials Micropor, Mater, 3 (1995) 443-448.
4. L. Merejer, T.J. Pmavana. Access in mesoporous materials advantages of a uniform pore structure in the design of a heavy metal ion adsorbent for environmental remediation, adv. Mater 9 (1997) 2749-2754.
5. K.Y. Ho G., McKay, K.L. Yeung, Selective adsorbents form ordered mesoporous Silica, Langmuir 19, (2003) 3019-3024.

6. S.A. Bagshaw, F. Testa, Wairakei geothermal silica, a low cost reagent for the synthesis of mesostructured M41S alumino-silicate molecular sieves. Micropor, Mesopor Mater 39 (2000) 67-75.
7. X. Querol, N. Moreno, J.C. Umana, A. Alastuey, E. Hernandez, A. Lopez Soler, E. Plana, Synthesis of zeolites from coal fly ash an overview, Int. J.Coal. Geol., 50 (2002) 431-423.
8. H.L. Chang, C.M. Chun, I.A. Aksay, W.H. Shih, Conversion of fly ash into mesoporous alumumosilicate, Ind. Eng. Chem. Res. 38 (1999) 973-977.
9. P. Kumar, N. Mal. Y. Yamana, T. Sano, Mesoporous materials prepared using coal fly ash as the silicon and aluminium source J. Master Chem. 11 (2001) 3285-3290.
10. S.C. White, E.D. Case. Characterization of fly ash from coal fired power plants, J. Mater Sci. 25 (1990) 5215-5219.

Measuring the Satisfaction Level of Customers: A Comparative Study of Cooperative Banks and Nationalised Banks

Dr. Gorakhnath Eknath Wakle
Dept. of Economics, NSPM's Late Bindu Ramrao Deshmukh Arts & Commerce Mahila Mahavidyalaya, Nashik Road, Nashik, Maharashtra

Abstract:
The cooperative movement in India has led to rise in number of cooperative banks in India. These banks are small sized banking units and they function both in urban and rural areas for over more than a decade. They have played an important role in spreading banking services all over India. The present study focusses on comparing cooperative banks with nationalized banks on the basis of various services provided to their customers and their satisfaction level. The sample size of 200 customers is chosen as respondents out of which 100 hold accounts in a co-operative bank and 100 in a nationalized bank. It has been found that cooperative banks provide better and faster service as compared to nationalised banks. However, when it comes to interbank transactions & reliability nationalized banks fare much better.

Keywords – RBI, Co-operative bank, Random Sampling, Chi- square test

Introduction:

All modern economies are money economies, that is, they use money in all their economic activities. As a result in all modern economies, banks perform a variety of useful functions. In a developing country like India, bank money accounts for more than half the total supply of money. In fact, in every economic activities like production, distribution, exchange and consumption, banks have an important role to play. Thus, banks are the backbone of and advanced or developing economy.The organised sector banking system in India consists of the Reserve Bank of India as the apex bank. The Reserve Bank of India is the Central Bank of the country and as such, it is the monetary authority of the country. Other organised sector banks in India can be broadly divided into three parts as Commercial Banks, the Regional Rural Banks and the Co-operative Banks. A cooperative organisation is a voluntary organisation of persons who associate with each other, on equal terms, to achieve certain common ends. The Co-operative Movement in India was launched in 1904. The purpose of this movement was to solve the problem of housing, providing finance, promoting thrift and savings, etc. Co-operative banks are subjected to stricter controls, both from RBI, as well as from cooperative department. Co-operative banks are run by the members and even individual members can have a say in the formulation of policies of the banks. They can offer higher interest on deposits and hence, can offer concessions on loans.

Review of Literature:

1. **Madhavdas Committee (1979**) report evaluated the role played by urban co-operative banks in greater details and drew a roadmap for their future role recommending support from RBI and Government for establishing such banks in backward areas by prescribing viability standards.
2. **Pal and Malik (2007)** investigated the differences in the financial characteristics of 74 (public, private and foreign) banks in India based on factors, such as profitability, liquidity, risk and efficiency.
3. **Dutta and Basak (2008)** suggested that Co-operative banks should improve their recovery performance, adopt new system of computerized monitoring of loans, implement proper prudential norms and organize regular workshops to sustain in the competitive banking environment.

Objectives of the Study:

The present study focusses on measuring the overall satisfaction level of the customers on the various services provided to them by comparing the cooperative and nationalised banks as follows:

1. Ease of interbank transactions
2. Ease of obtaining loans
3. Reliability of the banks

Limitations of the Study:

The present study is limited to the customers who have accounts in cooperative and nationalised banks in Nashik city only.

Research Methodology: In order to understand the satisfaction level of the customers with respect to services Using random sampling method, a total 200 respondents of which 100 were chosen who have accounts in cooperative & 100 in nationalized banks.

Data Collection: Primary data has been collected by using questionnaire method, these 200 respondents have been asked to answer on the basis of their experience with the banks on various services provided to them. Secondary data has been collected from reference books, textbooks, journals and websites.

Hypothesis: The hypothesis was formed to compare the performance of cooperative banks with that of nationalized banks. The hypothesis for the present study is as follows:

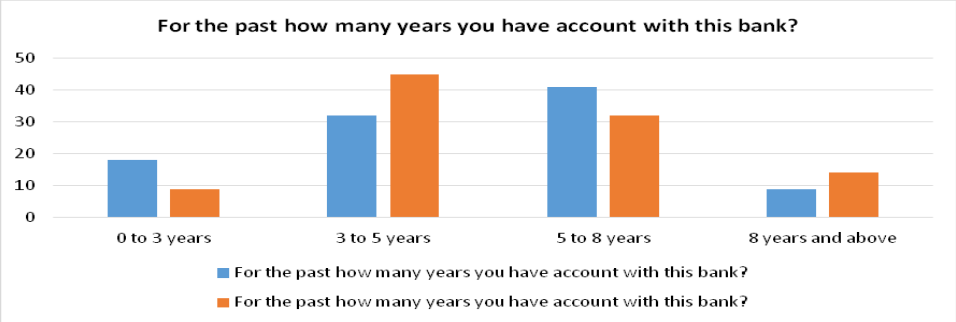
H_0 = Customers are not satisfied with the services provided to them by nationalised banks as compared to Cooperative banks and hence, do not recommend nationalised banks.
H_1 = Customers are more satisfied with the services provided to them by nationalised banks as compared to Cooperative banks and hence, recommend nationalised banks.

Data analysis and Interpretation: The collected data has been presented in tabular form followed by graphical representation and analysis as follows:

Table 1 shows the period of customers having accounts in the cooperative and nationalised banks respectively.

Period	For the past how many years you have account with this bank?	
	Cooperative Bank	Nationalised Bank
0 to 3 years	18	9
3 to 5 years	32	45
5 to 8 years	41	32
8 years and above	9	14
Total	100	100

Table 1



Graph 1

Table 2 shows the kind of account maintained by the customers in the cooperative and nationalised banks respectively.

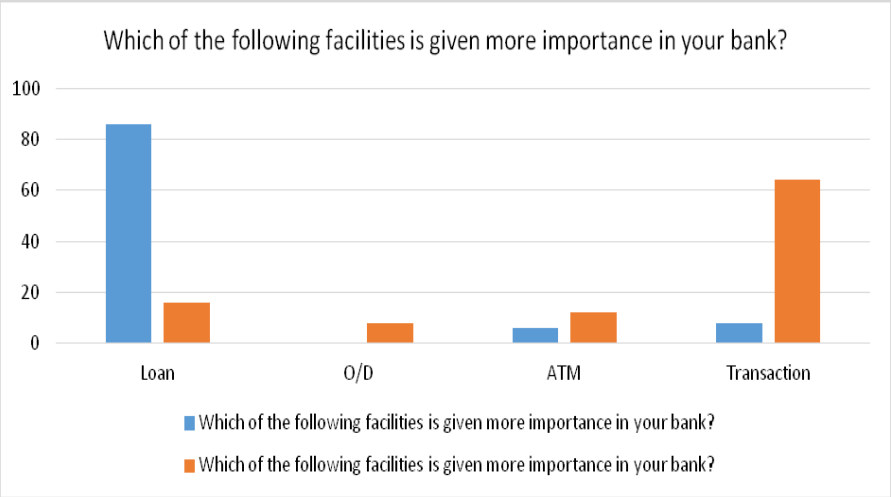
Type of Account	What kind of account do you maintain in this bank?	
	Cooperative Bank	Nationalised Bank
Current	48	18
Savings	52	82
Total	100	100

Table 2

Table 3 provides information about the facilities that are given more importance by the cooperative and nationalised banks respectively.

Facilities	Which of the following facilities is given more importance in your bank?	
	Cooperative Bank	Nationalised Bank
Loan	86	16
O/D	0	8
ATM	6	12
Transaction	8	64
Total	100	100

Table 3

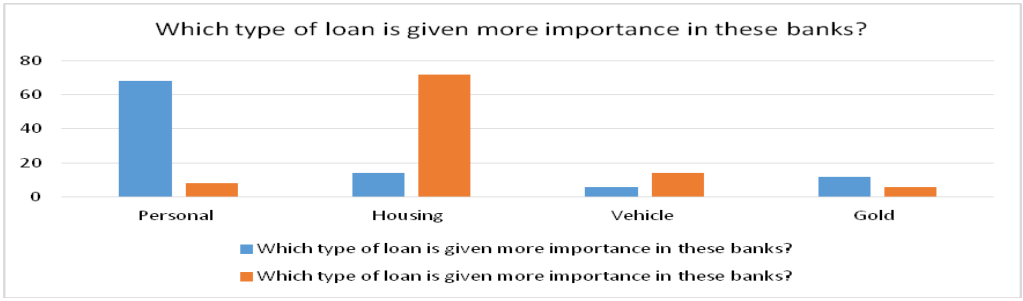


Graph 3

Table 4 provides information about the various loans offered by the cooperative and nationalised banks respectively.

Loans	Which type of loan is given more importance in these banks?	
	Cooperative Bank	Nationalised Bank
Personal	68	8
Housing	14	72
Vehicle	6	14
Gold	12	6
Total	100	100

Table 4

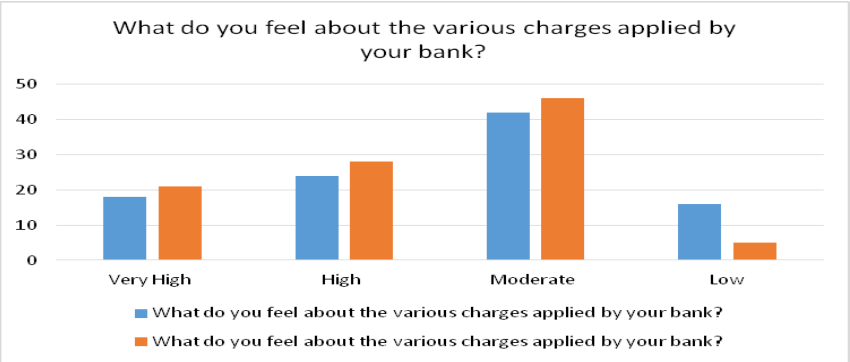


Graph 4

Table 5 provides information about what the customers feel about the various charges applied by their cooperative and nationalised banks respectively.

Rating	What do you feel about the various charges applied by your bank?	
	Cooperative Bank	Nationalised Bank
Very High	18	21
High	24	28
Moderate	42	46
Low	16	5
Total	100	100

Table 5



Graph 5

Table 6 provides information about what the customers feel about the overall quality services of their cooperative and nationalised banks respectively.

Rating	What do you feel about overall service quality of your bank?	
	Cooperative Bank	Nationalised Bank
Excellent	72	54
Very good	19	18
Good	6	19
Average	3	9
Total	100	100

Table 6

Graph 6

Table 7 gives information about whether the customers would recommend their cooperative and nationalised banks respectively to others.

Recommendation	Which of the bank would you recommend to your friends and relatives?	
	Cooperative Bank	Nationalised Bank
Yes	68	96
No	32	4
Total	100	100

Table 7

Testing of Hypothesis:

Observed Value (O)	Expected Value (E)	(O- E)	$(O- E)^2$	$\frac{(O- E)^2}{E}$
68	116	-48	2304	19.86
32	18	14	196	10.88
96	116	-20	400	3.44
4	18	-14	196	10.88
Total				**45.06**

Calculated Chi- Square value= 45.06

The level of significance is 0.05 and the degree of freedom is 1

The table value is 3.841

The calculated Chi- Square value 45.06 is more than the table value 3.841

Hence, Null Hypothesis is rejected and Alternative Hypothesis: Customers are more satisfied with the services provided to them by nationalised banks as compared to Cooperative banks and hence, recommend nationalised banks is accepted.

Findings of the Study:

1. The maximum number of customers have accounts in cooperative and nationalised banks for a period of 3 to 5 years and 5 to 8 years. Hence, the respondents chosen for the present study have sufficient experience with regards to the services provided to them by these banks respectively.
2. The maximum number of customers prefer to operate current account in cooperative banks which is 48% as compared to the customers who prefer to operate saving account which is 82%.
3. 86% of the total respondents from cooperative banks feel that their bank gives more importance in providing loans to their customers. 64% of the total respondents from nationalised banks feel that their bank gives more importance to interbank transactions rather than providing loans to their customers.
4. Almost 68% of the total respondents from the cooperative banks feel that their banks give more importance to Personal loans while 72% respondents from nationalised banks feel that their banks gives more importance to Housing loan.
5. Respondents from both cooperative and nationalised banks feel that the various charges applied by the banks for providing services is moderate which is 42% and 46% respectively.
6. 72% of the total respondents from the cooperative banks feel that the overall quality of the services provided by their banks is excellent while 52% respondents from nationalised banks feel it excellent.
7. Out of the total respondents from cooperative banks 68% would like to recommend their banks to others while 96% respondents from nationalised banks would like to recommend their banks to others.

Conclusion:

1. Cooperative banks provide better services to customers who hold current account with them as compared to those who have savings account. Also, very few customers prefer to have a current account in nationalised bank.
2. Cooperative banks provide more loan facilities and services to their customers while nationalised banks focus on better interbank transactions.
3. Obtaining personal loan from a cooperative bank is more hassle free as compared to a nationalized. However, getting a housing loan is easier from nationalised banks.
4. Customers are satisfied with the charges applied by the cooperative as well as nationalised banks for providing various services to them.
5. The overall quality services provided by the cooperative banks is better than the nationalised banks.
6. Nationalized banks are more reliable than cooperative banks.
7. Cooperative banks maintain better customer relations than nationalized banks.

References:

1. Government of India. Report of the Committee on Banking Sector Reforms, RBI, Mumbai Reserve Bank of India Report of the High Power Committee on Urban Cooperative Banks, RBI, Mumbai, 1998-1999.
2. Gupta J, Jain S. "A study on Cooperative Banks in India with special reference to Lending Practices". International Journal of Scientific and Research Publications. 2012; 2:10.
3. Hajera Fatima Khan, "Current scenario of Urban Cooperative Banks in India", IJMRR/Oct. 2018/ Volume 8/Issue 10/Article No-3/27- 38.
4. Jyoti Gupta, Suman Jain (2002), " A study on Cooperative Banks in India with special reference to Lending Practices" International Journal of Scientific and Research Publications, Volume 2, Issue 10, October 2012 1 ISSN 2250-3153.
5. www.rbi.org.in
6. https://shodhganga.inflibnet.ac.in
7. http://epratrust.com/articles/upload/9.%20Fathima%20Adeela%20Beevi.TKS.pdf
8. Https://Www.Academia.Edu/9389420/A_Comparitive_Study_Of_Cooperative_Banks_And_Nationalised_Banks_On_Various_Service_Parametres_Introduction
9. https://www.ebbf.org/post/ethical-finance
10. https://www.researchgate.net/publication/337631735_Current_scenario_and_future_prospects_of_urban_cooperative_banks_in_India
11. https://www.academia.edu/33681454/A_study_on_Cooperative_Banks_in_India_with_special_reference_to_Lending_Practices

An Analysis Of The New Farm Laws And Its Impact On Agricultural Development

Kopal Verma[1] Faiz Ayat Ansari[2]
[1]5th year B.A.LL.B. student Parul Institute of Law, Faculty of Law, Parul University, Vadodara
[2]Assistant Professor (Law) Parul Institute of Law, Faculty of Law, Parul University, Vadodara
E-Mail Id: 171734301004@paruluniversity.ac.in
E-Mail Id: faizkkr@yahoo.com

The 3 new farmlaws were passed through the Government of India were considerably discussed at domestic and overseas as historic and lengthy overdue. However, some experts, states, and stakeholders, which includesfarmers, were protesting in opposition to them and looking for their withdrawal. This research paper analyses the conditions and considers the motives for thepolicy reforms and explainsthe impactmade through successive Central governments for approximately the last one yearto influence states to undertake the reforms. Making from the real contents and spirit of the 3 acts, the paper discusses at duration how APMC[1] (Agricultural Produce Market Committees) markets, MSP (Minimum Support Price), farmers, and the rural economic system can be affectedthrough the brand new policy environment. It also shows the worries raisedfrom thefarmers' leaders and attackers. The paper reveals that the new acts take ahead the incomplete time table of reforms commenced in 1991 and the fragmented, piecemeal, and patchy reforms undertaken throughout states to their closing climax. The paper addresses apprehensions of the newacts in order that the underlying reform method is applied in various states with their suitable understanding. The paper also offers the motiveswhile looking forward to the brand newacts to completethe purpose of taking Indian agriculture to new levels. The Union authoritieslegislated new farm legal rulesfor agriculture, and changed the Essential Commodities Act 1951. The new lawswere highly showed and acclaimed as historic, path-breaking, and a "1991 movement" for agriculture. Still , some stakeholders and professionals have said and shows critical anxiety and worrienessapproximately the eectof those acts on farmers and the agriculture sector. Anatration which is said is being created primarily based completelyon ideological and imaginary grounds to create a views, opinion and strain towards the brand new legal guidelines via way of means of ignoring the intention, content material and result of the brand new coverage reforms. Some peoplehave also expressed and saidsubject approximately the probably concentrate of position of a small quantity of middlemen in agricultural marketing, ignoring the advantages to crores of farmers. This paper conferencethe results of all of the 3 acts on farmers, the farm sector, APMCs, the MSP regime, customers and the destiny of agriculture, agriculturists and connectedaspects. It is likewise essential to tell the public why it is neccessary for the Centre to result in those acts.

Arguments related to the Farm Bill,2020Favour

The acts are being showeras a watershed second withinside the records of Indian agriculture that might arousea whole transformation of agriculture. The new farm acts are prophecyto gain all of the stakeholders — farmers, enterprise and consumers. The new farm acts could suggestthe small and marginal farmers (86% of overall farmers) who don't have the manner to both good buy for his or her produce to get a higher rate or put money into generation to enhance the high-yieldingof farms. The new acts will assist in arranging a far greater incorporated market, growing competition, and improving performance and effectiveness of the advertising and marketing area of the rural sector. The regulation connected with the law of Indian agricultural markets just like the Agricultural Produce Market Committees (APMC) act had give rise to centralization and revolve into concept to be lowering opposition and participation, with excessive

Analysis Of Opposition To Law And Social Transformation: A Study In Vadodra

The act lookto interferethe monopoly of government-regulated mandis and permit

[1]MSP- Minimum Support Price.

farmers to promote at once to non-public consumers via way of means of outmanoeuvre the APMCs. The new legal rules and regulations offer complete independence for farmers to promote their produce.The act is anticipated to growth the liberty of desire of sale of agri-produce for the farmers and this may assist the farmers in getting a higher rate for his or her produce due to extra picks of markets. This could permit small and marginal farmers to promote their produce at marketplace and aggressive costs. The act lets in for non- public gamers to shop for the farmers' produce even at their farm gates. This will permit the farmers to get higher costs thru opposition and cost-slicing on transportation. The farmers can be capable of get a more proportion of the rate being paid through the customers, which presently stands at a lowly 15%. This could assist improve rural earning and sooner or later offer an impetus to the financial system at huge because of the elevated call for from the agricultural areas.

It is anticipated to pave the manner for the introduction of a 'One India, One Agriculture Market' via way of means of selling barrier-unfastened inter-country and intra-country change with provisions of digital buying and selling as well. This ought to assist accurate the local disparities in call for and deliver of the rural produce. This ought to assist farmers of areas with surplus produce to get higher charges and customers of areas with shortages, decrease charges.

Against

Some of the farmer groups and others have known as the acts corporate-pleasant and anti-farmer and feature expressed the concern that the brand new acts might also additionally harm the farmers' interests. The payments have confronted sturdy protests especially from Punjab farmers and from competition parties.

An Analysis Of Opposition To Law And Social Transformation: A Study In Vadodra

Since agriculture and markets are State subjects – access 14 and 28 respectively in List II – the acts are being visible as an instantaneous encroachment upon the features of the States and towards the spirit of cooperative federalism enshrined withinside the Constitution. The Centre, however, argued that change and trade in meals objects is a part of the concurrent list, consequently giving it constitutional propriety.Farmers[2]worry that the brand new proposed gadget will stop the minimal guide rate regime. They worry that encouraging tax-loose personal change out of doors the APMC mandis will make those notified markets unviable, which can cause a discount in authoritiesprocurement itself. The advent of personal mandis will power agriculture commercial enterprise toward personal mandis, finishing authorities markets, middleman structures and APMCs. In a situation in which increasingly more buying and selling movements out of the APMCs, those regulated marketplace yards will lose revenues. As a result, massive company homes will overtake markets, thereby purchasing farm produce at incidental rates. Critics view the dismantling of the monopoly of the APMCs as a signal of finishing the confident procurement of meals grains at minimal guide prices (MSP). This should cause the growing clout of personal customers and will cause low bargaining powers of the farmers. Lack of statutory guide withinside the acts for the MSP is a primary factor of concern, specifically for farmers from Punjab and Haryana, in which 65% of wheat (2019) is procured at MSP through the Food Corporation of India and country agencies. Critics argue that making sure a bigger range of farmers get the MSP for his or her produce and straightening kinks withinside the APMCs, in preference to making those State mechanisms redundant is the want of the hour Mandisconvey in sales for nation governments. The diversion of agriculturalalternate

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closer to non-public mandisought to result in the lack of states' revenues. Some states are worried approximately the lack of sales from mandi taxes and fees, which presently variety from 8.5% in Punjab to much less than 1% in a fewStates. The deregulation of the sugar enterprise in 1998, which paved the manner for non- public establishments, did now no longer bring about a good sized development in

[2] TIMES OF INDIA,FARM BILL,2020.

farmers' productiveness or incomes. A state-led try in Bihar to decontrol the APMCs[3] in 2006 has now no longer ended in anboom in farmers' profits or stepped forward infrastructure. Without robust institutional arrangements, laissez-faire (no monetary interventionism) coverage can also additionally damage lakhs of unorganised small farmers. The lack of ability of the small and marginal farmers to recognize the phrases of the agreement can also additionally result in the exploitation of such farmers. The loss of bargaining electricity of farmers with large businesses is likewise a first-rate concern. Critics are fearful approximately formal contractual responsibilities attributable to the unorganised nature of the farm zone and shortage of sources for a felony struggle with personal company entities. The Price Assurance Act, even as presenting safety to farmers towards rate exploitation, does now no longer prescribe the mechanism for rate fixation. There is apprehension that the loose hand given to personal company homes ought to cause farmer exploitation. Article 246[4] of the Constitution places "agriculture" in access 14 and "markets and fairs" in access 28 of the State List. But access forty two of the Union List empowers the Centre to regulate "inter-State change and trade". While change and trade "withinside the State" is beneathneath access 26 of the State List, it's far difficulty to

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the provisions of access 33 of the Concurrent List – beneathneathwhich the Centre could make legal guidelines that might be triumphant over the ones enacted through the states. Entry 33 of the Concurrent List covers change and trade in "foodstuffs, which include suitable for eating oilseeds and oils, fodder, cotton and jute". The Centre, in different words, can byskipany regulation that gets rid of all impediments to each inter- and intra-nation change in farm produce, at the same time as additionally overriding the present nation APMC Acts. The FPTC Act does exactly that. However, a few professionals make a difference among agricultural "marketing" and "change". Agriculture in step with se might cope with the whole thing that a farmer does — proper from subject practiseand cultivation to additionally the sale of his/her personal produce. The act of number one sale at a mandithrough the farmer is as much "agriculture" as manufacturing withinside the subject. "Trade" starts most effective after the produce has been "marketed" through the farmer. Going through this interpretation, the Centre is inside its rights to border legal guidelines that sell barrier-unfastened change of farm produce (inter- in addition to intra-nation) and do now no longer permit stockholding or export restrictions. But those may be most effective after the farmer has sold. Regulation of the primary sale of agricultural produce is a "marketing" obligation of the states, now no longer the Centre. The Judiciary will ought to take a name at the constitutional validity of the farmacts,2020.An evaluation of the latest legal guidelines makes it cleanthat as in opposition to the general false impression that the triumphing machine of Minimum Support Price (MSP) is being replaced,alternatively new alternatives have been being recommend for the farmers via those farm bills. The authorities has made it cleanthat procurement at MSP will preserve and additionally that the mandis will now no **An Analysis Of Opposition To Law And Social Transformation: A Study In Vadodra**

longer forestall functioning. Under thebrand new machine, farmers can have the choice to promote their produce at different locations similarly to the mandis. It is really well worth noting that handiest 6% of farmers surely promote their vegetation at MSP rates, consistent with the 2015 Shanta Kumar Committee's record the use of National Sample Survey data. None of the legal guidelines at once impinges upon the MSP regime. There are fears that agreement farming will result in land lack of the small and marginal farmers to large corporates. However, good enough safety of land possession is in location to guard farmer interests. The act explicitly prohibits any sponsor organization from obtaining the land of farmers – whether or not thru purchase, hire or mortgage. The factor to be aware is that agreement cultivation is voluntary in nature and farmers can't be compelled into an agreement. The Indian farmer

[3]APMC- Agricultural Produce Market Committee.

[4]INDIA CONST. art. 246- Division of Power between the Union and the States.

constitutes forty in step with cent of the u .s .andan excellent better percent of its negative and because the to be had records factors out, is beneathneath substantial stress. Indian monetary and social improvement relies upon upon the empowerment of the farmers and the agricultural phase of our population. Thus there's anpressing want for agricultural zone reforms to transport past the antiquated agricultural regulations. The Indian farm payments are consistent with global priority in which some of growing economies had been making adjustments to their agriculture regulations because the Nineteen Nineties to inspire non-public zone involvement which could offer a chief fillip to the zone. The International Monetary Fund has additionally subsidized the latest farm acts as being an essential step withinside the proper direction. The flow to make bigger the marketplace for agricultural produce is welcome however this must be supplemented via way of means of measures in an effort to

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Assist hold the existing 'protection net' mechanisms like MSP and public procurement. Though a farmer could have the liberty to pick in which he/she desires to sell, he/she might not have then formation to barter the pleasant phrases with a personal company. The country must paintings toward empowering the farmers on this direction. The authorities have to create allowing infrastructure to allow the farmers to do barrier- loose buying and selling of agricultural commodities.The technique of figuring out expenses, which includes assured fee and further quantity, need to be supplied withinside the settlement as annexures. The authorities have to make certain appropriate provisions to make certain that the expenses aren't under the MSP. In case of expenses subjected to variations, the settlement settlement have to encompass a assured fee to be paid for such produce, and a clean reference connected to the winning expenses or another appropriate benchmark expenses for any extra quantity over and above the assured fee, which includes bonus or premium. There need to be time-sure redressal of grievances.In a nutshell, the 3 coverage reforms undertaken with the aid of using the Central government via the 3 new Acts are in step with the converting instances and necessities of farmers and farming. If they're applied withinside the right spirit, they may take Indian agriculture to new heights and usher withinside the transformation of the agricultural financial system. The reforms have generated optimism for India to end up ainternational strength in agriculture and a powerhouse for international meals supply. The reforms bring the seed for farmers' prosperity and transformation of the agricultural financial system and to make it a boom engine of the Indian financial system

Impact Of Covid-19 Lockdown On The Rural Economy Of Dairy Farming

(Case Study in Sangavi Panchayat Samiti Gan of Phaltan Tehsil, Satara District, MH)

Mr. Shende Popat[1] Dr. Jadhav Ashish[2] Miss. Ghuge Radhika[3] Mr. Kadam Rajaram[4]

[1]Ph. D. Research Scholar, Department of Geography, Shivaji University, Kolhapur.
[2]Asst. Prof. Dept. of Geography, S.M. Dr. Bapuji Salunkhe College, Miraj, Dist. Sangli.
[3]Ph. D. Research Scholar, Dept. of Geography, PAH Solapur University, Solapur.
[4]Vice Principal, Sahakarbhushan S. K. Patil College, Kurundwad, Tal. Shirol, Dist. Kolhapur.

Introduction

Agriculture is the backbone of the Indian economy. Agriculture is the source of livelihood for over 70 percent of the population. In the subsidiary occupation for agriculture dairy is a leading activity and plays a vital role in the rural economy. Dairy helps to tackle the serious problem of unemployment. Dairy activity brings about significant change in socio – economic structure of rural economy. Dairying provides employment to the rural landless, small and marginal farmers with supplementary employment and regular source of income and ultimately helps them to increase the standard of living. The cattle play a very important role in the development of the rural economy, the economic importance of milk and other milk products. However, the role of cattle and dairy farming as an economy is assessed on the basis of contribution of cattle production to total agricultural production. Apart from milk, cow dung and urine are good sources of organic manure, useful for making soil fertile. Generally cows and buffaloes live on plants and vegetable feeds which man cannot eat. They convert their rough feeds to products useful to man like milk.

Study Area

The Sangavi Gan of Panchyat Samiti comes in a Phaltan tehsil, Phaltan Panchayat Samiti of Satara District. Sangavi Gan has a group of seven adjoining villages; it included Algudewadi, Rajale, Somanthali, Sangavi, Songaon, Sathegaon and Sarde villages. This Gan has 5158 households along with 25295 human populations with respect to the 2011 census. This Gan has a 7.3 sq.km area. The district sub headquarter is Phaltan which is on an average 10 to 15 km away from each Gan villages. The district headquarter Satara is 75 to 85 km away from these villages.

Figure 1: Location Map of Study Area

Phaltan Railway Station has 15 km limits of villages. The Baramati tehsil is adjoining this Gan, which comes in Pune district. Each village has its own Gram Panchayat offices. This region comes under the rain shadow zone. The summer season is in extreme condition compared to adjoining tehsils. They have Nira River and Nira river right bank canal as a main permanent irrigation source. The wells and borewells are seasonal but because of the Nira River and canal their ground water table level is charged by month to month. Road network is in good condition. This Gan is connected by road to Phaltan, Baramati, Natepute, Man, Khatav tehsil directly.

Objective

1. To study the impact of covid-19 lockdown on the rural economy of dairy farming a case study in Sangavi Panchayat Samiti Gan of Phaltan Tehsil, Satara District.

Database And Methodology - For the present research study used both types of database i.e. primary and secondary dataset. The primary data are collected by using Google form. In this too we create an appropriate schedule of questions and send it to the milk producer's mobile of study areas; after filling the mentioned information they send it back. The secondary data are obtained by using Census of India, 2011. Simple percentage formula is used for calculating the result and that obtained results are plotted in graphical methods.

Discussion The obtained data and mined results are discussed in the following points.

Sangavi Panchayat Samiti Gan: A Belt of Animal Husbandry

The Gan are well in Co-operative, Industrial, Economic development. Basically the agro based movement sector has a high range of sub-components. In this Gan have Primary Milk Societies, Chilling Centers, Animal Feeds Unit and Milk Sangh. Animal husbandry with agriculture is the main economic activity which is done by each and every family of the Gan. Each family has at least one Goat or Cow in front of the house as a family milk purpose. Because of this thinking of people they are making a dominant milk producer of the tehsil. In this Gan has 11 Primary Milk Societies, 3 Chilling centers and 3 Milk sangh. Out of milk sangh's one (Heritage Milk) sangh has multistate, and remaining is in small and limited capacity of milk. For the successful animal husbandry the road network, fodder availability, healthy competition in producing milk is the same as purchasing produced milk.

5.2. Human Population and Animal Quantification

The Sangavi Panchayat Samiti Gan includes seven villages. Those are adjoining to each other. As per census 2011 they have 5158 households containing 25295 peoples. Out of the total Gan villages Sangavi village has the highest households and 5955 human population. The total area of Gan is 7318 m^2 and the highest areal extents are occupied by Sangavi village.In the sample case study period, we are taking a sample 175 households of the total houses and we are sampling 1146 human population. In this surveyed households having 1194 cows and 87 Buffaloes population.

Table 1: Demographic profile of Sangavi Panchayat Samiti Gan

Village	Sample HH Population	Sample HH Cows	Sample HH Buffaloes	Sample HH	Census 2011 HH	Total Human Population (2011)	Area (m^2)
Algudewadi	173	149	7	25	420	2371	490
Rajale	160	176	15	25	987	4675	1365
Sangavi	168	173	13	25	1245	5915	1762
Sarde	169	178	13	25	820	4288	1034
Sathegaon	162	172	13	25	506	2363	926
Somanthali	161	168	12	25	803	3896	1032
Songaon	153	178	14	25	377	1787	709
Total	**1146**	**1194**	**87**	**175**	**5158**	**25295**	**7318**

Source: Based on Census of India, 2011 and Intensive Field work, 2021

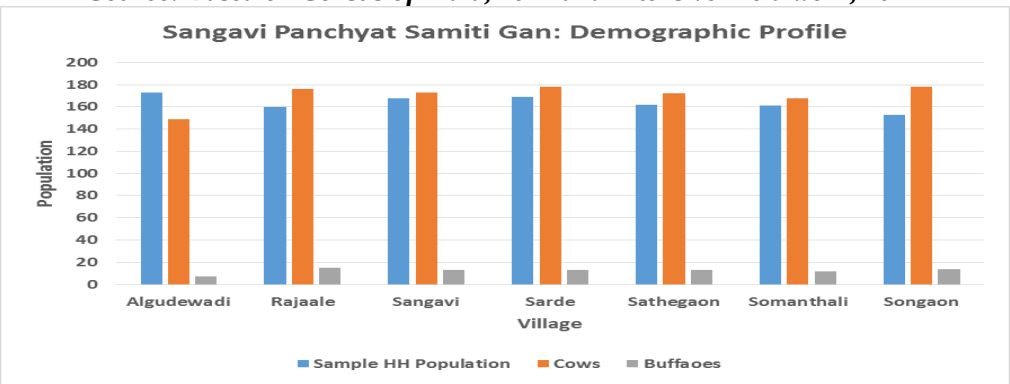


Figure 2: Demographic profile of study area

5.3. Village-wise milk production, rate of milk and milk income

In this section the author is discussing the village wise and animal type wise milk production, rate of milk obtained by mother society, daily and monthly income with respect to per capita income.

5.3.1 Village-wise milk production, rate of milk and milk income of March, 2021

Below mentioned table 2 shows the details of milk production, milk rate, monthly income and per capita income of March month of 2021. The Sangavi Gan produces 4.18 lakhs liter milk in the month of March. Out of the total milk production cows are produced 4.10 lakh liter milk and remaining are produced by buffaloes. Sarde village produces the highest 65778 liter (15.72 %) milk production and Algudewadi village produces 51306 liter (12.26 %) milk production of the Gan. Out of the total cow milk production Sarde village has the highest 64693 liter (15.76 %) and Algudewadi village produces the lowest 50345 liter (12.26 %) milk production of the Gan. In the buffalo milk production Rajale village produces the highest 1271 liter (16.01 %) and Algudewadi village 961 liter (12.10 %) milk production of the Gan.

Table 2: Milk production, rate of milk and milk income of March, 2021

Content	Month total milk Production (Liter)			Average milk rate/Liter		Monthly income of milk (Rs.)			Income per Day per Capita	
Village	**Cow**	**Buffalo**	**Total**	**Cow**	**Buffalo**	**Cow**	**Buffalo**	**Total**	**People**	**Animal**
Algudewadi	50345	961	51306	29.48	34.71	1104843	24725	1129568	43	67
Rajale	58575	1271	59846	30.14	35.40	1333102	33327	1366429	59	53
Sangavi	56743	1147	57890	30.62	35.33	1311944	30038	1341982	57	55
Sarde	64693	1085	65778	30.60	35.00	1498097	28175	1526272	65	55
Sathegaon	63211	1178	64389	30.54	35.00	1466371	30843	1497214	65	60
Somanthali	62146	1116	63262	30.70	34.30	1438728	28290	1467018	65	61
Songaon	54630	1178	55808	30.30	34.60	1245753	30153	1275906	62	47
Total/Avg.	410344	7936	418280	30.34	34.91	9398838	205551	9604389	59	57

Source: Based on Intensive Field work of June, 2021

The average milk rate of the cow is 30.34 Rs./liter and the buffalo is 34.91 rupees per liter in the month of March 2021. The highest average milk rate of cow is 30.70 Rs./liter which is in Somanthli village and the lowest average milk rate of cow is 29.48 Rs./liter which is in Algudewadi village. Buffalo's milk rate is higher than the cow's milk. The average milk rate of buffalo is 34.91 Rs./liter. Highest average milk rate of buffalo is 35.40 Rs./liter in Rajale village and the lowest average milk rate of buffalo is 34.30 Rs./liter which are in Somanthali village.Total monthly income of milk from the cow is 9398838 rupees and from the buffalo is 205551 rupees of the Sangavi Gan. Sarde village has the highest monthly income of milk from cows and buffalo which is 1526272 rupees. Lowest monthly income of milk is 1129568 rupees in the village Algudewadi. Highest monthly income of cow milk is 1498097 rupees in Sarde village as well as lowest is 1104843 rupees in Algudewadi village. Highest monthly income from buffalo milk is in Rajale village which is 33327 rupees and lowest is 24725 rupees in the village of Algudewadi.

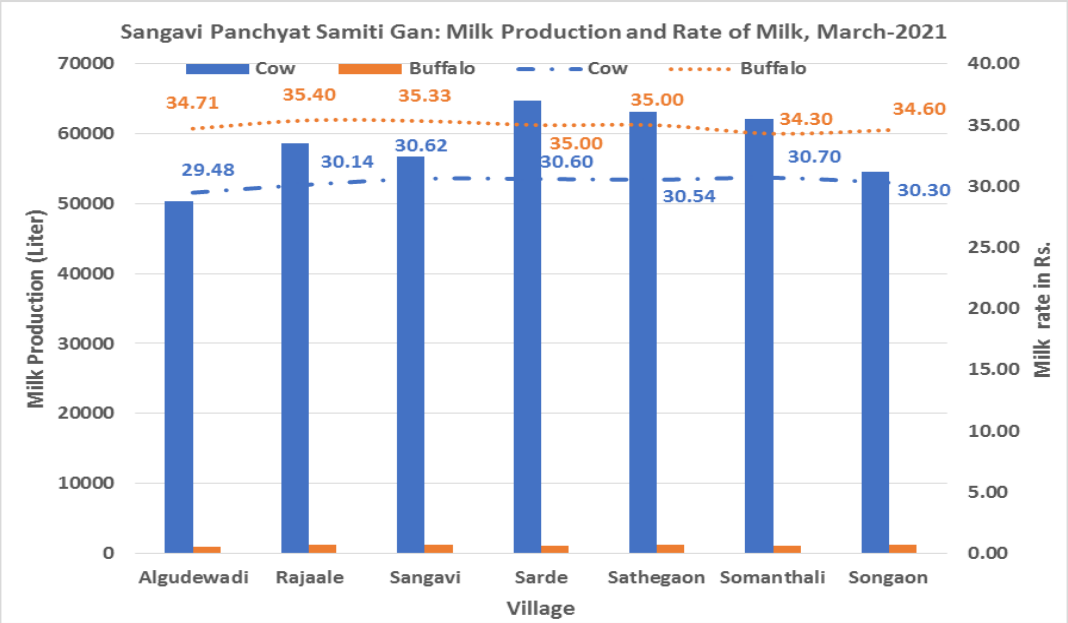


Figure 3: Milk production, rate of milk and milk income of study area March, 2021

5.3.2 Village-wise milk production, rate of milk and milk income of April, 2021

The Sangavi Gan produces 3.78 Lakh liter milk in the month of April 2021 which is given in table 3. Out of total milk production 3.73 Lakh liter milk is produced by cows and remaining milk is produced by the buffaloes. Sangavi village produces the highest 57339 (15.13%) liter milk production Algudewadi village produces 45628 (12.04%) liter milk production of the Gan. Out of total cow milk production Sangvi village has the highest 56580 (15.16%) liter milk production and Algudewadi village produces the lowest 45030 (12.07%) liter milk production of the Gan. In the buffalo milk production Rajale village produces the highest 989 (17.26%) liter and Algudewadi village 598 (10.44%) liter milk production of the Gan.The average milk rate of the cow is 19.71 Rs./liter and the buffalo is 34.71 rupees per liter in the month of April 2021. The highest average milk rate of cows is 20.38 Rs./liter which are in Algudewadi village and the lowest average milk rate of cows is 19.30 Rs./liter which is in Rajale village. Highest average milk rate of buffalo is 43.50 Rs./liter in Sarde village and the lowest average milk rate of buffalo is 28.29 Rs./liter which are in Algudewadi village.

Table 3: Milk production, rate of milk and milk income of April, 2021

Content	**Month total milk Production (Liter)**			**Average milk rate/Liter**		**Month income of milk (Rs)**			**Income per Day per Capita**	
Village	**Cow**	**Buffalo**	**Total**	**Cow**	**Buffalo**	**Cow**	**Buffalo**	**Total**	**People**	**Animal**
Algudewadi	45030	598	45628	20.38	28.29	913110	24130	937240	27	50
Rajale	54570	989	55559	19.30	36.29	1081890	41648	1123538	37	33
Sangavi	56580	759	57339	19.66	32.00	1159860	31236	1191096	39	35
Sarde	54750	759	55509	19.86	43.50	1138920	32794	1171714	36	32
Sathegaon	54930	874	55804	19.52	31.50	1114845	36480	1151325	38	35
Somanthali	53640	828	54468	19.38	30.00	1075830	32756	1108586	37	35
Songaon	53520	920	54440	19.44	41.00	1057200	37278	1094478	41	30
Total	**373020**	**5727**	**378747**	**19.65**	**34.65**	**7541655**	**236322**	**7777977**	**36**	**36**

Source: Based on Intensive Field work of June, 2021

Total monthly income of milk from the cow is 7541655 rupees and from the buffalo is 236322 rupees of the Sangavi Gan. Sangavi village has the highest monthly income of milk from cows and buffalo which is 1191096 rupees.

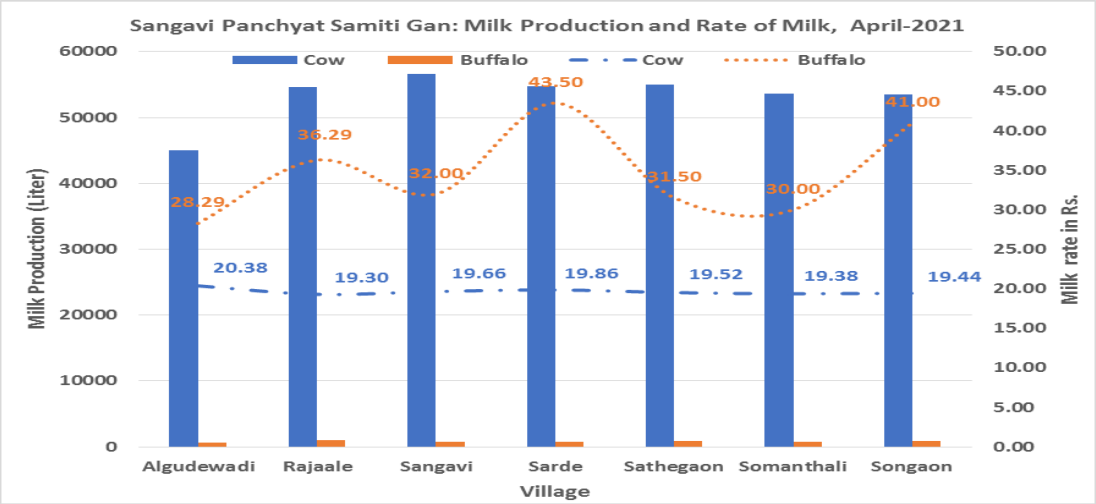


Figure 4: Milk production, rate of milk and milk income of study area April, 2021

Lowest monthly income of milk is 937240 rupees in the village Algudewadi. Highest monthly income of cow milk is 1159860 rupees in Sangavi village as well as lowest is 913110 rupees in Algudewadi village. Highest monthly income from buffalo milk is in Rajale village which is 41648 rupees and lowest is 24130 rupees in the village of Algudewadi.

5.3.3 Village-wise milk production, rate of milk and milk income of May, 2021

Table 4 shows the details of milk production, milk rate, monthly income and per capita income of May month of 2021. The Sangavi Gan produces 3.76 lakhs liter milk in the month of May. Out of the total milk production cows are produced 3.69 lakh liter milk and remaining are produced by buffaloes. Sarde village produces the highest 55645 liter (14.76 %) milk production and Somanthali village produces 51863 liter (13.76%) milk production of the Gan. Out of the total cow milk production Sarde village has the highest 54405 liter (14.72 %) and Somanthali village produces the lowest 50747 liter (13.73%) milk production of the Gan. In the buffalo milk production Sarde village produces the highest 1240 liter (16.73 %) and Algudewadi village 775 liter (10.46%) milk production of the Gan.

Table 4: Milk production, rate of milk and milk income of May, 2021

Content	Month total milk Production (Liter)			Average milk rate/Liter		Month income of milk (Rs)			Income per Day per Capita	
Village	**Cow**	**Buffalo**	**Total**	**Cow**	**Buffalo**	**Cow**	**Buffalo**	**Total**	**People**	**Animal**
Algudewadi	53692	775	54467	18.38	22.57	1016320	17546	1033866	29	51
Rajale	52700	1085	53785	17.30	32.57	939982	24676	964658	31	27
Sangavi	52638	992	53630	17.46	29.57	957776	22909	980685	31	29
Sarde	54405	1240	55645	17.86	33.29	1018893	28892	1047785	32	28
Sathegaon	53537	1054	54591	17.52	28.50	979073	24087	1003160	32	29
Somanthali	50747	1116	51863	17.38	27.88	920499	24831	945330	31	29
Songaon	51708	1147	52855	17.44	37.17	920778	25141	945919	35	25
Total	**369427**	**7409**	**376836**	**17.62**	**30.22**	**6753319**	**168082**	**6921401**	**32**	**31**

Source: Based on Intensive Field work of June, 2021

The average milk rate of the cow is 17.57 Rs./liter and the buffalo is 30.28 rupees per liter in the month of May 2021. The highest average milk rate of cows is 18.38 Rs./liter which is in Algudewadi village and the lowest average milk rate of cows is 17.30 Rs./liter which is in Rajale village. Highest average milk rate of buffalo is 37.17 Rs./liter in Songaon village and the lowest average milk rate of buffalo is 22.57 Rs./liter which is in Algudewadi village.Total monthly income of milk from the cow is 6753319 rupees and from the buffalo is 168082 rupees of the Sangavi Gan. Sarde village has the highest monthly income of milk from cows and buffalo which is 1047785 rupees. Lowest monthly income of cow and buffalo milk is 945330 rupees in the village Somanthali. Highest monthly income of cow milk is 1018893 rupees in Sarde village as well as lowest is 920499 rupees in Somanthali village. Highest monthly income from buffalo milk is in Sarde village which is 28892 rupees and lowest is 17546 rupees in the village of Algudewadi.

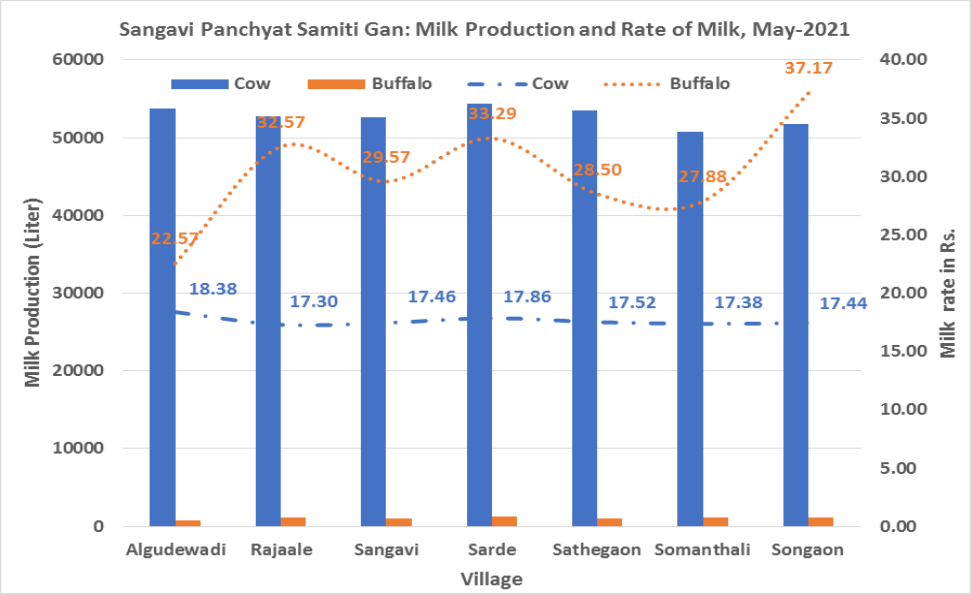


Figure 5: Milk production, rate of milk and milk income of study area May, 2021

5.3.4 Village-wise milk production, rate of milk and milk income of June, 2021

The Sangavi Gan produces 3.57 Lakh liter milk in the month of June 2021 which is given in table 5. Out of total milk production 3.49 Lakh liter milk is produced by cows and remaining milk is produced by the buffaloes. Sathegaon village produces the highest 54591 (15.28%) liter milk production whereas Algudewadi village produces 40858 (11.43%) liter milk production of the Gan. Out of total cow milk production Sathegaon village has the highest 53537 (15.30%) liter milk production and Algudewadi village produces the lowest 40052 (11.45%) liter milk production of the Gan. In the buffalo milk production Sarde village produces the highest 1240 (16.59%) liter and Algudewadi village 806 (10.78%) liter milk production of the Gan.The average milk rate of the cow is 17.00 Rs./liter and the buffalo is 27.42 rupees per liter in the month of June 2021. The highest average milk rate of cows is 17.56 Rs./liter which are in Algudewadi village and the lowest average milk rate of cows is 16.50 Rs./liter which are in Somanthali village. Highest average milk rate of buffalo is 29.57 Rs./liter in Sangavi village and the lowest average milk rate of buffalo is 22.86 Rs./liter which are in Algudewadi village.

Table 5: Milk production, rate of milk and milk income of June, 2021

Content	Month total milk Production (Liter)			Average milk rate/Liter		Month income of milk (Rs)			Income per Day per Capita	
Village	Cow	Buffalo	Total	Cow	Buffalo	Cow	Buffalo	Total	People	Animal
Algudewadi	40052	806	40858	17.56	22.86	864804	22686	887490	20	31
Rajale	51522	1085	52607	16.75	26.57	1126966	30248	1157214	30	27
Sangavi	52638	992	53630	17.10	29.57	1174048	28082	1202130	31	29
Sarde	49569	1240	50809	17.25	28.67	1141425	35302	1176727	30	26

Sathegaon	53537	1054	54591	16.90	28.50	1200154	29526	1229680	32	29
Somanthali	50747	1116	51863	16.50	27.88	1128353	30438	1158791	31	29
Songaon	51708	1178	52886	16.80	27.83	1128695	32300	1160995	35	25
Total	**349773**	**7471**	**357244**	**17.50**	**31.13**	**7764445**	**208582**	**7973027**	**30**	**28**

Source: Based on Intensive Field work of June, 2021

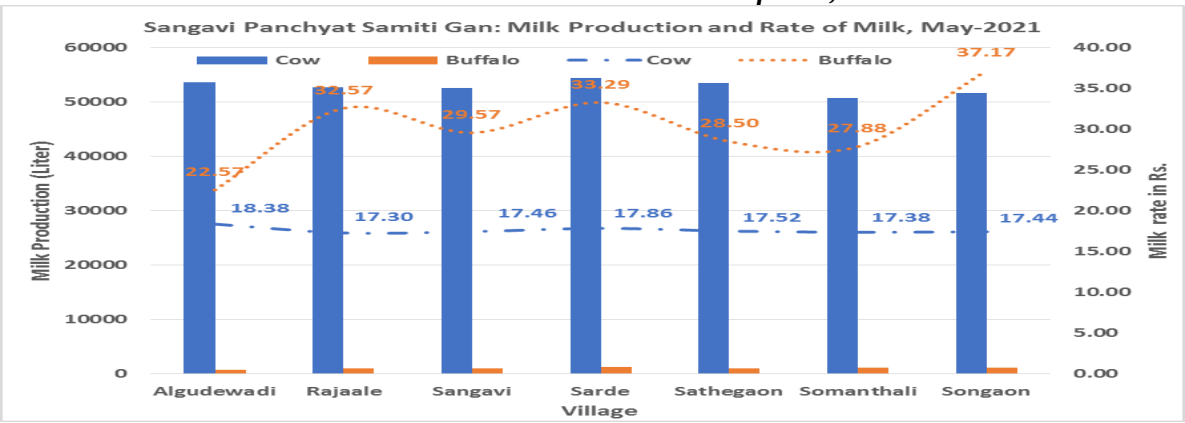


Figure 6: Milk production, rate of milk and milk income of study area June, 2021

Total monthly income of milk from the cow is 7764445 rupees and from the buffalo is 208582 rupees of the Sangavi Gan. Sathegaon village has the highest monthly income of milk from cows and buffalo which is 1229680 rupees. Lowest monthly income of cow and buffalo milk is 887490 rupees in the village Algudewadi. Highest monthly income of cow milk is 1200154 rupees in Sathegaon village as well as lowest is 864804 rupees in Algudewadi village. Highest monthly income from buffalo milk is in Sarde village which is 35302 rupees and lowest is 22686 rupees in the village of Algudewadi.

Findings And Suggestions

Basically the rates of milk are actually not based on the production cost of milk. The milk producer faces a lot of problems like, availability of fodder, rate of fodder and animal feeds, availability of manpower, drinking water and quality cattle's. Major problems are in animal sheds, the lactation period of cattle is more than the standard time. Dependent calves and other animals are based on the milch animal milk. The balance of private and government sector milk societies are not in equal position, it's have hands of the private sector so they have a clear agenda of maximum profit.

Village	**Total Human Population**	**March-April**		**April-May**		**May-June**	
		Per Capita Income difference (Rs)	**Income Difference (Rs)**	**Per Capita Income difference (Rs)**	**Income Difference (Rs)**	**Per Capita Income difference(Rs)**	**Income Difference (Rs)**
Algudewadi	2371	16	38174.83		Positive Difference	9	20781.13
Rajale	4675	22	103209.31	6	27998.94	1	2775.78
Sangavi	5915	18	105194.55	8	47251.91	0	0.00
Sarde	4288	28	121360.83	4	17398.24	2	9353.49
Sathegaon	2363	27	63134.58	6	13792.38	0	0.00
Somanthali	3896	28	109775.18	6	24623.17	0	20.17
Songaon	1787	21	38287.61	6	11596.78	0	Positive Difference
Total	25295		579136.89		142661.42		32930.57

The rate of cow milk has hurriedly decreased, its breakdown from Rs. 30.34/liter to 17.50/liter and buffalo milk rate decreased from Rs. 34.91/liter to Rs. 27.41/liter in the 100 days. The per capita income of the family decreased by Rs. 29/Person of the Gan and per animal income also decreased Rs. 29/animal. In the period March to April month, the milk producers are suffering from a huge economic loss condition. Loss of the mentioned period is Rs. 5.79 lakh. In the April to May month this loss came down to Rs. 1.42 lakh and it continued towards the Rs. 30000 in May to June month. We are appealing to the government for sustaining a milk producer as well as the dairy sector positively. They can give economic support through declaring a subsidy for individual milk producers. These crises not come only at the Sangavi Gan, it also suffered all over milk producers of the Indian Subcontinent.

Reference

1. Census of India, (2011)
2. Khatakale A. B. (1995): "Dairy Farming in Solapur District: A Geographical Analysis", Dissertation submitted to Shivaji University, Kolhapur for the degree of M. Phil (Geography).
3. Patil M. G. (2002): "A critical study of pricing of milk and milk products with special reference to Government Milk Scheme, Miraj, the thesis of Ph.D. in Economics Submitted to Shivaji University, Kolhapur.
4. Rajhans S. M. (2006): "Dynamics of Rural Development in Sangli District: with special reference to Swarana Jayanti Gram Swarojgar Yojana: A Geographical Analysis" the thesis submitted to Shivaji University, Kolhapur for Ph.D. degree (Geography).
5. Sarang S. B. (1982): "Dairy Farming in Kolhapur District", A Geographical Analysis," the thesis of Ph.D. in Geography Submitted to Shivaji University, Kolhapur.

Application of Geospatial Technology For Groundwater Potential Mapping inAmbad Taluka of jalna District (MS)

Dr.Sominath Sarangdhar Khade
Dept.of Geography Rashtramata Indira Gandhi Arts Science &Commerce college Jalna
sominath.khade@gmail.com

Abstract:

Ground water is one of the vital natural resource available on the earth which plays an crucial role for the development of rural as well as urban area. Ground water has limited extendand volume. Due to rapid growth of population, urbanization and industrialization the available water resource are unable to meet the agriculture, industrial and domestic needs. The aim of this study was to investigate new water sources using geospatial technonology.The induction of modern technologies of geospatial tools like Remote Sensing (RS) Geographic Information System (GIS) and Global Positioning System (GPS) have provided very powerful methods of surveying, identifying, classifying, mapping, monitoring, characterization, and to track changes in the composition, extent, and distribution of several forms of earth resources. This technology contributes on efficient and effective result oriented methods for studying the occurrence and movement of ground water resources. In this present study indicate various ground water potential zones for the assessment of ground water availability in Ambad Taluka of jalna district. The thematic layers considered in this study are Geomorphology, Drainage, Soil, Rainfall, Slope, Land use and surface water body, which were prepared using the Cartosat-1 and landsat-8 satellite imagery and conventional data. The maps are prepared in Arc GIS 10.3 based on weighted overlay analysis and computed all the multiply values for quick assessment of ground water potential zones in the study area.

Keywords: ground water, remote sensing, geographical information system, potential zone, watershed

Introduction

Water is the most valuable and vital resource for sustenance of life and also for any developmental activity which found in two forms i.e. surface water and ground water. Ground water is the water that seeps through rocks and soil and is stored below the ground. The depth from the surface at which ground water is found is called the water table. The water table can be as shallow as a foot below the ground or it can be a few hundred meters deep. It is an significant natural resource in present day, but of limited use due to frequent failures in monsoon, undependable surface water, and rapid urbanization and industrialization has created a major riskto this valuable resource. Over the years the growing importance of groundwater based on an increasing need has led to unscientific exploitation of groundwater creating a water stress condition. This alarming situation calls for a cost and time effective technique for proper evaluation of groundwater resources and management planning. The remote sensing (RS) and Geographic information system (GIS) tools can open new paths in water resource studies. Analysis of remote sensing data along the survey of India (SOI) topographical sheets and collateral information with necessary ground truth verifications help in generating the baseline information for groundwater targeting. Identification of groundwater occurrence location using remote sensing data is based on indirect analysis of directly observable Terra in features like geological structures, geomorphology, and their hydrologic characteristics. The use of remote sensing and GIS tools to extract detailed drainage, soil, rainfall, slope and geomorphic features in parts of Ambad Taluka (Jalna District) suggests appropriate methods for groundwater potential zone studies.

Study Area

The district of jalna is one of the most important districts of the Maharashtra. Jalna is famously known as the Industrial city District is approximately situated at the center part of Maharashtra state of Republic of India and in northern direction of Marathwada region. Specifically district lies between 19˚1 north to 21˚3 North Latitudes and 75˚4 East to 76˚4 East Longitude.Jalna was formerly a part of Nizam State and after the Marathwada Mukti Sangram, became part of India, as a tahsil of Aurangabad district. Jalna district erstwhile a part of Aurangabad district was formed on 1st May 1981 by carving out Jalna, Bhokardan, Jafrabad, Ambad tahsils of Aurangabad district and Partur tahsil of Parbhani district.The boundaries of Jalna district are adjacent to Parbhani & Buldhana on east, Aurangabad on west, Jalgaon on north and Beed on south.Jalna district covers an area of 7,612 Sq.Kms, which is 2.47% of the total state area.The district head quarter is at Jalna & well connected to state capital and national capital by broad gauge railway line. Major towns of the state are also connected by state highways. Jalna district is well known for it's hybrid seed industries, steel re-rolling mills, bidi industry & agro based industries like dal mill. The district is also known for the highest production of Sweet Lemon(Mosambi) in the state.The peoples of Jalna district played a important role in the Marathwada MuktiSangram, in which Shri. Janardan

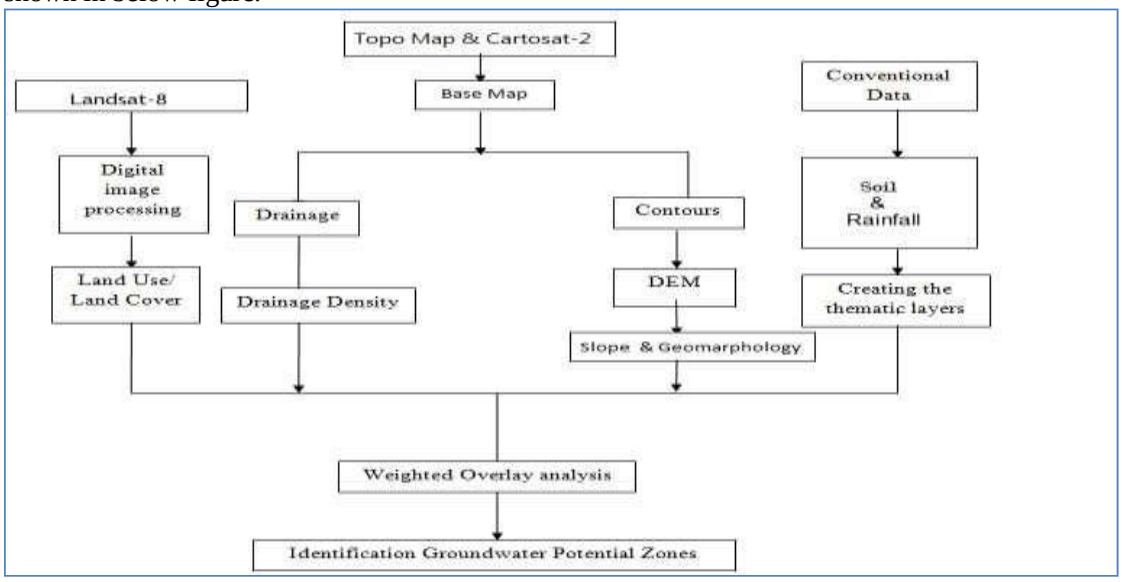
Mama Nagapurkar of Jalna laid down his life for motherland .Land in the region is best suitable for agriculture. The physical setting of jalna district shows a contrast of immense dimensions and reveals a variety of landscapes influenced by relief ,climate and vegetation. The climate ranges from the rainiest in the Ambad region, which has an average annual rainfall of over 4000 mm. and averages temperature is 40° C. This dry climatic situation largely affect on drainage pattern and agriculture.

Aim and objective

The objective of this paper is to demonstrate the capability of geospatial technology in ground water resource management. The overall aim of this study is to contribute towards systematic groundwater studies utilizing remote sensing, Digital Elevation Models (DEM) and Geographic Information Systems (GIS) in the assessment of groundwater resources. The specific objective of this study to identify and delineate groundwater potential zones through integration of various thematic maps with GIS techniques.

Database & Methodology

The study has been conducted based on the secondary data which have been collected from concerned department. The study has considered nine parameters for the groundwater level assessment as mentioned in introduction. The elevation data has been downloaded from ASTER DEM and this has been used as base to create the elevation and slope, then using the elevation data the drainage network has been created. The Landsat-8 satellite data downloaded from earthexplorer.usgs.gov has been used to find out the land use and land cover pattern of study area. The spatial data such as soil, geomorphology and rainfall were collected from socio- economic abstract of Jalna District. The collected rainfall data had information about the particular rain gauge station so the method Inverse Distance Weightage (IDW) in ArcGIS used to find out overall rainfall variation in the study area.In this study, weighted overlay has been developed for delineate ground water potential zone using geospatial techniques. This method may be the simplest and best-known type of GIS model. In order to access groundwater Potential zones, different thematic layers used for this study are Geomorphology, LULC, Drainage density, Slope, Soil and rainfall. These layers prepared using satellite imagery and the conventional data. These thematic layers integrated with the help of Arc GIS V10.3 and Erdas Image V10.5 software. For these geographic units weight parameters decided based on their capability to store ground water. The methodology adopted flowchart for the present study is shown in below figure.



Result and Discussion

Mapping and monitoring aerial extent of surface water bodies/reservoirs using geospatial technology has been well established. Remote sensing can be defined as the observation of targets from distance without physical contact (Peiffer, 2007). GIS is a computer based system dealing with the geographic data or maps for capturing and processing spatial data of geographic nature and used in input, storage, manipulation and display of geographic data (Sharma et. al, 2015). Availability of freshwater has determined the growth of civilization in the past. As the world‘s population continues to increase, it is predicted that the availability of fresh water for human needs is a serious limiting factor in the future. Though the estimated water volume on the planet is about 1.4billion km3nearly 96.5% of it is held up in the ocean as saltwater. An estimated 10.5million km3 of freshwater, which is a third of total freshwater available on earth are stored below the surface in the form of groundwater. It is widely, but

unevenly distributedand is an important source for irrigation and drinking purposes (Hasan et.al, 2017). Groundwaternormally exists whenever water infiltrates beneath the surface, the soils and rocks beneath the surface are porous and permeable enough to hold and transmit this water and the rate of infiltration is sufficient that these rocks are saturated to an appropriate thickness. Groundwater is a renewable source and therefore, if located, exploited and managed carefully, can sustainforever (Handbook R.S., 2016). In this study, a set of hydrological, geological and topographical parameters that influence the occurrence of Ground Water. The following thematic maps prepared Geomorphology, LULC, Drainage density, Slope, Soil and rainfall. It is then integrated with weighted overlay in ArcGIS. Suitable ranks assigned for each category of these parameters. For these geographic units weight parameters decided based on their capability to store ground water.The procedure is repeated for all the other layers and resultant layers were classified again. The ground water potential zones were classified into four categories –poor, moderate, good and excellent. As mentioned in the methodology the selected six parameters viz. Geomorphology, Drainage density, Slope, Land use and land cover, Rainfall, soil have been created using GIS techniques.

Thematic map weight and Feature Ranking.

Parameter	Class	Rank	Weight
Geomorphology (Height from sea levelin mm)	468-520	5	20%
	520-558	4	
	558-620	3	
	620-717	2	
	717-859	1	
Drainage density(km/km2)	< 2.6	5	15%
	2.6 – 4.8	4	
	4.8- 7.01	3	
	7.01-9.48	2	
	9.48 <	1	
Slope (Degree)	Below -5	5	15%
	5-10	4	
	10-15	3	
	15-20	2	
	Above 20	1	
LULC	Water body	5	20 %
	Agriculture	3	
	Vegetation	4	
	Built up & open	1	
	Fallow Land	2	
Rainfall	Below 450	3	15%
	450-500	4	
	Above 500	5	
Soil	Shallow Soil	3	15%
	Medium	4	
	Deep	5	

Source: Compiled by Author

Groundwater Potential Zone in Ambad Taluka

These maps have been overlaid in terms of weighed overlay method using Spatial Analysis tool in Arc GIS 10.3 version. During weighed overlay analysis, the ranking has been given for each individual parameter of each thematic map and weights were assigned according to their influence for Geomorphology (20 %), drainage density (15%), Slope (15%), Landuse/Land cover (20%), rainfall (15%), and. oil (15%). The resulting maps presents the ground water potential zones in terms of Excellent (27.86 Km2), Good (1036.91 Km2), Moderate(398.45 Km2) and Poor zones (2.77 Km2). After overlay all these maps we have obtained the ground water potential zone map.The ground water recharge potential map show in (fig-3) the map provides broad idea about the favorable ground water recharge area. In this result it is shows that eastern part of the study area is highly suitable for ground water recharge and middle part is moderate suitable. Some part of the south-western and north-western site in hilly region is very low suitable for ground water recharge.

Conclusion:

The occurrence of groundwater in the study area is controlled by Geomorphology, Rainfall and Soil as revealed from GIS analyses and field investigations. Use of Remote Sensing and GIS technology is very useful for the preparation of groundwater prospective areas mapping & management plan on a scientific basis. The overall results demonstrate that the use of Remote sensing and GIS provide potentially powerful tools to study groundwater resources and design a suitable exploration plan. This gives more realistic groundwater potential map of an area which may be used for any groundwater development and management programmer.

References:

1. Surajit Bera (2016): *„Delination of groundwater potential zones in Dhanbad District, Jharkhand, using Remote Sensing and Gis techniques"*, International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056, e-ISSN: 2395 -0056 , Volume: 03 Issue: 07, Pp-1607-1616.
2. M. Kavitha Mayilvaganan & other (2011) : *„Delineating groundwater potential zones in Thurinjapuram watershed using geospatial techniques"* Indian Journal of Science and Technology, ISSN: 0974- 6846, Vol. 4 No. 11,Pp-1470-1477.
3. Vasudevan S (2015) : *„Delineation of groundwater potential zones in Coimbatore district, Tamil Nadu, using Remote sensing and GIS techniques"*, International Journal ofEngineering Research and General Science, ISSN-2091-2730, Volume 3, Issue 6, Pp- 203-215.
4. M.L.Waikar (2014): *„Identification of Groundwater Potential Zone using Remote Sensing and GIS Technique"* International Journal of Innovative Research in Science, Engineering and Technology, ISSN: 2319-8753, Vol. 3, Issue 5, Pp-12163-12175.
5. Mishra Shalu (2013): SPATIAL ANALYSIS OF DRAINAGE NETWORK FOR GROUND WATER EXPLORATION IN RIVER BASIN USING GIS AND REMOTE SENSING TECHNIQUES : A CASE STUDY OF TONS RIVER IN ALLAHABAD, INDIA' Journal of Environmental Research And Development, Vol. 7 No. 3, Pp-1316-1320.
6. Y. Yaswanth Kumar (2017): **„***IDENTIFICATION OF GROUNDWATER POTENTIAL ZONES USING REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM"*International Journal of Civil Engineering and Technology, ISSN Print: 0976-6308, Volume 8, Issue 3, March 2017, pp. 01–10.
7. Ramu Mahalingam B. (2014): *„Identification of ground water potential zones using GIS and Remote Sensing Techniques: A case study of Mysore taluk –Karnataka"* INTERNATIONAL JOURNAL OF GEOMATICS AND GEOSCIENCES**,** ISSN 0976 – 4380, Volume 5, No 3, Pp-393-402.
8. Kamal Ku. Barik (2017): *„Delineation of Groundwater Potential Zone in Baliguda Block of Kandhamal District, Odisha using Geospatial Technology Approach"* International Journal of Advanced Remote Sensing and GIS, ISSN 2320 – 0243, Volume 6, Issue 3, pp. 2068-2079.
9. Rajvir Singh (2014): *„Remote Sensing and GIS Approach for Groundwater Potential Mapping in Mewat District, Haryana, India"* International Journal of Innovative Research in Advanced Engineering, ISSN: 2349-2163, Volume 1 Issue 11, Pp- 106-111.

"Agriculture And Rural Study Of Mandangad Tahsil"

Prof. Vishnu Jaybhaye
LGM Arts College, Mandangad Dist. Ratnagiri-415203.
Email : vishnusarjerao@gmail.com

Introduction :-

Mandangad Tahsil is hilly and mountainous place and it remains backward in Socio-economic aspects. Rural area is contrasting to the urban area in the respects of Socio – economic development.Most of the services facilities and fundamental needs are not reached in the most of rural area. Therefore, the rural-urban interaction is essential for development of rural area. Till today, Adiwasi (aborigine) community is deprived from education, social-cultural, political and economical development. Therefore, they have to face many problems and difficulties especially the rural people of this district. That's why these rural communities are deprived from the stream of development, and exploited. To find out some difficulties and problems of these communities and suggest some remedies for the well development, the research scholar has selected the subject entitled "agriculture and rural study of Mandangad tahsil"

Significance Of The Study:-

Mandangad Tahsil is undeveloped and it is surrounded by hilly and mountainous area. So, Mandangad Tahsil is remains very backward because maximum rural community of this district is belong to various backward castes and tribes. Many benefits or schemes of government schedule are do not reached up to the rural backward people so that they are deprived from the progress difficulties of rural undeveloped community and put them forth the government as well as to make the awareness.

The research scholar has selected a subject for research entitled "agriculture and rural study of mandangad tahsil"By selecting this Topic, the main purpose of the research scholar is to present the nature of contemporary developed and undeveloped rural- urban area community and identify various difficulties of rural area. As it has been tried to mention in the entitled thesis.

Objectives :-

The main reason of sorrowfulness regarding rural & undeveloped community in Mandangad Tahsil is in their life style. Even society & government do not have tried to change the life style of this Rural community within many previous years. Even they are not going to change their life style for certain economical and social development. That's why in the research workthe following objectives are being considered.

1. To study the life style of rural and urban population in Mandangad Tahsil
2. Agriculture and rural condition.

Methodology:-

Theinformation regarding research topic is being collected through questionnaires, various report of rural institutions, government offices, reference books associated to the subject, magazines and daily newspaper.

Rural Population :-

The population growth rate of Ratnagiri district was 9.89% from 1991 to 2001 and it was almost 12.84% less than the population growth rate of Maharashtra state.

The sex ratio is more in Ratnagiri district. The vital reasons of less population growth rate and more sex ratio is the migration of people from this district to Mumbai, Pune for employment. Considering the density of population, this district has 1.75% population from out of state. It has less (207) density of population than total density of our state i.e. 314. Considering the ratio of population in urban and rural area; 88.67% people live in rural area and 11.33% people live in urban area. The two Tahsil viz 'Mandangad and Sangameshwar' are completely included in 'Rural Area'.

Agriculture:-

Man made facilities of irrigation are very scanty so that, the agricultural process or production is totally depend on natural source of irrigation like rainfall & waterfall within rainy season. Therefore, only one crop cultivation is in a year. Land of Mandangad especially formatted by purple / violet rocks that is well known "Jambha rock" in konkan region. Due to the heavy rainfall, weathering different rocks are

found on the surface level of the ground. But at some places, we found scanty layer of soil. Land is classified into four types in fertile area. These types are as follow;

1. The land that consists wetness for some extent and in which the crop of rice especially cultivated.
2. Land contains iron and salt in the costal area where trees of coconut & a betel nut are cultivated.
3. Hilly or mountain slope land is quasi-fertile, where trees of mango & Cashew are planted & crop of "Nachani" Cultivated.
4. Salty land is not an appropriate for agricultural.

Information about total Geographical Area of Mandangad Tahsil & its classification is as given below

Sr. No.	Types of Area	Area (in Hectors)	Percentage
1	Forest occupied Area	1983.43	4.49
2	Land that is not useful for cultivation &Plantation	5675.78	12.85
3	Current infertile / uncultivated area	11252.33	25.48
4	Barren land	6995.35	15.85
5	Infertile / uncultivated area	18247.55	41.33
	Total	44154.00	100.00

Rural community live mostly in hilly and mountainous area. Their fields are rocky and have sharp slope. Their agriculture field at the bottom of the hills and mountains which has much slope. Their agricultural fields are very small that can't be measured in acres and hectares. Small pieces of agricultural field it are made by them at the slope of mountains and hills. They are cultivating the crop of rice at the banks of the rivers. Their fields are very small which are surrounded by wall compound around it with the stones. That pieces of fields are called 'Lava' as wall as "Awan" by them. These forms are cultivated by the group of people especially Rural community. Some farms are belong to them but, mostly owned by the "Forest Department". They are cultivating these forms but at any time they can be driven away form his land/ farms. Maximum farms/ fields have been required by the act of lineage. These fields/ forms are at their name as per government's rule. They are also paying agriculture tax of these farms/ fields, but they have not captured the farms as per legal process till today. Due to the particular geographical structure of Konkan region, there are two methods of agriculture. These are as:- (A) Ali Method and (B) Dali method.

Ploughing and firing the low-lands, mud to be created in rainy season and plants of rise are cultivated in it, that is calls 'Ali' Method of agriculture. But at the slope area of the hills and mountains are fired by the leaves of the trees and throws the seeds for agriculture that is called 'Dali' Method of agriculture. A particular Committee has been framed by the government regarding the problem of 'Dali' fields / farms of Rural community named "Bombay Forest Commission". The problem of livelihood has been created in 1862 due to the action of this committee. So, the government has provided public permission for cultivation some farms/ fields within the forest area to Rural community.

As per 'Maharashtra Agriculture Land Act" of 1961 as wall as regarding "Limitation of Maximum Land Requirement Act" extra lands has been distributed for landless, minimum land owner. Especially scheduled castes, schedules Tribes, Nomadic castes- Tribes and landless Backward Class people. After distribution, these lands should come under cultivation so, the government has farmed revise act 'Revenue Act 1961' But this act doesn't become so successful, because the owners of land have handover the barren, hilly and mountainous land to the government as per act of 1961. There was not proper planning of land distribution at that time. So the distributed land is very rocky and barren which is not under cultivation yet.

The lands which are required by Rural community have not facilities of irrigation, barren by nature so that only crops of rice, Nachani, Vari are cultivated by them. Even they are unable to fulfill their basic needs of livelihood form the production in these lands. Problem of malnutrition has been created among themselves. There is no use of government's schemes for Rural community.

7) **Conclusion –**

The Area of lands Acquired by Ruralcommunity :–

a) In Rural community, there is 25% farmers having land minium 1 acre and maximum 5 acres and 75% farmers are landless.

b) There are maximum number of families who received land by government laws and the land is not under cultivation.

c) 40.00% Loan for agriculture purpose received by banks and 60.00% loan for agriculture purpose received by money lender and relatives. Due to the process of bank loan, it is difficult to take loan from bank therefore,Ruralcommunity is do not taking loan from the banks.

d) There is no irrigation facilities in Mandangad Tahsil for Rural community therefore, agricultural development is not occur in this tahsil.

References

Name of Publication	**Author/ Editor**	**Publisher**	**Year**
Research Method of Geographical Science 2007	Dr. S. Karlekar& Dr. M. Kale	Diamond publication pune.	**2007**
Research Methodological Science & Techniques,	AglavePradip	Nagpur vidya publication	**2000**
Rural Development	Prof. VidyaBhide	Prachi publication Mumbai	2000
Rural Society and Economic	SwanandGokhale	Prachi publication Mumbai	2000
Rural and Urban Sociology	R.J. Lote	PimpalapurepublicationNagpur	2010
Rural Government and Politics	SwanandGokhale and PrashantGokhale	Prachi publication Mumbai	2000
Rural and Urban Sociology	Prof. P.K.Kulkarni	Vidya publication Nagpur	2006

Impact of canal irrigation on Agricultural productivity with reference to Kukadi Command Area.

Dr. Ankush Sahebrao Doke
Head Department of Geography Mahatma Phule Nutan Mahavidyalaya, Mirajgaon,
Tal. - Karjat, Dist. - Ahmednagar.
Email Id.: mpnmgeog@gmail.com.

Abstract

Before the Kukadi canal irrigation project part of Ahmednagar, eastern part of Pune and Solapur districts comes under totally drought prone. But after canal irrigation the picture of agriculture is changed. The agricultural productivity of these area become changed. The present paper highlights the impact of canal irrigation on agricultural productivity in Kukadi command area. For measurement of agricultural productivity Kendall's Ranking Coefficient Index has been used.

Key words: Canal irrigation, agricultural productivity, Kukadi project, cropping pattern.

Introduction

The research in agricultural geography can be helpful for planning and sustainable agricultural development and solve the problems of regional imbalances. Agricultural productivity means the ratio of output to input in relation to land capital and overall resources employed in agriculture.[1]In Western Maharashtra Ahmednagar, eastern part of Pune, and Solapur districts come under Rain shadow region. A very short part of it comes in under impression of Bhima, Ghod and Kukadi Rivers. These rivers help in the development of agricultural production. Before the Kukadi canal irrigation project, this area comes under drought prone area. But, nowadays the picture is changed due to canal irrigation. It makes an impression upon the crop production and cropping patterns, use of seeds, and many others.

Study Area:

The study area occurs in the Kukadi command area of western Maharashtra. Junner is first Tehsil from the north side of Pune district lies in $19^0$12'35'' North latitude to $73^0$57'32''East longitudes. There are four main Dams of Kukadi Project as Yedgaon, Pimpalgaon joge, Manikdoh, and Wadaj in this Tehsil. Total geographical area is 13, 8,452 hectares.[2.] About 27115 hectare area comes under Kukadi command area.In Ahmednagar district there were 14 Tehsils. Among them Parner Tehsil, Shrigonda and Karjat Tehsil come under command area of Kukadi left bank canal.Parner Tehsil is located at west part of Ahmednagar, on 18.32^0 to 19.19^0 North latitude and 74.15^0 to 76.24^0 East longitude the area occupied by 1,930.28 sq. km. In this tehsil 14740 hectares area irrigated through kukadi left bank canal.Shrigonda Tehsil situated on 18^0-27'-18'' North to 18^0-51'-54'' North latitudes and 74^0-23'-24'' East to 74^0-52' East longitudes. The area occupied by 1605.61 sq. km. In this 30616 hectare area comes under kukadi left bank canal irrigation.The Karjat tehsil is from $19^0$09' north to $19^0$46'65'' North latitude and $74^0$74'9'' to $75^0$25'8'' East longitude, with the total geographical area of 1503.61 Sq. km.[3]in this 29990 hectare area is benefited through kukadi canal.Karmala tehsil is located in North West part of Solapur district at $18^0$25'12''N to $18^0$42' North Latitude and $75^0$12'0'' E to $75^0$20'00'' East longitude. It occupies 1609.70 sq. km. area.[4] In Karmala 24562 hectare area comes under kukadi canal irrigation.

Rational of the Study

The problems of providing irrigation benefits to the scarcity area from Pune, Ahmednagar and Solapur Districts was engaging an attention of the state for quite a long time. Shirur Tehsil of Pune District, Parner, Karjat,Shrigonda, Tehsils of Ahmednagar District and Karmala Tehsil of Solapur Districts are chronically affected by scarcity year after year.[5]so the impact of canal irrigation on changes in agricultural productivity of Kukadi command area is important.

Objectives To assess the spatial and temporal patterns of agricultural productivity and changes in the productivity patterns in Kukadi command area.

Methodology Agricultural data collected from Kukadi Command Area in Pune, Ahmednagar and Solapur district. The secondary data collected from Kukadi office as well as irrigation department of Govt. of Maharashtra, district gazetteers, reports, books internet etc. For data analysis Kendall's ranking coefficient technique is apply to measure the agricultural productivity of an area. In this technique, ranks are given according to yield per unit of area or each crop and average rank is worked out i.e. ranking coefficient.

Results and Discussion: A measurement of the existing agricultural productivity becomes necessary before any remedial steps can be taken. Jowar, Bajra, Wheat, Groundnut, Sugarcane, Fruits and vegetables, pulses and fodder crops area the important crops of the Kukadi command area. Jowar, sugarcane and Fodder crops is accounting for more than 50 percent of the total cultivated area of the region. Jowar can be grown both Rabi and Kharif seasons in kukadi command area. Sugarcane is a late arrival in the field of cash crops. The changes have been occurred in the crop productivity, in response to many technological developments in 1990-91 to 2010-11, in kukadi command area of western Maharashtra.[6]For the major seven crops grown in five Tehsils of kukadi command area are selected for measurement of agricultural productivity. The Kendall's ranking co-efficient method (1967) is used.

Table 1 Agricultural productivity in five Tehsils under canal irrigation

1990-91 Production: in kg/hectares

Sr. no.	Crops		Junner	Parner	Shrigonda	Karjat	Karmala
1	Jowar	Y	655	684	523	574	583
		R	2	1	5	4	3
2	Bajra	Y	670	357	414	351	510
		R	1	2	5	3	4
3	Wheat	Y	1235	1248	1260	1255	1194
		R	4	3	1	2	5
4	Groundnut	Y	811	854	876	859	860
		R	5	4	1	3	2
5	Sugarcane	Y	56	55	61	51	58
		R	3	4	1	5	2
6	Pulses	Y	781	724	622	810	511
		R	1	3	5	2	4
7	Fodder crops	Y	835	824	712	721	703
		R	1	2	4	3	5
		ΣER/N	16/7	19/7	22/7	22/7	25/7
		Rank Co.	2.28	2.71	3.14	3.14	3.57

Source: Compiled by the researcher

Table 2 Agricultural productivity in five Tehsils under canal irrigation

2010-11Production.: in kg/hectares.

Sr. no.	Crops		Junner	Parner	Shrigonda	Karjat	Karmala
1	Jowar	Y	745	850	641	743	813
		R	3	1	5	4	2
2	Bajra	Y	759	347	428	305	513
		R	1	4	3	5	2
3	Wheat	Y	1423	1300	1475	924	915
		R	2	3	1	4	5
4	Groundnut	Y	981	985	997	993	990
		R	5	4	1	2	3
5	Sugarcane	Y	95	93	96	91	90
		R	2	3	1	4	5
6	Pulses	Y	692	1476	955	1298	884
		R	5	1	3	2	4
7	Fodder crops	Y	1103	1024	1016	950	1054
		R	2	4	1	5	3
		ΣER/N	20/7	20/7	15/7	26/7	24/7
		Rank Co.	2.85	2.85	2.14	3.71	3.42

Source: Compiled by the researcher

Three areas of agricultural productivity have been identified as shown table 1& 2.

1. Areas of High productivity:
2. Areas of moderate productivity
3. Areas of low productivity

Areas of high productivity:

In 1990-91, this category was confined in Junner Tehsil of Pune district. The canal irrigation facility provides water for agriculture at firstly in this region. In this area river basins have fertile soils and many farmers in this area are adopting modern techniques in agricultural practices. So, the Junner Tehsil leads in areas of high agricultural productivity. In 2010-11, Shrigonda Tehsil comes under in high productivity. Before canal irrigation this region confined as in Low productivity. From 2000-01, the kukadi left bank canal provide water in this region and it became change in agricultural productivity. Shrigonda

Tehsil leads in production of Sugarcane and fruits and vegetables crops, during the period of last 20 years.[7] (Table 1 and 2)

Areas of moderate productivity:

The Parner Tehsil in 1990-91 and Junner and Parner Tehsils in 2010-11 confined moderate agricultural productivity. The ranking co-efficient value ranges between 2.50 to 3.00. In 1990-91, Parner Tehsil comes under water scared area, then after 2000-01 due to kukadi left bank canal the most of area comes under irrigation. The farmers adopted new techniques in agriculture. And the productivity of crops increased. So, this Tehsil leads moderate agricultural productivity. (Table 2)

Areas of low productivity

In 1990-91, Karjat, Shrigonda and Karmala Tehsil come under drought prone areas. There was low intensity of rainfall, and uncertainty of monsoon, the agricultural production of various crops leads pulses. Then after kukadi canal irrigation the situation become changed. In 2010-11, Shrigonda Tehsil goes in high agricultural productivity region. Karjat and Karmala Tehsil leads in low agricultural productivity where the co-efficient value is more than 3.00. (Table 1 & 2) The high variability of rainfall and low intensity of irrigation have led to low agricultural productivity in eastern part of kukadi command area.[8]

References:

1. Mohammad N,Noor (1992),*'Anthropogenic correlates and determinants of agricultural productivity'*, New Dimensions in Agricultural Geography, Vol.8, Concept Publication New Delhi.
2. Census of India (2001), *'District Census Handbook of Pune',* published by the director of census operations Govt. printing press Mumbai, Pp. 7.
3. Socio- Economic Abstract of Ahmednagar District (2011), Pp. 1.
4. Socio- Economic Survey of Solapur District (2009), P.6.
5. Kukadi irrigation project (2010),Department of irrigation, Government of Maharashtra, '*Divisional office no. 1(Narayangaon) report* , vol. II, Pp.1-5
6. Ankush Doke (2013) , '*A GEOGRAPHICAL STUDY OF AGRICULTURAL AND ECONOMIC CHANGES IN COMMAND AREA OF KUKADI CANAL IRRIGATION PROJECT IN WESTERN MAHARASHTRA',* PhD Thesis, Pp. 62-102.
7. Ibid, Pp. 210
8. Ibid, Pp.211

A Brief Survey of Indian English Poetry

Dr.Dwijendra Nath Burman
Assistant Professor Department of English Buniadpur Mahavidyalaya

Abstract: "The language I speak,
Becomes mine, its distortions, its queer nesses,
All mine, mine alone, It is half English, half
Indian, funny perhaps, but it is honest,
It is as human as I am human, don't
You see.?"--- Kamala Das. English education in India caused a tremendous ferment in the life and literature of the people. A whole world of new ideas was opened to then through the portals of English literature. Lord William Bentinck's decision to make English the medium of education in India was a momentous one. The inauguration of the University of Bombay, Calcutta and Madras in 1857 was the next landmark. As the new generations of Indians came out of the colleges and universities. So, English became the medium of thought and expression among the Indian intelligentsia. It entered into the soul of the Indian people. The first sign of this was found in the writing of English verse by Indians. The first among Indo-Anglian poets was Henry Louis Vivian Derozio (1809-1831), the son of a Portuguese –Indian father and an English mother. Derozio educated in the finest English tradition in Calcutta, he became the headmaster of Hindu College in Calcutta at the age of 19. As a teacher of English literature, he encouraged his students to try their hand at writing poetry in English. He himself wrote most of his poetry in English.

Keywords: Education, Medium, Tremendous, Momentous and Encouraged.

Introduction:

The best Indo-Anglian poets have given us something which neither English poetry nor any of our regional literature can give: in other words, they have effected a true marriage of Indian processes of poetic experience with English formulae of verse expression. Derozio's sonnets , "The Harp of India and To India, My Native Land, are regarded as fine examples of India's earliest nationalistic poetry. In addition to sonnets and short lyrics, Derozio wrote a long narrative poem. The Fakir of Jangheera, describing the ill-fated life and adventures of a Brahmin widow Nuleeni. Derozio's poetry shows strong influence of the English Romantics, notably Byron, Scott and Moore. Derozio was however, a poet of unfulfilled promise for he died of cholera at 22. Yet the small body of verse he left behind him significantly influenced later Bengali poets, and has won for him a niche in the history of Indo-Anglian poetry. Another pioneering Indo- Anglian poet was Kashiprasad Ghose (1809-1873), was published Shair and Other Poems in 1830.The list of other poets who wrote in English during the 19th and the first half of the 20th century is quite impressive: Michael Madhusudan Dutt (1824-1873), Romesh Chunder Dutt (1848-1909), Toru Dutt (1856-1877), Manmohan Ghose (1867-1924), Aurobindo Ghose (1872-1949), Rabindranath Tagore (1861-1941), and Sarojini Naidu (1879-1949). Michael. M. Dutt was more original and more spontaneous than Kashi Prasad Ghosh. He was a passionate admirer of Byron and sent poems to Blackwood's Magazine dedicating them to William Wordsworth. Two longer pieces, The Captive Lady and Vision of Past and some sonnets and lyrics form his only writings in English verse. The Captive Lady deals with the story of Prithvi Raj, the most romantic figure in the Rajput history. The story is well told and the poem shows Madhusudan's easy command over English metrical forms. His style is also free from moralizing and conventional descriptions of nature.

Rationale of the Study:

Visions of the Past is a slight sketch in blank verse. It describes the primeval innocence, the Temptation of Man and his Fall in the form of visions. The blank verse is fairly good but there is nothing striking about the piece. Madhusudan Dutt attained real success in Bengali poetry; his English verses never arise above mediocrity. He is a good imitator, but he never rises to any heights of originality. We have seen how he imitates Milton in his description of Satan: A form of owe he was –and yet it seemed,

A sepulcher of beauty- faded, gone,
Mouldering where memory fond mourner keeps,
Her lonesome vigils sad-to chronicle,
The Past-and tell its tale of coming years,
Or like a grant tree in might war,
With storms on whirlwind car and fierce array,
Blasted and crushed –of all its pride bereft.
Or like a barque which oft had walked the deep
In Queen like majesty- and proudly brave-

But by the fiery hand of some dread fiend
Nursed in starless caves of ocean, shorn
Of all its beauty in the boundless surge,
A phantom of departed splendor lone.

Romesh Chandra Dutt, civilian and economist, translated the Ramayana and the Mahabharata into felicitation English verse. He also published his Lays of Ancient India in 1894; in which he gives us selections from Sanskrit seems to us the best in the book. On the whole, the verses, show scholarship and good taste but fail in giving a true idea of the beauty of Sanskrit poetry. There were some minor writers of English verse, who wrote profusely but could hardly rise above a certain mediocrity. They showed a wonderful command over the English language and its metrical systems, but they lacked the vigor and imagination of a true poet. These writers were Navakissen Ghose, Nizamut Jung, Roby Dutt, Manikram Vasanmal Thadani, P. Sheshadri and Govinda Krishna Cheltur. With Aru Dutt and Toru Dutt, we reached the first truly significant chapter of fulfillment in the history of Indo-Anglian poetry. Both the precocious sisters were gifted singers, but unfortunately fated to die an early death, when they were still hardly more than girls. Aru passed away in 1874 and Taru in 1877, aged 20 and 21 respectively. So, Aru and Toru were the "inheritors of unfulfilled renown," poetesses of rare promise and of no mean achievement. Toru Dutt's Ancient Ballads and Legends of Hindustan appeared posthumously in 1882, and more than ever proved her facility and power of poetic utterance in a foreign medium. The stories of Savitri and Sita, Dhruva and Prahlada, told so often before, are told again with a new freshness and charm. In these stories, for the first time, she reveals to the West, the soul of India through the medium of English poetry. Perhaps, this is the chief reason why the Ancient Ballads deserve to live, for though they have faults enough, it is the first time that an Indian girl who has not yet lost the child's mind has enshrined these old stories in English verse.

Objective of the Study:

We have been thrown the light in The Miscellaneous Poems at the end of the volume, though few in number, seem to us the best. Intensely personal, in them Toru Dutt found her true sphere of expression. It is in these five or six poems in which Toru sings of herself and her surroundings that she really reveals herself. Baugmaree gives a very simple yet perfect description of an Indian garden. Our Casuarina shows Toru's mastery over more elaborate verse structures. It is simple yet elevated style recalls Wordsworth. We have also noticed how with a few skilful touches she conjures up the picture of the tree:

Like a huge python winding round and round,
The rugged trunk indented deep with scare,
Up to its very summit near the stars
A creeper climbs in whose embraces bound,
No other tree could live. But gallantly
The giant wears the scarf, and flowers are hung
In crimson clusters all the boughs among,
Whereon all day are gathered bird and bee;
And oft at night the garden overflows
With one sweet song which seems to have no close
Sung darkling from our tree while men repose.

In the fourth stanza of this poem we get a romantic, almost Keatsian touch;

Ah! I have heard that wail, far away,
In distant lands by many a sheltered bay,
When slumbered in his cave the water wraith
And the waves gently kissed the classic shore
Of France and Italy beneath the moon,
When earth and sky lay tranced in a dream less swoon.

Both Our Casuarina Tree and Baugmaree show Toru Dutt reaching a riper perfection. In them we find the mellow sweetness, the lack of which strikes Edmund Gosse. Had Toru lived we may have hoped that she would have shed many of her early blemishes and risen to be a great poetess. Eighty years have elapsed since Toru Dutt's poems were first given to the world, but it is certain, as Mr. H.A. L. Fisher declared that she will ever remain "in the great fellowship of English poets." Edmund Gosse paid a glorious tribute to her when he wrote: "When the history of the literature of our country comes to be written, there is sure to be a page in it, dedicated to this fragile exotic blossom of song." Manmohon Ghose is unique among Indian writers of English verse. He buried himself in the study of classical European art and literature with the result that his poetry is entirely Western in taste and allusion. Mark the influence of the Greeks in this charming little poem: Over the head, in joyful wanderings,

Through heaven's wide spaces, free,
Birds fly with music in their wings,
And from the blue rough sea
The fishers flash and leap;
There is a life of loveliness things,
O'er thee so fast asleep
In the deep West the heavens grow heave lier
Eve after eve, and still
The glorious stars remember to appear,
The roses on the hill
Are fragrant as before;
Only the face of all that's dear
I shall see no more.

Manmohon wrote two poetic sequences –Immortal Eve and Orphic Mysteries, which almost irradiate the true pathos and sublime of pure poetry. Immortal Eve is written in praise of his dead wife. There is a pleasing simplicity and freshness about the poems. In Orphic Mysteries the wistful note of Ghose's earlier poetry deepens into one of intense sorrow. According to Laurence Binyon, Immortal Eve and the section entitled Orphic Mysteries contain the finest and most original of Ghose's lyrics.Manmohon Ghose is a delightful Nature poet, but his poems are full of Nature in England. He used to say, "The mind loves to dwell on what is past and what is distant from us."

Analysis: Rabindra Nath Tagore is regarded as the Titan among the Indian writers of English verse. Although he is a Bengali poet who has translated his verse into English prose, yet that prose has such qualities of rhythm and of imagination, that it has the effect of poetry. He has also written a few lyrics in orthodox verse. With the value of his native compositions we are not concerned; but of his English prose poem we are compelled to say that their absolute worth can easily be exaggerated. Indeed, it is difficult to find in his numerous volumes-Gitanjali (1912), The Crescent Moon (1913), Fruit Gathering (1916), The Gardener and others- anything richer in thought and expression that the pages of the English Bible afford to the receptive reader. So, Tagore has written a few original English verses as well, but two of them show real beauty. For example, there is beauty of rhythm and movement in the following:

When the evening steals on Western Waters,
Thrills the air with wings of homeless shadows,
When the sky is crowned with star –gemmed silence
And the dreams dance on the deep of slumber,
When the lilies lose their faith in morning,
And in panic close their hopeless petals,
There's a bird which leaves its nest in secret
Seeks its song in trackless paths of heaven.

Again in April there is a freshness and dancing cadence very suitable to the subject:

Breezy April, vagrant April,
Rock me in your swing of music
Thrill my branches with enchantment
At your touch of sweet surprise;
In my life dream by the wayside
You come startling me from Slumber;
Wilful is your mood fantastic
Courting, teasing and inconstant.!

Even his prose translations are full rhythmic beauty and wealth of imagery. His lyrics are marked by spontaneous flow, delicacy as well as exuberance of fancy, a radiant clarity and grace of diction, charm and poignancy of feeling and abundance of natural imagery. Tagore was a mystic who sought to realize his oneness with the universal soul. But he was opposed to all forms of barren asceticism and was a lover of life. He was in every sense of the term an Indian poet true to his cultural heritage and to the traditions of Sanskrit and Bengali literature. Sarojini Naidu has also made a significant contribution to Indian poetry in English. Her poetical output is contained in the volumes called The Golden Threshold (1905), The Bird of Time (1912), and The Broken Wing (1817). These volumes are full of poignant feeling and picturesque Indian imagery. When she was only 11 years old she wrote her first poem. From that day, she says, her poetic career began absolutely.

Conclusion:

At last we have continually noticed that Keki Daruwalla expresses his own sense of emancipation from the shackles of European and Anglo-American influence:

Then why should I tread the Kafka beat or the Wasteland
When mother, you are near at hand
One vast, sprawling defeat?

Thus, firmly rooted in their own cultural milieu and conscious of their poetic identity, the new Indian writers of English poetry delve into the myths, legends, superstitions, and folklore of Indian society to express the contemporary social reality. In this sense, they have come closer to writers of their Indian language. In the hands of these Indo- English writers poetry has seriously become "a criticism of life." They spare no subject-love, sex, marriage, family life religion, politics, and other social concerns. Keki Daruwalla, Kamala Das, and Arun Kolatkar are well-known for their portrayal of socio-political reality in a new and strikingly ironic mode. The future of Indo-English poetry is bright. Poets like Nissim Ezekiel, Ramanujan and Parthasarathy have been extremely influencial in making Indo-English poetry acceptable abroad. The publication, in 1976, of Arvind Krishna Mehrotra's Nine Enclosures, Arun Kolatkar's Jejuri, Gieve Patel's How Do You Withstand, Body, and Adil Jassawalla's Missing Person by a Bombay Clearing House shows promise that high quality of Indo-English poetry is being produced today. This new poetry in English is characterized by experimentation and innovation, new imagery and realistic attitude, authentic creative urge and an equally superb craftsmanship. So, Indo-English poetry has come of age, and is taking new directions in the hands of its chief luminaries.

References:

1.Basu, Latika. Indian Writers of English Verse, 1933.
2.Iyangar, K. R. S. Indian Writing in English, 1962.
3. Kulshrestha, Chirantan, ed: Contemporary Indian English Verse, 1982.
4. Mc Cutchion , David, Critical Essays on Indian Writing in English, 1969.
5. Naik, M. K. Critical Essays on Indian Writing in English, 1972.
6. Narasimhaih, C. D. The Swan and The Eagle, 1969.
7. Shahane, Vasant , A . and M. Sivaramakrishana , ed. Indian Poetry in English: A Critical Assessment, 1981.
8. Sinha, R. P. N. The Birth and Development of Indo-English Verse, 1971.
9. Walsh, William. Reading in Commonwealth Literature, 1973

Analysis of Major Foundry Clusters of India

Reshma A.Aiwale[1] Dr. Jayavant S. Ingale[2]
[1] Department of Economics, Shivaji University, Kolhapur, Maharashtra, India 416416.
[2] Department of Economics, Balwant College, Vita, Dist. Sangli, Maharashtra, India 415311.
Email: aiwalera@gmail.com

Abstract:

The foundry industry is mother industry, providing castings to various industries and other sectors in India. In several parts of India, foundry units are grouped together in clusters. Batala and Jalandhar (Punjab), Kolhapur (Maharashtra), Ahmedabad and Rajkot (Gujarat), Belgaum (Karnataka), Howrah (West Bengal), and Coimbatore (Tamil Nadu) are the biggest foundry clusters in India. Maharashtra has the highest concentration of foundries, followed by West Bengal, Tamil Nadu, and Andhra Pradesh. Kolhapur's foundry cluster is well-established and has been steadily growing. The current investigation analyses of India's major foundry clusters in order to understand the present situation of their feeder to other sectors by end products. The present study is based secondary data. The study recorded that almost all foundry clusters manufacture end products such as automotive/oil engines and pumps/valves. Tractor parts/Agricultural implements are produced in large quantities at Batla and Jalinder, followed by Belgaum and Kolhapur. The Coimbatore cluster is well-known for pump-set castings, while the Rajkot cluster makes diesel engine castings.

Keywords: Foundry Industry, Foundry Clusters etc.

Introduction:

In India, the foundry industry, also known as the casting industry, serves as a 'mother industry'. It is a key industry that produces cast metal components, which are used as a basic material in a variety of industries. The expansion of the foundry industry is vital for the overall growth of the manufacturing and engineering sector; and the Indian economy. The Indian Foundry Industry is the world's second-largest manufacturer of castings [1].The foundry industry in India is a key feeder to a variety of other industries. In India, both casting exports and imports have been steadily increasing, with export value much exceeding import value. In several parts of India, foundry units are groupedtogether in clusters. Maharashtra has the highest concentration of foundries, followed by West Bengal, Tamil Nadu, and Andhra Pradesh. Batala and Jalandhar (Punjab), Kolhapur (Maharashtra), Ahmedabad and Rajkot (Gujarat), Belgaum (Karnataka), Howrah (West Bengal), and Coimbatore (Tamil Nadu) are the biggest foundry clusters in India [2].The present investigation is mainly deals with analysis of major foundry clusters of India with respect to their end products and their market shares. This study is useful to understand the current scenario of overall development and different economic aspects of foundry industry in India.

Methodology for research:

The present study is based on secondary data. The secondary data have been obtained from published literatures and mainly drawn from the annual reports, monthly magazines, and websites of foundry information centers and ministry of MSME, India. The collected data has tabulated to suit the analytical purposes.

3. Brief History of Foundry Industry in India:

Today's modern civilization is so far advanced because of foundry and its products. Foundry technology deals with the technology of metal casting which has been in vogue since the beginning of civilization. Foundry is the mother industry and castings are the backbone of all industrial growth. For example axle heads made of copper used to be cast about 6000 years ago. Life sized portrait head of cast bronze, aged 2250 B.C. have been excavated from Mesopotamia. Grave slabs and cannons shots made of cast iron have been in use for more than 1000 years. The first foundry was set up in China during the Slang Dynasty (1766- 1122 BC) and Abraham Darby established the first cast iron foundry in England in the year 1709. Earliest Indian castings can be traced to prehistory. The excavations at Mohenjodaro and Harappa (3300- 2000 B.C.) were unearthed metal articles. Many of which must had been produced by process of castings. The first castings were of copper and copper based images, domestic utensils, art work, from periods of history and all regions of the country are available to show that the art of casting was widely known and practiced in India. The art of casting continued through the centuries as an important metal working craft, attaining great heights of technical and aesthetic perfection. Even today the Indian cast handicrafts in brass, iron and silver constitute as an important item of export from India [3].Modern foundry industry has made its beginning in India in the 19th century. The foundry of the Hooghly Docking and Engineering Company was started at Howrah, near Calcutta in 1819. Foundry industry shows tremendous growth, both in volume and variety. In India large numbers of foundries of all types are present. There are more than 5000 foundry industry units are located in India. More than 95% of foundries

are in small sectors; with wide variation in sizes, products, technology standards and work culture. Foundries in the small and medium industries sector in India occupy a place of special importance in shaping the Indian economy. Foundry industry in India is formed in geographical clustering in different regions of states. Each foundry cluster is known for catering some specific end use markets. The major foundry clusters in India are located in Batala, Jalandhar, Ludhiana, Agra, Pune, Kolhapur, Sholapur, Rajkot, Mumbai, Ahmedabad, Belgaum, Coimbatore, Chennai, Hyderabad, Howrah, Kolkata, Indore, Chennai, Faridabad, Gurgaon etc. [2].

Major Foundry Clusters of India:

Belgaum Foundry Cluster: Belgaum, in the state of Karnataka, is a significant foundry cluster. Belgaum has around 100 foundry units. The cluster's geographical spread includes the industrial regions of Udyambag and Macche. Belgaum's foundry sector arose largely to serve the demands of Pune's car industry. Belgaum is known for producing high-precision, high-volume, and cost-effective castings. Belgaum's foundry operations have ISO 9000 certification and export casting in a substantial percentage (almost 20%). As seen in Table 1, the foundry sector in Belgaum serves to a wide range of end-use sectors. Cupola is the most common melting furnace at Belgaum. Three out of every four foundry use cupola as their main melting furnace. Divided blast cupolas are not very common yet in the cluster. Low ash coke is commonly used in the cupolas [4].

Coimbatore Foundry Cluster: Coimbatore, in the Tamil Nadu state, is a major foundry hub in Southern India. Coimbatore's foundry industry arose primarily to serve the textile and pump-set industries. In Coimbatore, there are around 600 foundries. ThanneerPandal/Peelamedu, Ganapathy, SIDCO, Singanallur, Mettupalayam Road, and Arasur Village are all located within the cluster's geographical boundaries. The demands of the domestic market are met by the majority of foundry operations. Castings are also exported by a small number of foundry facilities (approximately 10%). Pump-set castings are produced by about half of all foundries. The end-to-productdistributions of foundry units are given in Table 1. Electric induction furnaces are used by just 10% of the foundry units, mainly to manufacture graded castings and for duplexing operation. The majority (about 70%) of the cupolas in the cluster are of conventional designs, with no electric heating or cooling equipment [4].

Batala and Jalandhar Foundry Cluster: The Punjabi cities of Batala and Jalandhar are key foundry clusters in Northern India. The vast majority of foundry facilities are small-scale, producing grey iron castings. Approximately 15% of the foundry facilities also export their goods. Machine parts and agricultural implements are the main products of the foundries in Batala and Jalandhar. Castings are also made for a variety of different end-use applications, as shown in Table 1. Cupola is the predominant melting furnace employed by about 95% of the foundry units at Batala and Jalandhar, India. The majority of the cupolas are of conventional designs and usually use high-ash coke in their production processes [4].**Kolhapur Foundry Cluster:** Kolhapur, in the Maharashtra state, is a significant foundry cluster for automobile castings. The foundry cluster was established in the past to meet the casting needs of local businesses such as oil engine production, sugar mills, and machine tool manufacturing. Kolhapur has over 300 foundry units. Kolhapur, Sangli, Ichalkaranji, and Hatkanangale are among the regions covered by the cluster. Castings are exported by a considerable number of foundry operations in Kolhapur (about 25%). As can be seen in Table 1, the foundry units serve a diverse variety of end-use industries. The total production of the Kolhapur foundry cluster is estimated to be 600,000 tonnes per annum. This accounts for about 7–8% of India's total casting production. The cluster primarily manufactures ferrous (iron) castings covering both iron and grey-iron castings. About 30% of production is being exported [4, 6 and 7

Foundry Cluster Rajkot: Rajkot, in the Gujarat state, is a significant foundry cluster in Western India. In Rajkot, there are around 500 foundry units. The cluster was established primarily to meet the casting needs of the local diesel engine sector. The cluster's geographical distribution covers the regions of AjiVasahat, Gondal Road, and Bhavanagar Road. The bulk of Rajkot's foundries make grey iron castings for the local market. Castings for electric motors, for example, are exported by a tiny number of foundry facilities (about 10%). Apart from oil engines, the Rajkot cluster's foundry units serve a variety of other end-use applications, as shown in Table 1. Cupola is the predominant melting furnace used by nearly 90% of the foundry units. A local cupola design, called 'Rajkot cupola', is quite popular in the cluster. The use of low ash coke is common among the foundries [4].

Distribution of foundry units in clusters by end user market:

Metal cast components are manufactured by the Indian foundry industry for use in automobiles, tractors, railways, machine tools, sanitary, pipe fittings, defence, aerospace, earth moving, textile, cement,

electrical, power machinery, pumps / valves, wind turbine generators, and other industries. The Foundry Industry generates around USD 19 billion in revenue, with approximately USD 3.1 billion in exports. Grey iron castings, on the other hand, account for around 68 percent of all castings produced. There are around 4600 foundry units, with 90 percent of them being MSMEs. International Quality Accreditation is held by about 1500 foundry units. Several large foundries are modern and competitive on a worldwide scale [2 and 5]. Distribution of foundry units in clusters according to end user market is shown in Table 1. Each cluster is involving in accomplishing the needs of local area and industrial demands. The common interpretation along with discussion is given below.

Table 1: Distribution of foundry units in clusters by end user market

Sr. No.	End User Market	Market Share (%) from following clusters				
		Belgaum	Coimbatore	Batala and Jalandhar	Kolhapur	Rajkot
1.	Automotive/Oil engines	31%	4%	8%	42%	57%
2.	Pumps/valves	21%	46%	10%	17%	7%
3.	Sugar industry	-	-		6 %	-
4.	Tractor parts/Agricultural implements	7%	-	41%	4%	-
5.	Electric Motors	10%	6%	-	-	-
6.	Food Processing	5%	7%	-	-	-
7.	Textile Machinery	-	6%	-	-	-
8.	Machine Parts	-	-	33%	-	11%
9.	Others	26%	31%	8 %	31%	25%

(Source: MSME Technology Development centre [4])

Discussion:

The information obtained from various resources are stated that the Coimbatoreis India's largest foundry cluster. Steel castings, pump bodies, and forging components are the emphasis of the cluster. Maharashtra has highest concentration foundry units in the Kolhapur cluster, which focuses on automobiles, is the second. While Rajkot is forming a new cluster, Belgaum and Shimoga are also rapidly growing in the South. Howrah, Faridabad, Agra, Jalandhar, and Batala are among the other clusters. There are over 5,000 foundries in India that produce various sorts of castings. While extremely big foundries account for 5-10% of the total, medium-sized foundries with annual revenues of 100-150 crores account for the remaining 30% foundries.The end product of foundry like Automotive/Oil engines and Pumps/valves are produced from almost all foundry clusters however Tractor parts/Agricultural implements are produced in higher percentage (41%) in Batla and Jalinder cluster followed by Belgaum and Kolhapur. Electric motors and food processing instrumental castings are produced from Belgaum and Coimbatore cluster. The castings for textile machinery are produced in Coimbature cluster while automotive and sugar factory castings are producing from Kolhapur cluster [2].Foundry business is leading in India and constantly growing, it has potentiality to compete with China but Government should give support through required schemes and subsidies for spatial growth and development of foundry industry in India.

Conclusions: Indian foundry industry is distributed in foundry clusters, each foundry cluster, is recognized for catering to certain end-use sectors. The Coimbatore cluster is well-known for pump-set castings, while the Kolhapur and Belgaum clusters are well-known for automotive castings, the Rajkot cluster for diesel engine castings, and the Howrah cluster for sanitary castings, among other things. Foundry business is constantly growing in India and has potentiality to compete with first rank holder, China but Government should give support through required schemes and subsidies for spatial growth and development of foundry industry.

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References:

1) Garg, N (2011): President, The Insitute of Indian Foundrymen, addressing the 59th Indian Foundry Congress, 11th – 13th February, Hotel Shivalik View, Chandigarh, UT and Modern casting issue.
2) Foundry Information centre (http://foundryinfo-india.org/profile_of_indian.aspx)
3) Foundry Industry: Brief History and Definition (https://www.tpcastings.com.au/ foundry-industry-brief-history-and-definition.html)
4) MSME technology Development centre:, Overview of foundry cluster in India (http://foundry.msmetdcagra.in/2020/07/15/overview-of-foundry-clusters-in-india/).
5) The foundry industry in India (https://www.ipfonline.com/news/detail/industrynews/the_foundry_industry_in_india/7913)
6) http://www.kolhapurfoundrycluster.org/
7) Cluster Profile Report Kolhapur Foundry Industry Prepared for Small Industries Development Bank of India (SIDBI) (https://sidbi.in/files/posts/Cluster-Profile-Report---Kolhapur-(Foundry)-Cluster.pdf)

Ecology and Behaviour of Heteropneustes fossilis (Bloch, 1794) from Amravati Region, Maharashtra, India

Behade K. R[1]. V. T. Tantarpale[2]
Department of Zoology, Vidya Bharati Mahavidyalaya, Amravati
Email: kalyanibehade@gmail.com

Abstract

Among various fresh water fishes that are available in India, Heteropneustes fossilis is one of the common catfish. It is commonly known as Singhi. The present study furnishes the notes on ecology and behaviour of Heteropneustes fossilis from Amravati region of Indian State Maharashtra. Species belongs to family Heteropneustestidae. It is consumed as food in many due to its nutritional value. The species is listed as Least Concern in IUCN, due to lack of major threats to this species population.

Key words: Amravati, Behaviour, Catfish, Ecology, Heteropneustes fossilis,

Introduction

Heteropneustes fossilis is commonly found air sac catfish in Asia. It is mainly found in ponds, ditches, swamps, marshes. They are named for prominent barbells which resemble to cats whisker's. They are one of the economically important fresh water fish (Arratia et al., 2003). It is omnivorous fish that feds on Small worms, crustaceans and small fish. It belongs to family Heteropneustidae (Rehman et. al., 2013). It breeds during monsoon season. It is also known as stinging catfish due to its venomous sting. They are grey brown to olive brown in colour. It has great demand due to its nutritional properties. It is commercially important for fisheries. Development of species is directly depends upon their aquatic environment. Maharashtra has natural resources and it is important state for fish production (Pawar et al., 2014). The species is listed as Least Concern in IUCN, due to lack of major threats to this species population.The purpose of present study is to provide information about ecology and behaviour of Heteropneustes fossilis from Amravati Region, Maharashtra, India

Material and Method

The present study was conducted in Amravati district of Maharashtra . It is located between 20 °32′ and 21°46′ North and 76°37′ and 78°27′ East. Amravati has tropical wet and dry climate. It has various fresh water sources such as Purna river Tapi river, Chandrabhaga. It has favourable conditions for growth of fishes. Fishes were collected from local fisherman and local markets located on rivers and identified with available literature (FAO, 1997).

Result and Discussion

Stinging catfish Heteropneustes fossilis commercially important in Many Asian countries Heteropneustes fossilis is common air breathing fish found in India (Ratmuangkhwang et al., 2014). It is elongated and it has compressed body with maxillary barbels extending to end of pectoral fins. Heteropneustes fossilis is widely distributed species that listed as Least Concern in IUCN, due to lack of major threats to this species population. It is mostly found in oxygen deficient swamps, ponds and Ditches. They are also fund at marshy and brackish water. They are Omnivorous through its life cycle. They show sexual dimorphism and female tends to show more round abdominal bodies than male. Male are lean with papilla like structure (Haniffa et al., 2017). It breeds in confined water in monsoon month, but it can breed in pond and ditches when water accumulates. It can be cultivated in dimly lit tank with hiding places, as well as some open area for swimming. It prays small sized fishes, but tends to be calm with large size species. Fish protein has a high nutritional value due to a well balanced amino acid profile, ample amounts of polyunsaturated fatty acids (PUFA) as well as a number of vitamins and minerals (Rehman et. al., 2013).

Conclusion

Present study revealed the facts about ecology and behaviour of Heteropneustes fossilis. It is commonly found in fresh water sources of Amravati district. It is nutritionally rich species. It is listed as Least Concern in IUCN, due to lack of major threats to this species population

Bibliography

1. Arratia, G., Kapoor, B.G., Chardon, M. and R. Diago (2003): Taxonomy and Phlogeny of Clariddae, Vol. II, pp.487,
2. FAO. (1997): FAO database on introduced aquatic species. FAO Database on Introduced Aquatic Species, FAO, Rome.
3. Haniffa,MA , Jafar, S. and Ajaz A B., (2017): Seed Production an Urgent Need for Singhi (Heteropneustes fossilis) Farming – A Review. Ann Aquac Res 4(3): 1038-1040.
4. Pawara, R. H., Patel, N. and Patel Y.(2014): Review on fresh water fish diversity of Maharashtra. Journal of Entomology and zoology studies, 2(5): 358-364

5. Ratmuangkhwang S., Musikasinthorn P. and Kumzawa Y. (2014): Molecular Phylogeny and biogeography of air sac catfishes of Heteropneustus fossilis species complex (Siluriformes : Heteropneustidae). Molecular Phylogenetics and Evolution 14:1-8
6. Rehman M., Hossain M.B.,Hossain Y., Hossain I.,Provhat S. J., Islam M.S. and Hossain B. (2013): Induced Breeding of Stinging Catfish, Heteropneustusfossilis : Comparison among different Inducing Agents . Turkish Journal of Fisheries and Aquatic Sciences 13: 523-527

Identifying Different Farm Activities Performed By Women

Prof. Aparna S. Dhoble
Sevadal Mahila Mahavidyalaya, Nagpur Member Of Board Of Studies (Extension Education) Rashtrasant Tukdoji Maharaj, Nagpur University, Nagpur.

Abstract

Women play a dual role, dual responsibility of working in home as well as in farm. The objectives of study were to study the different farm activities performed by women, to assess the sources of information input by rural women, to examine the sources of information processing by farm women, to find out the sources of information output towards farm activities. This study analyses the work performed by women in agriculture in the sevagram at wardha district of Maharashtra. A survey was conducted on 225 farm women. A total of 225 farm women were selected as respondents through random sampling technique. Analysis of the data showed that involvement of farm women in farm activities was performing her duties sincerely.

Keywords: Farm activities, rural women, sources of information.

Introduction

Rural women play a significant role in agriculture. Agriculture is the backbone of Indian economy as it provides direct employment to about seventy percent of the working people and a source of livelihood for them. Indian agriculture is now becoming more and more mechanized. Agricultural means agricultural uses and practices including, but not limited to: Producing, or increasing agricultural products; rotating and changing agricultural crops; allowing land used for agricultural activities to lie fallow in which it is ploughed and tilled but left unseeded; allowing land used for agricultural activities to lie dormant as a result of adverse agricultural market conditions; allowing land used for agricultural activities to lie dormant because the land is enrolled in a local, state, or federal conservation program, or the land is subject to a conservation easement; conducting agricultural operations; maintaining, repairing, and replacing agricultural equipment; maintaining, repairing, and replacing agricultural facilities, provided that the replacement facility is no closer to the shoreline than the original facility, and maintaining agricultural lands under production or cultivation.

Objectives

1. To study the general information of the rural women.
2. To identify the different farm activities performed by women.
3. To assess the sources of information input by rural women.
4. To examine the sources of information processing by farm women.
5. To find out the sources of information output towards farm activities.

Research Methodology

The study was carried out in sevagram of wardha district which was selected purposively.Relevant data were collected with the help of personal interview technique. The sample for the study comprised of 225 farm women by stratified random sampling method. A questionnaire was used to conduct the study. Survey method was adopted for collection of data. An interview schedule was used for elicit information from the women who were actively engaged in farm activities. Frequency and percentage were computed for analysing the data.

Result And Discussion

Table 1 Age distribution of the rural women

S.No	Age	Total No. of Respondents	Percentage
1	Upto 20 years	10	4.44%
2	21- 40 years	45	20.06%
3	41-60 years	130	57.8 %
4	61 & above	40	17.7%
		225	100%

It is revealed from above table that 57.8% belong to the age group of 41-60 years whereas 20.06% comes under 21-40 years. 17.7% of the rural women found to be 61 & above age group. Very few respondents i.e. 4.44% belong to the age group upto 20 years.

Table 2 Education of the women

S. No	Education	Total No. of Respondents	Percentage
1	Illiterate	25	11.11%

2	Std. 1-4	50	22.22%
3	Std. 5-7	80	35.55%
4	Std. 8-10	55	24.44%
5	Std. 11-12	10	4.46%
6	Graduation	5	2.22%
		225	100.0%

It is found from the above table that 35.55% of the rural women having education upto Std. 5-7, 24.44% had education upto Std. 8-10, 22.22% had educated uptill Std. 1-4 , 11.11% of the rural women are illiterate whereas few had studied upto Std. 11-12 and graduation i.e. 4.46% and 2.22% respectively.

Table 3Type of family of the women

S.No.	Type of family	Total No. of Respondents	Percentage
1	Nuclear	125	55.55%
2	Joint	100	44.45%
		225	100.0%

It is revealed from the above table that 55.55% of the rural women having nuclear family whereas 44.45% having joint family system.

Table 4 Different activities performed by women

S.No.	Different farm activities	No. of the Respondents	Rank Order
1	Preparatory tillage	197	VI
2	Pre-sowing arrangement & sowing	225	I
3	Interculture operations	224	II
4	Harvesting	220	III
5	Post harvesting	199	V
6	Marketing	221	IV

As the responses are more for all the activities, the preference has been given by rank order.Pre-sowing arrangement &sowing accorded I rank order as more preference has been found. All farm activities performed by women "sometimes" and "always". Women are doing their all activities with full zeal and enthusiasm. Interculture operations received II rank order, harvesting and marketing comes under III & IV rank order. Post harvesting had V rank order and preparatory tillage accorded VI rank order.

Table 5 Sources of information input by rural women

S.No.	**Farm activities**				
	Preparatory tillage	**Individual**	**Group**	**Mass**	**Total No. of Respondents & Percentage**
1	Land preparation	189 (84%)	18 (8%)	18 (8%)	225 (100%)
2	Manuring	213 (94%)	6 (3%)	6 (3%)	225 (100%)
3	Maintaining farm boundaries	175 (78%)	30 (13%)	20 (9%)	225 (100%)
	Pre-sowing arrangement & sowing				
1	Raising nurseries	191 (85%)	22 (10%)	2 (5%)	225 (100%)
2	Selection of seed	101 (45%)	79 (35%)	45 (20%)	225 (100%)
3	Grading seed	180 (80%)	34 (15%)	11 (5%)	225 (100%)
4	Sowing	215 (96%)	5 (2%)	5 (2%)	225 (100%)
	Intercultural operations				

1	Irrigation	191 (85%)	22 (10%)	2 (5%)	225 (100%)
2	Weeding	214 (95%)	7 (3%)	4 (2%)	225 (100%)
3	Fertilizer application	191 (85%)	11 (5%)	23 (10%)	225 (100%)
4	Thinning- Gap filling	209 (93%)	9 (4%)	7 (3%)	225 (100%)
	Harvesting Operations				
1	Harvesting	211 (94%)	7 (3%)	7 (3%)	225 (100%)
2	Collecting	216 (96%)	7 (3%)	2 (1%)	225 (100%)
3	Heaping	209 (93%)	9 (4%)	7 (3%)	225 (100%)
4	Threshing	211 (94%)	9 (4%)	5 (2%)	225 (100%)
5	Winnowing	209 (93%)	9 (4%)	7 (3%)	225 (100%)
	Post Harvest				
1	Drying	67 (30%)	135 (60%)	22 (10%)	225 (100%)
2	Packing- Grading for store	56 (25%)	149 (66%)	20 (9%)	225 (100%)
3	Storing	79 (35%)	135 (60%)	11 (5%)	225 (100%)
	Marketing				
1	Packing for marketing	135 (60%)	68 (30%)	22 (10%)	225 (100%)
2	Selling	146 (65%)	56 (25%)	23 (10%)	225 (100%)

It can be seen from the above table that the majority of the rural women had preparatory tillage, pre-sowing arrangement & sowing, interculture operations, harvesting operations, and marketing had received information through "individual approach" only whereas regarding post-harvest they received information from "group approach".

Table 6 Sources of information processing by farm women

S.No.	**Farm activities**				
	Preparatory tillage	**By Memorising**	**By writing in Notebooks**	**By preserving printed Literature**	**Total No. of Respondents & Percentage**
1	Land preparation	214 (95%)	7 (3%)	4 (2%)	225 (100%)
2	Manuring	209 (93%)	9 (4%)	7 (3%)	225 (100%)
3	Maintaining farm boundaries	211 (94%)	7 (3%)	7 (3%)	225 (100%)

	Pre-sowing arrangement & sowing				
1	Raising nurseries	211 (94%)	9 (4%)	5 (2%)	225 (100%)
2	Selection of seed	209 (93%)	9 (4%)	7 (3%)	225 (100%)
3	Grading seed	216 (96%)	7 (3%)	2 (1%)	225 (100%)
	Interculture operations				
1	Irrigation	216 (96%)	7 (3%)	2 (1%)	225 (100%)
2	Weeding	171 (76%)	45 (20%)	9 (4%)	225 (100%)
3	Fertilizer application	211 (94%)	9 (4%)	5 (2%)	225 (100%)
4	Thinning- Gap filling	217 (96%)	4 (2%)	4 (2%)	225 (100%)
	Harvesting Operations				
1	Harvesting	219 (97%)	4 (2%)	2 (1%)	225 (100%)
2	Collecting	219 (97%)	4 (2%)	2 (1%)	225 (100%)
3	Heaping	217 (96%)	4 (2%)	4 (2%)	225 (100%)
4	Threshing	214 (95%)	7 (3%)	4 (2%)	225 (100%)
5	Winnowing	207 (92%)	13 (6%)	5 (2%)	225 (100%)
	Post Harvest				
1	Drying	217 (96%)	6 (3%)	2 (1%)	225 (100%)
2	Packing- Grading for store	219 (97%)	4 (2%)	2 (1%)	225 (100%)
3	Storing	217 (96%)	4 (2%)	4 (2%)	225 (100%)
	Marketing				
1	Packing for marketing	214 (95%)	7 (3%)	4 (2%)	225 (100%)
2	Selling	217 (96%)	6 (3%)	2 (1%)	225 (100%)

It is proved from the above table that about preparatory tillage, pre-sowing arrangement and sowing, interculture operations, harvesting , post harvesting, marketing, the information has been process out through by “memorising” only as it is the easiest method for both literate as well as illiterate women. Negligible percentage of rural women using by “writing in notebook” and by “preserving printed literature”for processing the farm activities.

Table 7Sources of information output by farm women

S.No.	Farm activities				
	Preparatory tillage	**Interpersonalapproach**	**Group approach**	**Mass approach**	**Total No. of Respondents & Percentage**
1	Land preparation	180 (80%)	34 (15%)	11 (5%)	225 (100%)
2	Manuring	175 (78%)	34 (15%)	16 (7%)	225 (100%)
3	Maintaining farm boundaries	171 (76%)	36 (16%)	18 (8%)	225 (100%)
	Pre-sowing arrangement & sowing				
1	Raising nurseries	157 (70%)	45 (20%)	23 (10%)	225 (100%)
2	Selection of seed	123 (55%)	79 (35%)	23 (10%)	225 (100%)
3	Grading seed	112 (50%)	108 (48%)	(2%)	225 (100%)
4	Sowing	(70%)	(20%)	(10%)	225 (100%)
	Interculture operations				
1	Irrigation	157 (70%)	23 (10%)	45 (20%)	225 (100%)
2	Weeding	164 (73%)	45 (20%)	16 (7%)	225 (100%)
3	Fertilizer application	162 (72%)	52 (23%)	11 (5%)	225 (100%)
4	Thinning- Gap filling	169 (75%)	45 (20%)	11 (5%)	225 (100%)
	Harvesting Operations				
1	Harvesting	169 (75%)	45 (20%)	11 (5%)	225 (100%)
2	Collecting	157 (70%)	23 (10%)	45 (20%)	225 (100%)
3	Heaping	196 (87%)	25 (11%)	4 (2%)	225 (100%)
4	Threshing	157 (70%)	45 (20%)	23 (10%)	225 (100%)
5	Winnowing	184 (82%)	23 (10%)	18 (8%)	225 (100%)
	Post Harvest				
1	Drying	135 (60%)	68 (30%)	22 (10%)	225 (100%)
2	Packing- Grading for store	180 (80%)	34 (15%)	11 (5%)	225 (100%)

3	Storing	157 (70%)	55 (24%)	13 (6%)	225 (100%)
	Marketing				
1	Packing for marketing	146 (65%)	45 (20%)	34 (15%)	225 (100%)
2	Selling	155 (69%)	45 (20%)	25 (11%)	225 (100%)

Data presented in the above table reveals that the information which receive to the rural women has been provided to other women by mostly " interpersonal approaches" whereas very few women use group and mass approaches to disseminate the information to another women towards farm activities.

Conclusion

Women are generally participating in farm activities because they face a work burden at home and outside work also. She receives information mostly through "individual approach" about farm activities. The sources of information for processing which she remembers it by "memorising" method which is convenient for all women. The output of this information has been carried out through "interpersonal approach" through others. That's why the women play a vital role for inside and outside work for the family and the society.

References:

1. https://www.lawinsider.com/dictionary/agricultural-activities
2. https://www.tandfonline.com/doi/abs/10.1080/09737189.2013.11885390
3. https://www.sciencedirect.com/science/article/abs/pii/S1447677019301755
4. https://www.oxfamindia.org/women-empowerment-india-farmers
5. https://www.fao.org/3/am307e/am307e00.pdf

Agriculture In Ancient Indian Scripture,The Global Pathfinder: A Literary Lore

Dr. Sumita Mandal
Assistant Professor (Stage-III) & Hod, Sanskrit Khandra College Under K.N.U., Asansol, Paschim Bardhaman, West Bengal, India
E-Mail drsumita.mandal@gmail.com

Abstract

From time immemorial agriculture has been considered as the best among all the occupations in India and the very basis of leading the life with happiness and prosperity. Our ancient scriptures are replete with references of agriculture and agricultural techniques known to us since the Vedic era and are relevant in our global village even today. In the Vedic texts cultivation of a wide range of cereals, vegetables, and fruits was common, and animal husbandry was the important means for their livelihood. Various suktas of the Rigveda have talked about the significance of agriculture. The Atharvaveda gives importance to the education of farmers for the country to attain strong economy. Post Vedic literature provides more detailed information on agriculture and its various aspects. The introductory treatise on agriculture, Krishi Parashar is considered globally as the farmers' almanac. Mahrishi Kashyap has also explained agriculture in his Kashyapikrishisukti. Lord Vishnu in the Srimadvagavadgita has identified himself as the tree of Ashawatha (Pipal). Kautilya in his Arthashastra has given crop yield forecasting methods and described agriculture as the basis of business and trade. While the Ramayana represents a society where agriculture was more important, the Mahabharata informs that the state is held responsible for the wellbeing of agriculture. The importance of cereals (anna) is also emphasized in the Chandogyopaniṣada. All these important aspects of agriculture in our ancient treatises are highly relevant in our global village today and Indian agricultural system has been reckoned as the global pathfinder nowadays.

Key words: Agriculture, Ancient scripture, global village, India, pathfinder.

Full Paper

From time immemorial agriculture has been considered as the best among all the occupations in India, and the very basis of leading the life with happiness and prosperity. India as a whole like most of the developing world is rich in indigenous genetic resources and agriculture plays a vital role in India's economy. New improved techniques of agricultural production have been being developed since the Vedic era to improve the method of agricultural system like threshing, planting crops in rows, cotton spinning and storing grains in granaries. Our ancient scriptures are replete with references of agriculture and agricultural techniques that are relevant in our global village even today. Agriculture is known to us since the Vedic ages. Vedic people in general were by and large agriculturists and agriculture was a regular occupation from at that time. Vedic seers considered agriculture as the most valuable wealth and the only option for food security. The term Kṛṣi (the Sanskrit equivalent for agriculture) which is known as dragging, pulling, plouging, tilling of the soil and all the things related to human being occurs in the Ṛigveda quite a number of times, indicating their familiarity with cultivation. In the Vedic texts cultivation of a wide range of cereals, vegetables, and fruits was common, and animal husbandry was the important means for their livelihood. Meat and milk products were part of the diet; animal husbandry was important. The soil was ploughed several times. The importance of seeds was emphasised and a certain sequence of cropping were recommended. Cow dung provided the manure and irrigation was practiced then.

Agriculture is the basic necessity of human life. According to the Vedas human life is dependent on anna and production of anna depends on agriculture. Hence, the Yajurveda (4/10) says that one should make effort for producing abundant grains through agriculture. The Rigveda (7/39/2) further adds that the cultivator is bound to get plentiful crops and immense wealth. Highlighting the importance of agriculture the Atharvaveda (8/10/12) asserts that success in agriculture leads to success in life. The person possessing abundant food grains is respected as a great man in the society (Aitreya Brahmana-2/5). Various suktas of the Rigveda such as Ksetrapati (4/57), Parjanya (5/83), Pṛthvi (5/84), Go (6/28), Apaḥ (7/47), Akṣa (10/34), Vishvedeva (10/101) and Araṇyani (10/146) have well described in the importance of agriculture. Similarly various suktas of Atharvaveda including Kṛṣi (3/17), Anna (6/17, 7/58), Anna samṛddhi (6/142) have talked about the significance of agriculture. The Atharvaveda gives importance to the education of farmers for the country to attain strong economy. The farmers educated in Varta Vidya can produce more in the field. Twelve types of lands like fertile (urvara), barren (ushara), desert (maru), fallow (aprahata), grassy (shadvala), muddy (pankikala), watery (jalaprayah), land contiguous to water (kachchaha), full of pebbles and pieces of limestone (sharkara), sandy (sharkaravati), land watered from a river (nadimatruka), and rainfed (devamatruka) and nearly thirty six references of agricultural fields have been referred in the Rigveda. The term field (Ksetra) is mostly used in the Vedic literature. In the Rigveda the Lord of field (Ksetrasyapati or Ksetrapati) is found to be obeyed as the presiding deity of the field and is offered sacrifices and prayers for good crops.

Many other Aryan deities like Suna, Sira, Sita, Pusan and Parjanya are also mentioned in the hymns of the Rigveda which were recited at the beginning of the ploughing in the then time. In the Vedic literature the terms viz. kināsa (Rigveda, 4.57.8), kārṣīvaṇa (Atharvaveda, 6.116.1), vāpa (Vājasaneyīsaṁhitā, 30.7, Taittirīyabrāhmaṇa, 3.4.3.1) and idvāh (Aitareyabrāhmaṇa, 3.4.3.1) seem to mean cultivator or farmer in its general sense or the persons who were somehow involved in the process of cultivation. According to the Markandeya Purana (46/65-75), Brahma, the first inventor of agriculture brought the agriculture into practice and initiated one class of the people to do this profession of agriculture and since then the agriculture depended on human toil. But the Atharvaveda (8/10/11), the Visnu Purana, and the Srimad Bhagvad Mahapurana (4/18/29-32) regarded the king Prithu, who for the first time did farming and grew grains as the inventor of agriculture.Post Vedic literature provides more detailed information on agriculture and its various aspects. Through agriculture one can acquire vigour, energy and power. During the post-Vedic time agriculture, cattle rearing, trade and commerce which altogether known as vārttā, were the principal means of livelihood and agricultural operations came to be associated with domestic rituals (Taittiriya Samhita-9/3/7/3). In the Yajurveda (9/22) and Taittiriya Saṃhita (4/3/7/2-3) agriculture is regarded as the means of human welfare. It is the source of prosperity and sustenance. It gives grain, strength and lustre. In Taittirīya Sanhita (4/3/7/1) agriculture has been described as Chandas (metre), the music that fills human life with delight and keeps human beings with happiness. The Brihatparshara (5/185 -187) says that there is no religion and no profitable business and no other means other than agriculture for obtaining happiness, food, clothing, respect etc. The Krishi Parashar of Maharshi Parashar is the first or introductory treatise on agriculture in whole world and is considered globally as the farmers' almanac consisting of 243 verses in two parts, the contents of which are arranged in a sequence and should be followed globally even today. This only available ancient Indian scientific text on agriculture includes all aspects of agriculture such as meteorological observations relating to agriculture, management of agriculture and cattle, agricultural tools, seed collection and preservation, ploughing and all the agricultural processes involved right from preparing fields to harvesting and storage of crops. Tree plantation its types, raising of nursery, grafting and transplanting have been described in the Vrukshaurveda. Like Garga Muni who dealt with the cultivation practices of various crops Mahrishi Kashyap has also explained agriculture in his Kashyapikrishisukti (1/18-19, 235-240, 244-248) exclusively and mentions that production of grains and other vegetation are the sole purpose of highest fulfillment of the earth and further adds that it is the giver of all auspicious things, leading to the satisfaction of Gods especially with its perpetual power to produce grain and fountains of sweet water. Lord Vishnu in the Srimadvagavadgita, the timeless Vedic wisdom revered throughout India, delineates the concepts of Vedic agriculture and has identified himself as the tree of Ashawatha (Pipal) that releases Oxygen even during night time also, while other trees release Oxygen during day time.

Ashwatha Sarva Vrukshanam, Devarshinam Cha Narada
|Gandharvanam Chitra Ratha, Sidhanam Kapilo Muni || (10.26)

According to Pāṇini there are three kinds of farmers-Ahali-Farmers who do not have their own ploughs. Suhali-Farmers who are in possession of good land or ploughs. Durhali-Farmers who have old ploughs. Varahmihir explained the techniques of rain forecasting at length in his Varahsanhita. Shurpala explained Vrukshaurveda and perfected many techniques. Kautilya in his Arthashastra gave crop yield forecasting methods and described agriculture as the basis of business and trade. Agricultural taxes are referred in the Dharmasastra. The Baudhayana Dharmasastra, the Gautama Dharmasastra and Manusmriti describe that one sixth of the produce should be calculated as land revenue though it varied in different regions and in the time of distress. However in the Manusmṛti, it is stated that agriculture is thought to be good by some, but as a profession it was blamed by all.

The Ramayana represents a society where agriculture was more important. Rama mentions a ceremony namely Navagryayanapuja on the occasion of which pitrs and Gods were offered to the new harvest. King Janaka himself was engaged in ploughing, when Sita was found. According to the Ramayana agriculture depends on weather, irrigation, river water and rainfall. The kings were also beware of the calamities and used to try to dissolve the menace such as draught, floods, locusts, rats, birds and invasions. Though the Mahabharata is not an agricultural text it informs that the state is held responsible for the wellbeing of agriculture as well as any damage to crops due to its inadvertence or negligence (Santiparvm, 88.28), the view of which has also been supported by Kalidasa's Abhijnanashakuntalam (V, 9). The state had to give seeds and other materials for agriculture free of cost (Sabhaparvam, 5.79). The world, both animate and inanimate, is sustained by food and one who wishes to attain well-being in this world and beyond should offer food to all those who seek. Lord Krishna teaches Yudhisthira the greatness of food sharing (annadana). The tools for agricultural activities mentioned in the Ramayana were langala and hala drawn by bulls, hoe (kuddala), axe (kuthara), hatchet (tanka), crowbar (sula) and sickle (datr). The Mahabharata,

Manusmriti, Astadhayi and Amarakośa also mention digging tools like Khanitra, Ākhana, stambaghna, plough and so on.In the Arthashastra Kautilya who is of the view that a fruitful agriculture requires the supply of good seeds, optimum rainfall and arrangement of proper irrigation and other inputs mentions suitable fruitful agricultural operations. It emphasizes on marketing and safe storage. According to this ancient treatise soil test is necessary for particular crops. It narrates how to increase the soil fertility and how to improve the productivity of the cultivated land. It refers to the proper seasons for proper crops - rainy season for sesame, millets, direct sown rice (virlu) and transplant rice (sali); the middle of season for pulses; and the later season for linseed, mustard, wheat, burley, sunflower (kusumbha), horsegram (kuluttha), leguminous seeds (kalaya), linseed (atasi), mustard (sarshapa) etc. Kautilya also classifies the months according to optimum distribution of rainfalls - One third for the months of July, August, October and December and two third for August, September and October.Last but not the least, the importance of cereals (anna) is emphasized in the Chandogyopaniṣada which also tells how the rains contributed to the origin of anna, and the sun to its ripening. All these important aspects in agriculture are highly relevant in our global village today. Thus there is no denial of the fact that agriculture has been the chief source of livelihood to people of India as well as the corner stone of Indian economy. Indeed our ancient Indian scriptures are full of facts related to this main productive activity and its various aspects. There is no iota of doubt that all these important aspects of agriculture in our ancient treatises are highly relevant in our global village today and Indian agricultural system has been reckoned as the global pathfinder nowadays.

References

Primary Sources:

1. Basham, A. L. The Wonder that was India. New Delhi: Rupa & Co., 1997.
2. Bhattacharjee, A. K. Agriculture in the Vedic age. In: Bhāratīya Vidyā Vol. XXXVIIII, Nos. 1-4, pp. 47-51. 1978.
3. Dwivedi, Dr. Dhananjay Vasudeo. Development of Agriculture in Ancient India in Sanskruti Darpan, Issue 54 Jan., 2017
4. Gonda, J. Vedic literature (Saṁhitās and Brāhmaṇas). Wiesbaden. A History of Indian Literature Volume I. Fasc.1.1975.
5. Nair, Shantha N. Echoes of Ancient Indian Wisdom. Hindoology Books. New Delhi: An Imprint of Pustak Mahal, 2008.
6. Thapar, Romila. The Penguin history of early India. From the origins to AD 1300. London, 2003.

Secondary Sources:

1. Ayer, A. K. Y. N. Agriculture and allied arts in Vedic India. Bangalore, 1949.
2. Ghoshal, Pranati. Lifestyle of the Vedic People. New Delhi: D.K. Print World, 2006.
3. Gopalaswamy, Aiyangar T. K. Agriculture in the Vedas. In: Vedasamīkṣā (Proceedings of the Vedic Seminar) Tirupati, 1967.
4. Kansara, N. M. Agriculture and animal husbandry in the Vedas.Delhi,
5. 1995.
6. Mulage, Bheemabai S. History of Agriculture System in India: A Legal Perspective in International Journal of Humanities Social Sciences and Education (IJHSSE) Volume 4, Issue 7, July 2017, pp. 25-30.
7. Randhawa, M. S. A history of agriculture in India. Volume I. New Delhi.1980.
8. Sadhale, Nalini. (Tr.) Agri-History Bulletin No. 1 & 2. Asian Agri-History Foundation, Secunderabad 500009, India. 1996 & 1999.
9. Whitney, W. D. Atharva-Veda-Saṁhitā translated into English Vols. I-II. Cambridge Massachusetts, 1905.

Websites: [Accessed 22.01.2001 - 25.11.2021]

1. <https://www.academia.edu>
2. <https://www.academicjournals.org>
3. <https://www.agris.fao.org>
4. <https://www.amrita.edu>
5. <https://www.anantaajournal.com>
6. <https://www.arcjournals.org>
7. <https://www.asianagrihistory.org>
8. <https://www.books.google.co.in>
9. <https://www.craaq.qc.ca>
10. <https://www.en.m.wikipedia.org>
11. <https://www.goodreads.com>

12. <https://www.google.com>
13. <https://www.hinduscriptures.com>
14. <https://www.iosrjournals.org>
15. <https://www.jstor.org>
16. <https://www.openlibrary.org>
17. <https://www.readersend.com>
18. <https://www.shodhganga.inflibnet.ac.in>

Agripreneurship- A way forward towards sustainable development in Agriculture and Allied Activities in India.

Dr. Ratnaprabha S. Jadhav[1] Dr. Pramila S. Patil[2]
[2]Associate Professor of Geography PGSR, SNDT Women's University, Karve Road, Pune 411038
[1]Dept. of Commerce, PGSR, Pune, SNDT Women's University.

Introduction:

India is an agrarian economy, despite of this fact, India's agricultural produce from a hectare of land is just half of that of other countries (Dayakar Rao et al., 2010). Agriculture is the primary source of livelihood for about 58 per cent of India's population. Gross Value Added by agriculture, forestry and fishing is estimated at Rs 17.67 trillion (US$ 274.23 billion) in FY18. (IBEF, November 2018: Ministry of Agriculture).Though initiatives taken by the government, has brought significant development in this sector, it is not satisfactory. Agriculture is considered as the backbone of the economy, this sector should accelerate at a greater pace for overall economic development. Agriculture sector is always having risk from natural factors as late monsoon, heavy rain, and cyclone, etc. (Merriott, 2016). In order to promote economic development in post-liberalization-reform in India, Government has taken various policies initiatives for promoting entrepreneurship and self-employment (Verma et al., 2019). There is a great scope for entrepreneurship in agriculture and this potentiality can be tapped only by effective management of agri elements such as – soil, seed, water and market needs. An individual with risk bearing capacity and a quest for latest knowledge in agriculture sector can prove to be a right agripreneur (Bairwa et.al, 2014).

Scenario of Agriculture and Allied activities in India:

India's Position in World Agriculture in 2016

Sr. No.	Item	World	India	% Share	India's Rank
1	Area(million Hectares)	13490.08	328.73	2.44	VII
	Land Area	13008.76	297.32	2.29	VII
	Arable Land	1423.79	156.46	10.99	I
	Population (Million)				
	Total	7466.96	1324.17	17.73	II
	Rural	3370.78	867.27	25.73	I
	Crop Production (Million Tonnes)				
	Cereals	2909.20	297.85	10.24	III
	Pulses	83.46	18.15	21.75	I
	Oilseeds				
	Groundnut	44.91	7.46	16.62	II
	Rapeseed	68.09	6.80	9.98	III
	Commercial Crops				
	Sugarcane	1861.18	348.45	18.72	II
	Tea	5.91	1.25	21.14	II
	Jute	3.31	1.90	57.40	I
	Other Commercial Crops (Tea, coffee, Jute, cotton, Tobacco)	31.17	6.83	21.91	II
	Vegetables and Fruits (million Tonnes)				
	Vegetables (Primary)	1229.51	123.63	10.06	II
	Fruits Primary	710.50	88.47	12.45	II
	Livestock (Million Heads)				
	Buffaloes	199.39	112.57	56.46	I
	Cattle	1488.96	186.04	12.49	II
	Goat	1025.64	134.13	13.08	II

	Dairy Products (Million Tonnes)				
	Milk	809.80	165.33	20.42	I
	Eggs (Primary) Total	85.84	4.56	5.31	III

Overview of Agripreneurship in India:

Agripreneur is defined as "Entrepreneur whose main business is agriculture or agriculture-related" (Uplaonkar & Biradar, 2015).An agripreneur may be defined as someone who undertakes a variety of activities in agriculture and its allied sectors to be agripreneur. An agripreneur may start an agro business, change a business direction, acquire a business or may be involved in innovatory activity of value addition (Tripathi &Agarwal,2015). Being an innovative concept many of funding agencies still have questions regarding viability and feasibility of agripreneurial projects. Despite of several Government schemes, its execution is not as effective as expected hence getting financial assistance in initial stage is big challenge in front of budding agripreneur, (Verma, Sahoo, & Rakshit, 2019). Agriculture all over the world is going through a phase of transition from crop cultivation to allied activities. In this ever-changing scenario, agriculture is taking a new shape and expanding its scope beyond the limits of mere crop cultivation and animal husbandry for the livelihood of the rural population (Verma et al., 2019). Agripreneurial ventures in the form of diversification, value addition, precision farming, high-tech agriculture, agri-preneurship, global marketing, organic farming, etc. are getting due attention of people who are involved in redefining agriculture (Reddy & Krishna, 2018). Agriculture can create wealth along the value chain through production, value addition, and export of processed or unprocessed goods among others. In the value chain, there are many areas in agriculture that entrepreneurs can exploit in on-farm and off-farm activities. The on-farm activities include production, processing (feed and seed processing), farm input manufacturing, and agro service ventures. Off-farm ventures will include agri-tourism entrepreneurship (Uneze, 2013).Agripreneurship can contribute to social and economic development in the areas of reduction in poverty index, good nutrition and food security in the economy. In addition, it will lead to diversifying the economy and income bases, providing employment and entrepreneurial opportunities. Agriculture students would like to start entrepreneurship into horticulture crops followed by organic farming and agro processing in the study area. Respondents perceive pest and disease management is most difficult farm operation followed by marketing and selling of produces whereas harvesting and planting are considered as easy operations (Gautam Parmar, 2019).

References

1. Bairwa , Lakra, Kushwaha , Meena and Pravin Kumar, (2014, *)Agripreneurship Development as a Tool to Upliftment of Agriculture*, International Journal of Scientific and Research Publications, Volume 4, Issue 3, March 2014, ISSN 2250-3153. Uploaded by Lokesh Kumar Meenaon 26 October 2020, referred on 20th October 2021.
2. Merriott, D. (2016), *Agripreneurship for sustainable growth in agriculture and allied sectors : A conceptual model*, (January 2016).
3. Reddy, D., & Krishna, V. (2018), *Factors associated with the farmer suicide crisis in India*, Journal of Epidemiology and Global Health, 6(4), 217–227. https://doi.org/10.1016/j.jegh.2016.03.003
4. Uplaonkar, S. S., & Biradar, S. S. (2015), *Rural development through Agripreneurship : A study of farmers in Uttar Pradesh*. (2), 534–542.
5. Verma, R. K., Sahoo, A. K., & Rakshit, S. (2019), *Need for Promotion of Agripreneurship to Address the Challenges in Indian Agriculture : A Critical Review*, 7(10), 2565–2572.
6. Dayakar Rao, B., Patil, J. V, Rajendraprasad, M. P., Reddy, K. N., Devi, K., Sriharsha, B., & Kachui, N. (2010), *Generating livelihood for tribal youth through Agripreneurship development : Prospects, retrospect, constraints and strategies*. 7(5), 3412–3416.
7. Unite, C (2013), *Adopting Agripreneurship Education for Nigeria's Quest for Food Security in Vision 20: 2020*. Greener Journal of Educational Research, 3(9).
8. By Uche, C. & Familusi, L. C, *The Adoption of Agripreneurship as a Mitigating Measure to Unemployment in Nigeria: A Topical ReviewVolume 18 Issue 2 Version 1.0 Year2018* Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Online ISSN: 2249-4588 & Print ISSN: 0975-5853.
9. Gautam Parmar, 2019, *An Empirical Study on Agripreneurship intentions among agriculture students*, An International Peer Reviewed Research Journal (ISSN-2321-5968) Vol-7, Issue-01, October 2019.

Literature and Nature

Dr. Dhaygude Kakasaheb Dhondiba
Assistant Professor, Department of English, Sant Ramdas Arts, Commerce & Science College, Ghansawangi.Dist.Jalna.
Email-*kakasaheb.dhaygude@gmail.com*

Abstract

Literature is a bi-product of its environment; most of the works of well-known writers irrespective of their language and culture reflect the environment from where they belong. Nature is one of the largest storehouses of the resources to the literary outputs. The environment or ecology play dominant role in world's well-known works of litterateur. From the genesis of human being nature is the most significant element to human beings; some people worship it as deity because of its beneficial as well as terrifying powers. Some consider it as mystery which is not completely solved yet. In every artistic work we can perceive the marks of nature and its various entities. This paper attempts to highlight the relation between literature and nature.

Key words; Environment, literature, nature, novel,pastoral and poetry etc.

Research Paper

The literary artists hoisted their emotions on the natural elements like hills, mountains, dales, dunes, valleys, streams, water bodies trees and oceans. The devastating symbols are presented through nature's devastating powers; a storm is used to present the mental or psychological unrest of a character or it symbolizes a warning that something evil or catastrophe is going to take place. Human nature is compared to natural objects, the greenery in nature is always presented in such a way that it provides solace to the disturb person. In a literary work the nature is considered as mother of all living and non living entities and also provides unending energy to all its creatures, it nourishes and takes care of the living beings like a mother who provides solace in her lap to her babies. It is the nature which provides never ending raw material for literary production; the artists consider nature as a living entity which always communicates with its living as well as non living entities through winds, trees and grasses. It is only through literary works we can experience the close contact between human beings and the nature. The literary works teach us how to interact with nature and how we can get tranquility in the lap of nature. The texts also highlight the major environmental issues and also awaken the humanity for the need of ecological conservation not only for our survival but also for the coming generations. It plays major role in enhancing and creating awareness regarding the judicious use of natural resources. Various movements for environment protection are ignited by the spark provided by the literary figures, and it did not stop by igniting the awareness but actively participate in the mass movements that protest against human encroachment on natural entities. The literary works fathom the deep and unbreakable bond that exists from the birth of human civilization between humanity and nature. It is the cordial relationship between human and nature that has been providing the excellence and sustenance to human generations is focused in the literary texts. It proves that human and nature are not aliens to one another but every creature and entity has relations with one another. Many texts also investigate the nature of relationship; healthy as well as antagonistic between nature and human beings. Various literary genres like drama, prose, poetry and novel explain the relationship between human beings and nature

Many literary artists claim that there is never ending communication between human beings and nature, there is unbreakable link that exists from the birth of human race between nature and human beings. The major literary genres that highlight the bond between human and nature are poetry, drama and novel. The earliest poetry i.e. pastoral poetry of poets like Virgil presents the serene, idyllic countryside which is full of mountains, rivers, valleys and forests. The word pastoral is an adjective which means the life related to the rural and rustic people, it is also used to denote the idyllic life of the shepherds. A pastoral poem is a poem that deals with the life of shepherds and presents the serene, simple and unpolluted virgin countryside. The pastoral literary works present simple life of shepherds, one of the fore-fathers of pastoral poetry is the Homer's contemporary i.e. Hesiod whose lifespan can be dated from 750 BC 2650 BC, he is considered as the first poet who wrote poetry, his only survived works *Works and Days, Theogony* and *Shield of Heracles* . the another great Greek master who is recognised for his pastoral works is Theocritus who wrote bucolics and mimes, the setting of the bucolics is pastoral i.e. set in the countryside. The well-known bucolics of Theocritus are 1,6,7 and 17. In the Idyll one Theocritus moans Thyrsis mourns the death of Daphnis a shepherd. Daphnis disobeyed the heavenly goddess Aphrodite. Theocritus portrays the shepherd as young to whom Aphrodite, Priapus a fertility God who takes care of and protect the livestock, vegetation. Hermes in Greek mythology is a protector of heralds; who are messengers and Aphrodite a Greek goddess of procreation, beauty, lust, passion and pleasure, she

is also compared to the Roman goddess of beauty i.e. Venus. These deities ask the reason of Daphnis' restlessness. The goddess of beauty, Aphrodite makes fun of Daphnis. The deities also did not provide comfort to the disturbed soul of Daphnis. The poet also wants to convey that the mortals are insignificant in the eyes of divine figures and those who disobeys them will not be spared and left to tragic consequences. The Idyll 6 is written in dactylic hexameter, it is addressed to the well-known Greek didactic poet Aratus whose life span can be dated to 315BC TO 240 BC, also wrote in hexameter i.e. a poetic line that has 6 feet. His well-known work is *Phenomena* which beautifully presents the celestial world and whether. The Idyll 6 presents a poetic story of two shepherds i.e. Damoetas. Daphnis, the hero of the idyll one, it is a singing competition between Damoetas and Daphnis. Daphnis sings about the one-eyed Polyphemus, son of Poseidon and Thoosa. and juicer and the great goddess Galatea, it is about the love of Polyphemus to the Galatea, Daphnis warns Polyphemus about the real nature of Galatea as she never loves him instead teases and flirts. It is through the singing of Damoetas and Daphnis the story of the Polyphemus and Galatea is presented. At last the two singers know that none has lost and won. *The Harvest Feast* is also known as idyll which is one of the most beautiful bucolic idyll by Theocritus, the setting of the poem is the beautiful island of Kos in the Agean sea. The poet speaks through Simichidas. Theocritus addresses it in a first-person, states that his poetic works have been so popularized that even the Greek divine Monarch Zeus is also found of listening to his poems. Theocritus also praises other contemporary poets like Philatus and also criticizes the muses. The eleventh Idyll presents the love of Polyphemus and Galatea, besides Theocritus the Roman poet Virgil also wrote pastorals in Latin, in his eclogues Virgil has added political themes in the bucolic genres contrasting the serene atmosphere of Theocritus' pastoral poetry. Eclogues are generally crowded with the shepherds, portraying the dialogues, communication and singing feasts in which the first contestant sings according to the topic and the next responds with same structure and topic, the eclogues are written in dactylic hexameter. Virgil replaces the tranquil and peaceful life of countryside with turmoil in his Eclogues. Virgil's Tityrus and Meliboeus, Eclogue I presents the love between Tityrus and Meliboeus, who is banished from his land and wandering for a better fortune,he presents his Roman journey. Eclogue II is a monologue by Corydon who is a shepherd ,wails of his love. Eclogue III is about the singing competition between Menaicus and Damoetas,the eclogue is about a political mythology, here Virgil praises the hair of Julius Caesar who as Virgil believes that will bring the sunny days to Roman empire, here Virgil also claims victory over the mythological poet Orpheus. In eclogue V Virgil presents the shepherd's uneasiness for achieving the name and fame here, Meneicas and Mopsus a famous seer of Greek mythology mourning the death of Daphnis. Eclogue X presents the poet Gaius Cornelius Gallus who died in Arcadia. The pastoral setting is provided by the Arcadian mountains, rivers and valleys. Titus Calpurnius Siculus is another well-known Roman bucolic poet wrote and followed the Roman poet Virgil, Ovid and Theocritus. Marcus Aurelius Nemesianus is another Roman bucolic poet whose major themes are fishing, hunting and aquatics. His *Praise of Hercules* is the only surviving work. The Italian Renaissance poet Francesco Petrarch alias Petrarch wrote pastoral. His *Return Vulgarium Fragmenta* is a collection of 366 poems, another name in the world of pastoral poetry is the French poet Marot who is born on 23rd November 1496 and died on 12th September 1544, he was one of the well-known French Renaissance poets who was influenced by Claudin de sermisy.Pierre de Ronsrd who was born on 11 September 1524 was called as the prince of poets, he wrote eclogues, eligies religious and epistles.The first well-known English pastoral poet is Alexander Barclay, although a poet of satiric works he was largely influenced by the poet Mantaur who wrote 5 eclogues. The English pastoral poetry can be seen on the zenith in Edmund Spenser's *The Shepherde's Calendar* which imitates Virgil's eclogues, published in 1579. Edmund Spencer was also impressed by the works of Italian poet Baptista Mantuanus. The spelling of the work itself suggests the relation between this work and the works of mediaeval literature. There are twelve eclogues in *The Shepherde's Calendar;* it deals with country, shepherd's life, love, religion and politics. Each eclogue is named after a month, it is in the form of a dialogue, every poem is written in a different form. The torch of pastoral poetry further beared by another English poet i.e. Michael Drayton; who wrote *The Harmony of the Church.* These poems are dedicated to lady Deverux his *The Shepherd's Garland* was appeared in 1593, this collection has nine pastoral poems, it deals with the poet's unaccomplished love. William Browne's *Britannia's Pastorals* and *The Shepherd's Pipe* present the country life. Emelia Lanier, an Italian origin British poetess presents the pastoral themes. Andrew Marvell's *Upon Appleton House* presents pastoral life, it vividly depicts the serene natural beauty of gardens and mountains. The English mystic poet Robert Herrick wrote *The Hock Cart or The Harvest Home* in which he beautifully portrays the benefits of hard work in a pastoral style. John Milton's epic work *Paradise Lost* and his famous elegy *Lycidas* presents the pastoral theme. *Lycidas* was written in 1637 in which John Milton mourns the death of his friend

Edward king who was died when the ship capsized in the coast of Wells. Milton names Edward King Lycidas and mourns his death as it is found in the ancient tradition of morning of a loved one's by his or her near and dear ones, the poet recounts the life of his friend and considers him as shepherd and asks the muses to join in mourning the death of Lycidas. There are several romances like Sannazzaro's *Arcadia* and Sir Philip Sidney's *Arcadia* and French writer Honore d'Urfe's *Astree*. There are well known pastoral plays written from the ancient times of Greek and Roman, we can also find the pictorial description of the terrain in the fictional world of well known novelist like Thomas Hardy, most of the Hardy's fictional world is found in the Wessex region, it is the Wessex of the country of Dorestshire. Hardy presents the minute details of the Wessex topography. He immortalized the region and its local atmosphere.

Conclusion

In this way there is unending relation between literature and environment and the writers make use of this bond in their works to teach and amuse the readers.

References

1. Bate, Jonathan. *The Song of the Earth*. London: Picador, 2000.
2. Barry,Peter. *BeginningTheory: An Introduction to Literary and Cultural Theory*. 3rd ed. Manchester: Manchester UP, 2009.
3. Ahmad,Aijaz. *In Theory: Classes, Nations Literatures*. New York: Verso, 2008.
4. *Gifford, Terry , Westling, Louise (ed.), "Pastoral, Anti-Pastoral, and Post-Pastoral", The Cambridge Companion to Literature and the Environment, Cambridge Companions to Literature, Cambridge: Cambridge University Press, pp. 17–30, ISBN 978-1-107-62896-0*, retrieved 2020-10-15,2013.
5. Gottlieb, Roger S. *This Sacred Earth: Religion, Nature, Environment*. New York: Routledge, 2004.

Work Life Balance Of Women Teachers In Arts And Science College With Special Reference Coimbatore District

Dr.M.Nirmala[1], Dr.R.Geetha[2]

[1]Professor and Head, Department of Commerce with Professional Accounting and Accounting & Finance, Hindustan College of Arts and Science, Nava India, Coimbatore – 641 028

[2]Assistant Professor, Department of Commerce with Professional Accounting and Accounting & Finance, Hindustan College of Arts and Science, Nava India, Coimbatore – 641 028

Introduction:

As Coimbatore continues to emerge as a global economic power, understanding the dynamics between work and personal lives specific to this culture is increasingly important. In Coimbatore, the work-life agenda is very much aligned with the social and institutional context of the country. This briefing provides background for understanding how work-life issues are perceived and researched in Coimbatore, and offers recommendations for organizations seeking to implement work-life initiatives in the institution. Women typically suffer more bouts of anxiety than men, feeling anxious more than five times each week. Men feel the strain four times each week, with the pressure passing more swiftly than women. But women, who often shoulder the greater burden of raising children, feel anxious five times a week. One section of women say they are overburdened eight or more times each week, means they struggle to cope up with every single day. One in five (22 %) are anxious about maintaining a healthy work-life balance, and 12% making key decisions about their kids' future. Women are getting stressed up with household chores and managing stable relationships *Mckenna (2002)*

Review of Literature:

Work-life balance is about the interaction between paid work and other activities, including unpaid work in families and the community, leisure, and personal development. Work-life balance is about creating a productive work culture where the potential for tensions between work and other aspects of people's lives is minimized. This means having appropriate employment provisions in place, and organizational systems and supportive management underpinning them.The term "work-life balance" is a much discussed concept and used in various ways. Balance is sometimes used as a noun (when one is encouraged to achieve balance), and other times as a verb (to balance various demands) or an adjective (as ina balanced life). Most people interpret balancing as cutting back on work to spend more time on family or leisure *Greenhaus, Collins, Shaw, (2003)*. Often, it is thought to be in an individual's best interest to live a balanced life *Kofodimos, (1993)*. Work- life balance often refers to a harmonious interface between different life domains, or 'a lack of conflict or interference between work and family roles' *Frone, (2003: 145).Greenhaus and Beutell (1985)* define a work-life conflict as 'a form of inter- role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect'. Recently, the terms "work life enrichment" and "work-life facilitation" has been introduced, which stress positive interdependencies between work and life. This means that work can benefit from private life and private life can benefit from work *Greenhaus and Powell, (2006); Grzywacz and Marks, (2000)***.** Discussed about the definition of work-life balance is also about whether work and life are distinct spheres or not. Some authors oppose to the term work-life balance because work is a part of life *Carlson, Grzywacz and Zivnuska, (2009)*. Others argue that a balance should include other domains as well, because work and life are not the only domains individuals are engaged in. The same problem occurs when using the term "work-family balance", referring to work and family being the main domains individuals are balancing *Ransome, (2007); Languilaire, (2009).*

Work-Life Balance in Coimbatore

Coimbatore families are undergoing rapid changes due to the increased pace of urbanization and modernization. Coimbatore women belonging to all classes have entered into paid occupations. At present, Coimbatoren women's exposure to educational opportunities is substantially higher than it was some decades ago, especially in the urban setting. This has opened new vistas, increased awareness and raised aspirations of personal growth. This, along with economic pressure, has been instrumental in influencing women's decision to enter the work force. Most studies of employed, married women in Coimbatore have

reported economic need as being the primary reason given for working. Women's employment outside the home generally has a positive rather than negative effect on marriage.Based on the current culture, political climate, economic situation, and societal factors, the following are a few work-life initiatives that multinational institution should consider for strategically addressing the needs of the institutions and the needs of their employees in Coimbatore.

Flexibility: Provision for flexibility in terms of when and where work is conducted to reduce employees' conflicts, stress, and work interruptions and maintains or increases their productivity.

Commuting: Invest in transportation resources to assist employees with work conflicts and delays caused by long and difficult commutes.

Stress Reduction: Create a congenial atmosphere at work with opportunities for colleagues to interact informally, such as creating communal and casual spaces for chatting, listening to music, or getting a cup of tea or coffee with friends.

Health: Increase health consciousness by providing more information about good exercise and healthy eating, and by providing health check-ups. Though some organizations provide gyms, basketball courts, and other recreational facilities, the climate and culture make it difficult to exercise at work.

Elder Care: Provide medical coverage for parents and a separate form of leave for dealing with family issues. Also, contract with well known hospitals to provide quality nursing care, or compile a vendor list of quality elder care providers.

Childcare: Partner with local childcare providers to develop quality standards and performance guarantees on behalf of employees.

Training: Invest in training for employees to build skills, and to encourage employees to use technology more efficiently.

Gender Equality: Demonstrate that work-life programs are beneficial to the institution so that both men and women recognize their importance for talent attraction, retention and development. Self supporting programs for women should be encouraged

Major Issues in Work-Life Balance

In general the response of Coimbatore Institutions to work-life issues has been limited. This clearly reflex on the culture that does not empower women. An assumption and expectation that the (joint) Coimbatore family is in a better position to provide support than non-family institutions, and demographic factors including a lowrate of organized work force participation among women as compared to men.

Balance between teaching and research: Teachers in the educational institutions irrespective of their job, want to improve their career. During this process they go for higher education or they go for research activities. Balancing both teaching career and educational pursuits is a difficult task. It means that one needs more efforts to be taken on both the aspects which disturb work life balance.

Work environment: Work environment refers to the social- psychological characteristics of work settings. It includes employee- employer relationships, motivation and advancement, job demands, social support and so on. The environment which can provide a good balance of all the factors is said to be a good environment. A poor work environment is associated with reduced job satisfaction, absenteeism, somatic complaints, burn out and depression

Pressure of accreditations: Now-a-days many of the educational institutions are striving to get accreditations of AICTE, NAAC, and UGC and in order to achieve this the institutions are pressurising the employees to take more and more efforts, work overtime, take their academic work to home. This decreases the time to spend with the family members.

Job satisfaction: Work life balance has a direct relationship with job satisfaction. If a particular employee is going to have a good atmosphere at the work place and in the family she will be able to give her best at the personal jobs and as well as at the professional jobs. Ultimately there will be satisfaction in her life.

Organizational culture: Organizational culture includes rules and regulations, policies and procedures, work atmosphere, superiors' cooperation and so on which focus on the work life balance of the employees. When individuals perceive that their superiors are unsupportive over their efforts to balance work and family responsibilities, they perceive that there is work family interference and leads to work family conflict.

Financial problems: Financial problems are more closely related to the personal life. If women want to join in an educational institution due to financial problems in her family or if the husband's income is not

sufficient to the family needs, she cannot balance her personal and professional life as the priority is given to the personal needs only. Irrespective of financial problems there should be zeal and passion towards the work life of an individual towards her profession in orderto have an effective work life balance.

Family commitments: Family commitments of women include taking care of children, managing disabled persons at home**,** focusing on aged persons and so on**.** When women are more committed to the family, they cannot give their best at the work place. Due to this quality guidelines cannot be imparted to the students.

Factor Influencing Work Life Balance

The main factors identified from an analysis of the literature reviews, that directly impact work -life balance of women teachers in Arts and Science colleges arelisted.

Family and Personal Life

Achieving balance with work and family is an ongoing process of juggling responsibilities at work and the needs of the family members. The key to success lies in periodically analysing how things are going and find if one needs a change for the better. In life personal happiness does not necessarily depend on earning more money and being successful at work or in business. To strike a balance in life means different things to different people. For many people life depends on age, life style and personal happiness. People commonly suppress their natural preferences and personality, perhaps because of pressure from parents or institutions, or from society. Many people go through life, doing work that they do not like, denying themselves the opportunity to develop their true talents, strengths and passions. The work-life pattern is changing faster than ever before. Work, retirement, pension and life- expectancy have all changed radically in the last two decades. Two most commonstrong influences on family and personal life choices are

1. Work - particularly traditional employment and retirement practices.
2. Habits and attitudes-especially if they tend to conform to externalinfluences (society, media, friends, parents etc.,)

The way in which individuals make use of their spare time also plays an important role in defining their personal lives. Today there is an emerging trend to outlook towards living holistically and minimizing, rigid distinctions between work and play, in order to achieve an appropriate work life balance. The variables like spouse support, missing a previous time, following diet, and personal care are identified from the literature reviews under family and personal life.

Work Life

Work life is greatly influenced by four main factors: the nature of work, the managerial style, co-worker influences and employee himself. The work consists of ten factors concerning the actual tasks that make up a particular job. The managerial style consists of the methods that managers use to plan, control, organize, and direct the organization. Co-worker influences consist of the attitudes, beliefs and actions of those who work with the employee. Finally, the employee tries to shape his mental makeup in tune with his work environment conclude (Steve Brown and Thomas Leigh, 1996). The physical surrounding affects the mental state and the efficiency of an individual to a great extent. The atmosphere (both physical and psychological) that prevails in the work place can impact negatively on the work life. Pleasant working environment, leadership activities, curriculum based work, Inter-personal relationships among colleagues are the variables identified from the literature review pertaining to work life.

Balancing Time

Time management is the act or process of planning and exercising conscious control over the amount of time spent on specific activities, to increase effectiveness, efficiency and productivity. Time management is crucial aspect of balancing life and personal well-being. Organisations and companies need proper time management in order to attain their goals. The major issues that can be listed from understanding the literature on time management includes

1. Creating a conducive environment to effectiveness

2. Setting of priorities
3. Carrying out activities around one's priorities

By effectively balancing time the teachers gain insight on the work force, allowing them to see, plan and manage personal life and work life easily effectively. Effective time management will ensure teachers to complete syllabus in time, enable them spend time with their children as well states (Sylvia marks 2009). Balancing time in professional and personal life, Fair practices, completing syllabus in a prescribed time plays a crucial role in Time Management of Women college teachers.

Monetary Benefits Benefits are programs that an employer uses to supplement the cash compensation that employees receive. These benefits provide a level of security for employees and their families, and may include health care, insurance, time off disability insurance and retirement programs. Social security measures protect the workers from relapsing into below minimum standard of living, particularly, at the time of economic crisis and unforeseen contingencies. Social security relates to the direct role that the government's action plan plays in reducing human deprivation and eliminating vulnerability in a developing country.

Conclusion Work, family and personal life should be complementary to each other and not conflicting with each other. Some are successful in their careers but fail in family and personal life, whereas others who have a vibrant personal and family life are below par at work. Being successful in one sphere of life at the cost of the other is not a healthy sign. In the long run, family happiness and a decent personal life are key determinants of a successful career. A balancing act among these domains may not be as easy as one thinks, but a sincere attempt in this direction has to be made as it would yield fruitful results.

Reference:

1. Acharya, Bennett (1983) - "Women and the Subsistence Sector: Economic Participation and Household decision making in Nepal" , journal of social science.
2. Agarwal and Deepti (2001) - "Empowerment, Concepts and Clarity", Social Welfare, p.10-11family and work", The American journal of family therapy, vol 31, no 2, pg 107-124.

Temperature and Rainfall:The most important components factors affecting Indian Agriculture.

Dinesh Jagannath Nahire
Assi. Prof. Arts, Commerce & Science College,Onde,Vikramgad, Dist-Palghar

Abstract:
Rainfall and temperature are the most effective and the most powerful components of our natural environment. These components have complex bearing on formation of soil, natural vegetation, different flora and fauna, biodiversity and ultimately various economic activities and occupations of the human being. Agriculture is mainly depend on these two factors.The rainfall and temperature of the region play an integral part of our natural environment. These elements influence the way of the life of the people in particular region. Even the surface of the land is modified to a large extent by the action of rainfall and temperature. Agriculture not only provides food for the huge population of India but it also provides employment, raw material for agro based industries, supports the economy of the country too.The rural population of our country mostly depends on agriculture for their livelihood.

Keywords: Rainfall, Temperature, Natural Environment, livelihood

Introduction:

Climate change has been defined differently by different institutions and scholars. The Intergovernmental Panel on Climate Change (IPCC) defines the climate change as "Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use" (IPCC, 2001). According to United Nations Framework Convention on Climate Change (UNFCCC) article 1.2. Climate change is defined as "change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (UN, 1992). According to the Fourth Assessment Report, the IPCC defines the vulnerability as "degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity"
(Barker, et al., 2007).

India is a south Asian country that lies to the north of the equator between 8°4' to 37°6' north latitude and 68°7' to 97°25' east longitude. The climate of India belongs to the 'tropical monsoon type' indicating the impact of its location in tropical belt and the monsoon winds. Although a sizeable part of the country lying north of the Tropic of Cancer falls in the northern temperate zone but the shutting effects of the Himalayas and the existence of the Indian Ocean in the south have played significant role in giving India a distinctive climatic characteristics (Vision IAS). This tropical country is surrounded by water bodies on three sides, Arabian Sea towards the West, Bay of Bengal towards the East and Indian Ocean towards the South. India is having unique geographical features with complex topography. Mountain range such as the Himalayas broadens in the north and northeast. The Vindhyas separate the Indo Gangetic plain from the Deccan Plateau. The Satpura, Aravalli and Sahyadri cover the eastern fringe of the West Coast plains. The coasts of southern parts of India are known as Western and Eastern Ghats. Eastern Ghats are irregularly scattered and forms the boundary of the East Coast plains. Tibetan plateau towards the north of the foothills of Himalayas also influences Indian summer monsoon. On the northwest part of India, Thardesert extends from the edge of the Rann of
Kachchh of Gujarat up to the frontier of Rajasthan.

Variation in climate is perhaps greater than any other area of similar size in the world. Large variation were observed in the amounts of rainfall received at different locations. The average annual rainfall is less than 13 cm over the western Rajasthan, while at Mausiram in the Meghalaya has as much as 1141 cm. The rainfall pattern roughly reflects the different climate regimes of the country, which vary from humid in the northeast (about 180 days rainfall in a year), to arid in Rajasthan (20 days rainfall in a year). So significant is the monsoon season to the Indian climate, that the remaining season are often referred relative to the monsoon (S. D. Attri and AjitTyagi, 2010). The mountain ranges of India have a great influence on Indian climate (Rao, 1994).

Country can be divided into 6 climatic zones as shown in **Figure 1.1**, viz, northern mountains, northern plains, Deccan plateau, west coast region, south-east coastland and extreme northeast. South-east coast rainfall is associated with the cyclones of Bay of Bengal during October to December.

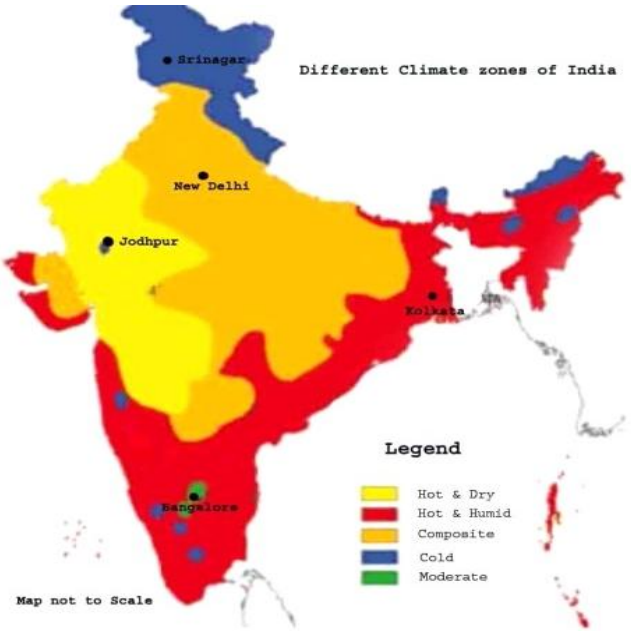


Figure 1.1: Climatic Zones of India

Country of India is divided into the four principal seasons as stated:

- **Summer season**, starts from March onwards and the many parts of country experiences great heat. In April – May, the average temperature all over the country rises to the maximum.
- **Monsoon season**, where winds enter the south Indian seas towards the end of May or the beginning of June. These winds are coming from the Indian Ocean get bifurcated due to the topography / relief of Sri Lanka and south India and advance towards north India. Usually during this season, heavy rainfall take place to all over India. Cloudy skies of this period cause temperature to fall a little, but humidity rises to its maximum
of the year.

Post Monsoon season, where the South-West monsoon begins to withdraw from India by the first week of October. The retreating South-West monsoon winds are replaced by North-East monsoon winds. During the North-East monsoon or winter monsoon wind blows from land to sea, and a part of the annual rain is received in Kashmir and
South-Eastern parts of Tamil Nadu, Andhra Pradesh and Orissa during such period.

Winter season, start from more or less at the end of November and continues till the end of February. Cold continental winds blowing from north easterly into India cause rainfall, hail storms and snow fall during winter. The winter temperature in Kashmir and adjoining parts of Himachal Pradesh falls less than 0°C.The vastness of Indian sub-continent and the unique configuration of the east African highlands and the Tibetan plateau mean that the Indian summer monsoon is the most vigorous and influential of all the monsoon circulation over the globe (Boucher 1998). It lasts from June to September and about 80% of the total annual precipitation is received over a large part of the country except in Jammu & Kashmir and Tamil Nadu. The economy of India is largely based on agriculture activities which in turn depends on the temporal and spatial variation of rainfall especially during Indian summer monsoon season. India is already experiencing a warming climatic conditions. Unusual and unprecedented events of hot weather are expected to occur frequently and cover much larger areas in India. Under 4°C warming, the west coast and southern India are projected to shift to new, high temperature climatic regimes with significant impacts on agriculture (World Bank, 2013). A decline in monsoon rainfall throughout the 1950s has already been observed. The frequency of heavy rainfall events has also been increased. A rise in 2°C temperature of the world's average temperatures will make India's summer monsoon highly unpredictable (World Bank, 2013). At 4°C warming events, an extremely wet monsoon that currently has a chance of occurring only once in 100 years is projected to occur every 10 years by the end of the century. An unexpected change in the monsoon could precipitate a major crisis, causing more frequent droughts as well as heavy flooding situations in urban parts of India. India's northwest coast to the south eastern coastal region could see higher than average rainfall. Dry years are expected
to be drier and wet years wetter (World Bank, 2013).

Mean annual temperature of India shows significant warming trend of 0.05°C/10yr during the period 1901–2003 and 0.22°C/10yr during recent period 1971–2003 (Kothawale and Rupa Kumar, 2005).

This shows a substantial acceleration of the warming during the last three decades and trend in annual mean temperature during 1901–2003 is mainly contributed by significant warming of annual maximum temperature (0.07°C/10yr) while the annual minimum temperature remains trendless. On the other hand, during the recent period 1971–2003, the significant warming trend in mean annual temperature is contributed by both maximum (0.2°C/10yr) and minimum temperatures (0.21°C/10yr). This feature is a major turnaround in the diurnal asymmetry of temperature trends over India reported by Rupa Kumar et al. [1994].

Conclusion:

Temperature and Rainfall are the most important components of Natural Environment. Indian agriculture is mostly depends on these two factors. Agriculture plays key role to protect the economy of our country.Variation is found in these two components in India perhaps greater than any other area of similar size in the world. Mean annual temperature of India shows significant warming trend of 0.05°C/10yr during the period 1901–2003 and 0.22°C/10yr during recent period 1971–2003. Unusual and unprecedented events of hot weather are expected to occur frequently and cover much larger areas in India.

References:

1. Barker, et al., 2007
2. S.D.Attri and AjitTyagi, 2010
3. (UNFCCC) article 1.2
4. Rupa Kumar et al. [1994].
5. Kothawale and Rupa Kumar, 2005).

Land Utilization, Irrigation and Cropping Pattern of Shrigonda Tahsil, Ahmednagar District (MS)

Dr. Sopan N. Dalimbe
Head &Assistant Professor Department of Geography Arts, Science and Commerce College Kolhar-413710
Mail: dalimbe@gmail.com

Abstract:

In India with more than 75% of the total population is in rural areas. It is imperative to develop the villages. Agricultural activity is not only a means of earning livelihood about a way of life in the Indian context. In India, agricultural sector is predominant. So obviously agricultural planning will be the core of the overall planning. Out of the National Income gross agricultures share is 42%. Hence the level of efficiency and productivity in agriculture to a great extent determine the efficiency of Indian economy. Thus indirectly rural development is depends on the agricultural development of the nation. When once the population is self-sufficient in the food grains, oil seeds, pulses etc. the surplus income generated can be used for other necessary infrastructure development for the development of agriculture, the availability of water dependable and in sufficient quantity is a pre-condition. Rural development and prosperity through irrigation has been the dominant theme is in Indian planning through five year plans.

Shrigonda is one of the tahsils in Ahmednagar district known for its peculiar agro-climatic condition favors the economic development. According to 2011 census handbook the Shrigondatahsil supports 2, 35,706 population in 114 villages. In comparison with 2001 census net population is more than 55,000. This shows that the decadal population growth rate of the tahsil is more than 29.22%. This certainly has created tremendous pressure on land and resources in this area. The standard of living and income level of the farmers are not so sound. The young population seems mostly un-employment. On the other hand, very large proportion of wasteland (21.64%) of the total geographical area.

Land Utilization and Irrigation:

Table 1 gives the values in terms of land utilization and irrigation for the total. For ready reference the total values are given in absolute figures. To start with, the base comparison shows that there is an increase in the number of cultivators in irrigated villages to the extent of 10 % over ten years (with 2006) in between: the year of start of irrigation while in un-irrigated villages the increase appears to be quite marginal (2.0%). The total land under cultivation seems to have suffered a loss over time. The loss in cultivated area is more in un- irrigated villages (−2.3%) than in irrigated villages (−1.3%). Thus the pressure on land seems to be more in irrigated villages than in un- irrigated villages. The reason is obvious: irrigation. The land man ratio in these villages gives another dimension of the problem. Prior to irrigation, in irrigated villages, land available per head was 4.81 hectares. Higher than that was available in un-irrigated villages (4.24), during 2001. With an increase in cultivators (+10.0) and a decrease in the area (−1.3), naturally the pressure has mounted up on land, over time. This has resulted in the reduction of land available per head to 4.32 hectares in irrigated villages (almost half hectare reduction per head). In un-irrigated villages the number of cultivators has increased only by 2% and the land available has also been reduced by 2.3 % over ten years. Hence, the per capita land availability is reduced by only 0.18 hectares in un- irrigated villages, over ten years. Thus in the post irrigation period also (2011), with half a hectares reduction, irrigated villages still enjoys higher area per head.

Table- 1Land Utilization and Irrigation

Sr. No.	Use Type	Irrigated Villages		Un- irrigated Villages	
		2001	2011	2001	2011
1.	Total geographical Area (hect.)	19032	19032	4967	4967
2.	Forest	4.75%	4.75%	14.3%	14.3%
3.	Land not available for cultivation	3364	3376	1046	996
4.	N.C. land / fallow	2860	3540	1240	1310
5.	Net area sown	14488	13230	3017	2912
6.	Net area irrigation	4162	4425	683	692
7.	% of irrigation (by canal)	73%	76%	--	--
8.	Tanks	28%	35%	10%	8%
9.	Wells	37%	32%	75%	64%

The total geographical area in irrigated villages is 19,032 hectares as against 4,967 hectares of un-irrigated villages.During 2011 the net area sown, (as % to the total geographical area) was 76.12% for

irrigated villages, while it was 60.74% in un- irrigated villages. Surprisingly, after irrigation, in irrigated villages the net area sown has come down to 69.51% and in un- irrigated villages the net area sown has marginally come down to 58.62 %. This may be because these lands, which were cultivated under rain fed conditions so far, are on higher altitude, away from canal, not economical and on outskirts of the villages, hence might have been discarded for cultivation even after the introduction of irrigation. Thus there is a slight reduction in the net area sown in irrigated villages, during 2011. The existing 69.51% land, which is shown, can be said to be fully utilized. But only 2.12% reduction in net area sown in un- irrigated villages has no impact on the already existing rain fed cultivation. In irrigated villages around 22% of the net area sown was irrigated during 2011 and it has gone up to 24 % during 2011. While in un-irrigated villages the area under irrigation was 13.75% during 2001 and it has gone up to only 13.93% during 2010. Out of 13,230 hectares irrigated by canals. (During 2011) 76% is irrigated by canals. Whereas in un- irrigated villages canal irrigation facilities not found, while 64% is irrigated by wells. Wells were 1057 during 2011 and they have gone up to 1265 (20% increase). Whereas, the number of irrigation wells continued to be 1830 in irrigated villages. Thus canal irrigation is predominant in irrigated villages whereas well irrigation is quite popular in un- irrigated villages, within the limited sense of the term. On the basis of the facts and figures presented above, irrigated villages (with 23.25% of irrigated area) as against (13.93% irrigated area) un- irrigated villages with more similarities is comparable for the differentials in development and whatever be the differences, can be attributed to the important and major difference i.e. irrigation.

Table- 2Crop Pattern: (%) Area

	Irrigated Villages		Un- irrigated Villages	
Crops	**2001**	**2010**	**2001**	**2010**
Jowar	23.7	20.2	35.1	38.4
Bajra	19.4	16.4	17.4	19.1
Wheat	23.6	27.3	9.3	12.2
Sugarcane	32.9	42.6	5.5	6.3
Groundnut	4.6	5.6	2.1	2.5
Pulses	3.2	5.1	0.9	0.8
Area under HVY	10.5	7.3	1.1	1.3

Irrigation:

The multiplicity is mostly interrelated to physio-socio-economic factors, and having considerable impact on irrigation. But all of them are not equally affecting on the aerial variations and temporal development of agricultural phenomenon in an area. To avoid dissipating one's efforts, it is desirable to choose the primary, decisive factors that may be of major importance in causing spatial and temporal variations. Water is one of the important and scarce inputs besides fertilizers, insecticides, high yielding seeds and modern technology for agricultural development. Thus irrigation is the main axis around which the whole agricultural activity revolves. Under this situation of low rainfall and its high variation in nature, the development of artificial means of moisture supply is very essential. The supply of water is depending upon availability of water resources. Ecological environment may limit the range of crops but the human factors determine which of the feasible crops. The farmers will choose and the input intensity with which his farms. Irrigation increases the range and the choice of ecological feasible crops on the farm and raises the practicability and profitability levels of inputs. ShrigondaTahsil has very limited water resources. The source of water is surface and ground water. The surface and ground water resources are harnessed by constructing major, medium and minor irrigation schemes across rivers and streams of the Tahsil.

Cropping Pattern:

In these two categories of villages major cereal crops are jowar, bajra wheat and sugarcane, Tue, gram, vegetables and some other pulses are also grown. Considering the share of crops in the increase in irrigated area, there is an indication of a shift in crop pattern. Food grains as a whole have shown a declining relative significance, in spite of improvements in the shares of crops like wheat, sugarcane, bajra.During 2011 the area under cereals and pulses was 70.6% of the total net area sown in irrigated villages. Of which wheat was 23.6% jowar 23.7% and pulses 3.2. After ten years, the area under food grains has just gone up by 1%. The gladdening factor is the area under pulses has gone up which is the need of the hour.

In un- irrigated villages, the area under food grains was lesser (48%) than the corresponding area in irrigated villages (70.6%). The area under jowar is comparable, but the area under wheat and pulses is to less (for 2011). Jowar, a traditional and subsistence crop, is grown in maximum possible area under rain fed condition. Though the yield is not encouraging, it is sufficient for self-consumption for most of the cultivators. After ten years the area under food crops has come down in un- irrigated villages by 7.1%.

This could be due to high commercialization. Food grains, with a low yield, low marketable surplus and low market prices are not remunerative to be grown on all the areas benefited by irrigation (canal or well). After under food grains has also come down, to accommodate subsistence requirement. Other areas are diverted to raise commercial crops.

Sugarcane have improved their position to 32.9% from 42.6% in irrigated villages; over ten years. Under Kukadi Canal 20 % of irrigated area is specially earmarked for 'two season crop' like cotton and lemon. So, the area is fully utilized during 2001 in irrigated villages. Overall commercial crops have improved their position to 27.7% (2010), as against 19.5% (2001). Miscellaneous crops have covered a considerable (10%) area sown during 2001, and it has been reduced to the nearest minimum of 0.7% during 2010, after effect of irrigation. After the onset of irrigation, people cannot afford to waste land under non-remunerative and long duration crops. In un- irrigated villages food grain crops were occupying almost half of the net sown (62.8%) during 2001. Groundnut and sunflower being the Oil seed crops, is grown under wells (number of irrigation wells; very high (1057) and area irrigated under wells is 75% in un- irrigated villages. People have grown cotton, groundnut and linseed. However, overall area under commercial corps has also suffered a loss of 10 % over ten years in un- irrigated villages. Miscellaneous crops have taken a very important role to the extent of 20 % of the net area sown. Thus the diversification of land is more evident in un- irrigated villages which is almost nil in irrigated villages.Thus irrigation (76% in irrigated villages, 12% in un- irrigated villages, 12 % in un- irrigated villages) has its impact on crop pattern also in sample villages. As Kukadi Canal Project is basically protective in nature, the tahsil being a drought hit area over years, people are supposed to grow sufficient food crops to tide over the drought situation and develop self-sufficiency reliance in food grains. This is what is being done precisely in irrigated villages while land is not put to proper optimum use in the dry track of un- irrigated villages in Shrigondatahsil. The yield rates are also different in the two categories of sample villages. Jowar is the most important crop of the entire Tahsil. Bajra also occupies a significant proportion increasing in important in the lighter soils to the south and east. Pulses are much less significant in the basin in Shrigonda plateau and are raised only as cover crops. Cash crops on the other hand are much more significant than on the plateau and of them, sugarcane is the most important. Next in important are groundnut and other oilseeds.

Conclusion:

There are innumerable references and studies in India and abroad to show that irrigation a necessary and sufficient condition, improves the yields to two or three times over the dry farming, in judicious combination with other inputs; irrigation assures water, certainty of outcome, reduces the instability of outcome, reduces the instability of yields, shift in crop pattern from coarse grains to commercial crops, multiple cropping, increases the effective area under cultivation, whereby the regional disparities in development could be removed lessened. To study whether irrigation improves the standard of living of the rural masses and helps the rural development, this study aims at reviewing the impact of irrigation on rural development, through the development of agriculture under an irrigation project. The study aims at quantifying and linking the interwoven characteristics of development with irrigation as the starting point for the around development of the rural areas. The main objectives are to study in depth how irrigation holds the key for agriculture development and consequently rural development at micro level (households of cultivators).At the cultivator household level, some topics are taken up for in-depth study. The following topics are, by no means exhaustive but felt to be sufficient to assess irrigation impact. The study aims at observing the changes in the post- irrigation period in the;

1. Work participation of own family female labour.
2. Attendance of the school going children (4-15 years) either to school or for work.
3. Area under cash crops; sugarcane, pulses, oil seeds, cotton, lemon.
4. Use of inputs *viz*., on time and in sufficient quantities, thus minimizing the wastage.
5. Optimum (own hired) labour usage.
6. Intake of quality foods (milk, meat, ghee etc.)
7. Proportion of (per capita consumption unit) expenditure on nonfood items in the total expenditure.
8. Per capita income ; overall and source wise
9. Indebtedness- and its impact on agricultural production
10. Housing conditions and availability of amenities facilities (household wise)
11. Position of people with reference to poverty line.

References:

1. Aggarwal, J. C, 1993, "Eighth Five Year Plan" Planning and Development in India.

2. Ahluwalia M.S., 1979, Growth and poverty in Developing countries, World Bank staff working paper 309.
3. Arputhraj, C., 1968, Indian Agricultural economy, Macmillian, New Delhi.
4. Barenner, Y.S., 1971, Agricultural and the economic Development of Low Income countries – Instute of social studies – The Hague.
5. Basu, S.K., 1963, Evaluation of Damodar canals (59-60) A study of the Benefits of Irrigation in the Damodar Region – Asia publishing House, New Delhi.
6. Dandekar V.M., and Rath. N., 1971, Poverty India, Indian School of political Economy, Poona, 16 pp.
7. Desai, D.K. 1963, Increasing Income, Production in Indian farmin. Approach of Linear Programming Technique, Ind. Soc. Agril. Eco. Bombay.
8. Dha. D., 1967, Evaluation of Benefits of Irrigation, Tribeni canal, Bihar, orient Longman, Bombay.
9. Gurjit Singh and Swaran Singh, 1965, Effect of Bhakra Dam Irrigation on the Economy of the Bharani village in Hissar District (1953-54 to 1961-62), Board of Economic Inquiry, Punjab Publishing No. 102, and Economics and statistics organization, Government of Punjab.
10. Hiramani, A.D., 1977, Social Change in Rural India: A study of two villages in *Maharashtra, B.R. Publishing Corporation, Delhi.*

Government Schemes And Sustainable Agricultural Development

Srushti Manchekar[1], Dr. Amol Gaikwad[2]
[1]Research Scholar K.T.H.M. College, Nasik.
[2]Research Guide HoD, Department Of Economics, K.T.H.M. College, Nasik.

Introduction:-

Even after 74 years of India's independence, a large country like India is still counted among the developing countries. Even though India has taken a step towards the next stage of development, the backbone of development is considered to be Indian agriculture. The equation that India is a reliable supplier of agricultural products is accepted by the whole world. Despite being the world's breadwinner, agriculture in this country is considered to be the most unreliable and risky business. The success of this business depends on the nature and the government. It is very important for the farmers to manage their farms so that they can make a profit on their investment by minimizing the risk in agriculture and at the same time, if the investment cost is reduced, their profit will automatically increase. This is because in 2015-16, the size of the agricultural area has shrunk from 2.28 hectares to 1.8 hectares. Also, the number of people who depend on it (for food as well as for subsistence) has increased significantly. Last year's CSDS report found that about 61 per cent of farmers were willing to take up another business or job instead of farming. If such a large number of farmers give up farming, the country as well as the world will not be able to produce enough food grains. If the basic need is not met, the country will not develop no matter how progressive it is. Climate fluctuations, crop disease outbreaks, soil fertility, difficulties in obtaining loans adversely affect both crop quality and quantity. The Government of India has undertaken a number of campaign initiatives to prevent this adverse effect by considering long-term measures as well as research in the field of agriculture with the help of science and technology. Therefore, it is helping the farmers to raise their socio-economic status and live a contented life.

Importance: -

A large portion of the population in the Indian economy is engaged in agriculture and allied occupations. Therefore, when agriculture fluctuates, it also has a direct impact on rural development and economic growth. That is why it is necessary to remove the barriers in the agricultural sector to bring the people below the poverty line above the poverty line. Over the last ten to fifteen years, the government has come up with a number of plans on how to maximize agricultural production through technical and scientific research. It has also started implementing a number of schemes to help farmers in tribal areas who are extremely poor and landless to maximize their profits with minimal investment. The aim of this research paper is to convey the importance of these schemes to the general farmers by consulting them.

Assumptions: -

1) Fluctuations in the Indian agricultural sector affect the overall growth rate of the economy.
2) The development of the agricultural sector has a positive effect on the rural economy.
3) The development of disadvantaged groups can be achieved by implementing various programs for agriculture and rural development.
4) The majority of the people who are engaged in agriculture and allied sectors but are in a backward position get huge benefits through government schemes related to agriculture.

Objectives: -

1) To study the impact of various schemes related to agriculture on the economic level of farmers.
2) To study the social impact of the schemes prepared by the government for the farmers.
3) Track the usefulness of the schemes.
4) Consult the impact of these schemes on other sections of the society.
5) To reduce poverty in rural agriculture through planned use of these schemes.

Methodology: -

Primary and secondary materials have been used for this research. For this, reference books, published and unpublished reports, serial books, newspapers, newsletters, internet, interviews have been used while compiling facts.

Various agricultural schemes run by government are as follows: -

Sharad Pawar Gram Samrudhi Yojana: -

On December 12, 1920, The government has started this scheme in the name of Sharad Pawar Saheb. Sharad Pawar Grameen Samrudhi Yojana (1921) and Mahatma Gandhi National Rural Employment Guarantee Scheme will be implemented in the whole of Maharashtra. Through this scheme:-

* Sheds for cows, buffaloes, goats and sheep will be constructed in rural areas.
* This scheme will help in opening poultry and poultry sheds.
* The government will help to improve the quality of soil.

* Employment opportunities will be provided for personal and public works.

Bhausaheb Fundkar Scheme Horticulture Grant Scheme:

The scheme was launched in 2018-19. Farmers participating in the scheme will be given 50% subsidy in the first year, 30% in the second year and 20% in the third year. For this, it is mandatory to keep the survival rate of the trees they plant at 90% for horticulture and 80% for dryland farming. Preference will be given to smallholder women, traditional forest dwellers and disabled farmers in this orchard scheme. Also, 100% subsidy has been provided by the state government for the requirement of drip irrigation for orchard scheme. For this, the government has selected perennial fruit trees like mango, sweet orange, cashew, custard apple, amla, tamarind, coconut, purple, locust.

Mukhyamantri Solar Krishi Pump Yojana 2021:

Even today, many farmers farm with diesel and electric pumps at a high cost. Also these diesel pumps are very expensive. These are out of budget for ordinary farmers. The state government has started this scheme keeping in view their problem. Under the solar pump scheme, the state government subsidizes 95% of the pump cost and farmers have to pay only 5%. These pumps have also curbed pollution. The additional burden of electricity on the government is also being reduced. Old diesel pumps will be replaced with new solar pumps and this will lead to recycling. The benefit of this scheme will be available only to the selected beneficiaries who do not use electricity in the field, farmers in remote tribal areas, farmers in the villages which have not been electrified due to NOC in the forest department.

Crop Loss Compensation Scheme:

Natural calamities like floods, droughts cause huge losses to farmers. To get relief from that, Prime Minister Narendra Modi has started this scheme for Maharashtra. Under this scheme, if a farmer dies in an animal attack, financial assistance of Rs. 8 lakhs is given, if a farmer is injured in an animal attack, financial assistance of Rs.

Kharif Crop Insurance Scheme:

Under this Pradhan Mantri Bima Yojana, if the crop is damaged due to natural calamities like hailstorm, wet drought, drought, etc., the insurance company has to pay two per cent of the kharif crop and 1.5 per cent of the rabi crop. The scheme is implemented by the Ministry of Agriculture & Farmers Welfare. Under this scheme of the Central Government, insurance facility is available up to two lakhs. Under this scheme maize, millet, cotton, wheat, barley, gram, mustard, sunflower are insured. The scheme is being implemented in 27 States and Union Territories. Through this scheme, the beneficiaries are contacted from time to time and reviewed. Its main objective is to motivate the farmers to cultivate without worrying about any calamity.

Debt Waiver Scheme:

Under this scheme, loans up to Rs. 2 lakhs of farmers in the state will be waived without any conditions. The scheme covers small and marginal farmers as well as farmers who traditionally cultivate sugarcane and other fruits. The government has announced a budget of Rs 10,000 crore to implement the scheme properly. The benefit of this scheme will not be available to MLAs-MPs, government officials, government employees whose income or pension is more than Rs 25,000.

E-NAM (National agriculture market):

This All India Electronic Trading Portal has been created to provide a unified national market to the APMC markets for agricultural commodities. The Small Farmers Agri Business Consortium is the leading organization for the successful implementation of this portal under the Ministry of Agriculture and Farmers Welfare, Government of India. The portal aims to integrate all APMC markets across the country through online marketing platforms, maintain product quality, as well as provide fair prices to farmers through a guided auction process.

Prime Minister Krishi Sinchai Yojana:

(Har khet Ko Pani / more crop per drop):

The Government of India attaches great importance to water conservation and water management. Therefore, the scheme has been launched with a view to making proper use of available water. Under this scheme, the creation of water resources, its proper management, its proper distribution, as well as the verification of which crop needs how much water, how much crop can be grown in the available water resources, etc. are implemented under this scheme. The biggest beneficiaries are the farmers of Vidarbha as well as those where rain water is scarce.

Paramparagat krishi Vikas Yojana :-(PKVY)

The PKVY scheme was set up in 2015 by the Government of India to promote organic farming, giving priority to organic farming for all. Under this scheme, farmers are trained to form components or clusters. The intention is to make organic farming in about five lakh acres by 2018 by producing 10,000

clusters. It also uses conventional tools. To avail the benefits of this scheme, 50 farmers who wish to do organic farming under PKVY can participate in each cluster. But this stipulates that the total agricultural area of all farmers should be 50 acres. They are paid Rs 20,000 per acre by the government for organic farming for a period of three years.

Pradhanmantri Fasal Bima Yojana (PMFBY): -

The scheme was launched by Prime Minister Narendra Modi on 18 February 2016 by combining the best features of both the National Agricultural Insurance Scheme and the Modified National Agricultural Insurance Scheme. The scheme has been launched under One Nation One Scheme. Under this scheme - to stabilize the agricultural income of the farmers so that they can maintain the continuity in agriculture throughout the year, financial assistance will be provided to the farmers to offset the losses due to unforeseen events Will be done. By getting maximum benefit from these facilities, they can get maximum yield from their farm.

Conclusion: -

The Government of India is working in many ways to bring about agriculture and rural development. But it is not easy to reach the target group. Because the size of Indian agriculture is still very large and fragmented. Therefore, it is not easy to develop a team. It is not possible to implement a single plan everywhere. Agriculture and its dependent industries contribute a lot to the development of the country. For this, the taluka has been identified as a planning component for agricultural development and productive growth. In order to increase the productivity of the major crops in each taluka, they were integrated with the help of modern technology. With the use of quality organic fertilizers, pesticides and with the help of modern technology, agricultural production and alternative agricultural yields are increasing. Modern agriculture is certainly producing more than conventional agriculture. To keep this increment sustainable apart from this finance minister Nirmala Sitaraman has announced in a move to strengthen infrastructure in agriculture, financing facilities of Rs 1 lakh crore will be provided for funding agriculture infrastructure project like implementation PM's vision of 'VOCAL FOR LOCAL WITH GLOBAL OUTREACH ', Pradhanmantri Matsya Sampada Yojana (PMSY), National Animal Disease Control Program, National Medicinal Plants Board, Beekeeping initiatives from TOP TO TOTAL (operation green - extended from - tomatoes, onions and potatoes to - All fruits and Vegetables), Agricultural produce price and quality assurance etc is helping to offset losses in agriculture. With help of new initiatives schemes, programs and plans to benefit to all farmers results a doubling of farmers income till 2022 which is in main achievement of government as well as ministry of agriculture and farmers welfare.

References:-

1)http://mpkrishi.mp.gov.in
2)https://m.economictimes.com
3)https://www.nabard.org
4) Agriculture and rural development - K.V. Venkata Reddy.(Himalaya Publication House;(First edition 01 May,2017)
5) Agriculture schemes - D.R Sanjeev Atrey, Sankalp Publication (01Jan, 2019)

Impact of Child Marriage in India

Vrushali Manohar Londhe
Research Student
Email Id:-vrushalischavan21@gmail.com

Abstract:

Gender inequality is discrimination on the basis of sex or gender to be routinely privileged or prioritized over another. Child marriage is one of example of gender based violence and results in river of gender inequality and gender discrimination. Child marriage is a complex issue, gender inequality and beliefs that girls and womens are inferior to boys and men. This issue is made worse by poverty, lack of education, harmful social norms, insecurity. Child marriage violets children's right and places them at the higher risk of violence, exploitation and abuse. Child marriage affects both girls and boys but its effects girls disproportionately. Child marriage ends childhood. It negatively influences children's rights to education, health and protection this consequences impact or not just the girls directly but also her family and community. Child marriage negatively affects the Indian economy and can lead Tu an intergenerational cycle of poverty.

Keywords: Child Marriage, Child Bride, Economically, Education, India

Introduction:

Child marriage refers to the marriage of a child younger than 18 years old, in accordance to article 1 of the convention of the right of the child. In simple terms child marriage is the marriage of a person aged before maturity. As a derivative interpretation of several international documents, it is a violation of human rights [1]. Most often an arranged marriage, children, especially girls, are married off early – sometimes just after puberty and sometimes even before – so as to bring the family some monetary earning. In many communities, a young girl brings in a lot of dowry – it doesn't matter that these girls may be too young to marry, it doesn't matter that the man she is married off to, is easily double, triple or even four times her age. These communities place significant emphasis on the fact that a woman is not allowed or is deemed incapable of being educated or working. There is also a belief that women must reproduce early enough because they have a shorter reproductive life period in relative comparison with men. In many parts of Asia and Africa, families give birth to many children so that enough of them survive, and enough of them help by being more hands to work. If these children are sons, these families deem them economically viable assets to the family. If these children are girls, they are redundant to the family's economy except when they are married off – until which time they are only more mouths to feed. Child marriage in India is not a new phenomenon. Child marriage in India its impact and the legal provisions that concern the issue.

The prevalence and impact of child marriage in India-

Child marriage in India continues to thrive by and large in the rural areas more than elsewhere in the country. The factors that encourage its subsistence are usually a combination of poverty, the lack of education, continued perpetration of patriarchal relations that encourage and facilitate gender inequalities, and cultural perspectives that encourage the phenomenon to thrive [2]. Economically, child marriages work as mechanisms that are quick income earners. A girl child is seen as a leeway to a large dowry, to be given to her family upon her marriage. Girls in many communities are not seen as assets in the family they are born into, but rather, as liabilities – especially since they are seen as more mouths to feed and no hands to work. From the economic perspective, child marriages are preferred by families that are poor, in a bid to reduce costs on the family, and to enable its economic strength by making money available for food, health and even education of the sons born to the family [3]. The younger a bride, the higher her "value", as the chastity of a young bride remains preserved [4]. In their pursuit to marry off the girls, education remains compromised – consequently culminating in the harsh reality that Indian girls without education are six times more likely to be married off early than those that have about ten years or more of education [5]. There is also the prevailing threat that holds girls back from fighting the yoke of child marriage – honor killings. Girls that are married against their will are not allowed to fight back – for that would induce their families to kill them to preserve the "honor" of their family names and reputation. Another major factor that contributes to the prevalence of child marriage is the declining sex-ratio. While many clinics have and do retain and ensure that the ban imposed on sex-selection and prenatal sex determination remains steadfast, the law is not enforced enough to combat unsafe abortions of the female fetus, and to deal with the abandonment of the girl child after birth [6]. Owing to this, in rural parts of northern India, particularly in Rajasthan, the declining sex-ratio has allowed the festering of a practice known as Atta Satta where a daughter is exchanged for a daughter-in-law, irrespective of her age [7]. Estimates suggest that each year, at least 1.5 million girls under 18 get married in India, which makes it home to the largest number of child

brides in the world - accounting for a third of the global total. Nearly 16 per cent adolescent girls aged 15-19 are currently married.While the prevalence of girls getting married before age 18 has declined from 47 per cent to 27 per cent between 2005-2006 and 2015-2016 it is still too high.

Cultural and Social challenges

Rural communities live in a state of poverty. At the outset, they do not indulge in family planning for there is a notion that more children are more hands to work. When these children grow, educated under the bounty of some system at the behest of the government, there comes a time when the family is forced to make a choice between educating their girls and between educating their boys. Oftentimes, they choose the latter, in the belief that their sons will remain with them, while their girls will leave the house after they marry. Consequently, these families see no economic benefits emanating from educating their girls. In pursuit therefore, these girls are pulled out of school, and every prospect of being able to do meaningful work in the future is rendered difficult. Another element of "stability" that a child marriage earns for her family. In uncertain times family may feel that it is necessary to ensure the economical 'safety' of their daughter and family through marriage. Young girls are perceived and treated as a resource with which their parents can attain greater wealth. Although child marriage is seen as a way to escape the cycle of poverty. Child marriage is also one way of preserving wealth in families of a higher socio-economic class. Some heavily affluent families, especially of tribal affiliations and inclinations are driven by the need to protect their girls' honor and their family name, and direct extension to the family's wealth. This makes them marry their girls off to a family of equal wealth and repute. In many such families, there is significant influence of "family honor" and the need to "protect it". High value is oftentimes placed on the virginity of the girl – it is believed, in many such families, if girl is not a virgin when she marries, it brings shame and dishonor upon the family. There is also the fact that young girls are encouraged to marry older men, because certain cultural practices that dictate longevity of the older husband, sometimes due to the perception that an older husband will be able to act as a guardian against behavior deemed immoral and inappropriate behavior. There are also certain pockets in society colored by a culturally driven mindset that the more children a woman bears, signifies prosperity for the family. This makes them force their girls into an early marriage so that the reproductive span is not limited.

Conclusion:

The legal and policy-making systems fail for two reasons one, the lack of feminist lawmaking and policy-making, and two, the lack of implementation of extant legal provisions and policies. Child marriage is clearly violation of the rights of the girl child, in the forms of discrimination, degrading treatment, slavery and exploitation. Despite the downside, there is plenty of pragmatism in couching concerns about child marriage in human rights principles. It guarantees to legitimize strong penalties for violations of laws and policies that can prevent child marriage. Invariably, the girl child of today is tomorrow's mother - as a mother, she is effectively her child's first teacher. If she is educated, she can give offer her children a good upbringing. A woman has the maximum impact on the social and economic decisions making in the family generally. Educated women help manage the economical requirements of the whole family also educated women add to the social and economic development of the nation. Girls Not Brides members are a diverse network of civil society organisations working to end child marriage around the world. Their experience, unique understanding and longstanding connections with girls and communities are the driving force to stop child bride movement.

Reference:

1) UNICEF, Child Marriage Information Sheet, May 2006
2) UNICEF, Child Marriage in India – An analysis of available data (2012), /documents/childmarriage.pdf; see also Word Vision UK, Research Report "Untying the Knot, Exploring early marriage in fragile states" (2013) .
3) UNICEF, Child Marriage in India – An analysis of available data (2012), at 14, /documents/childmarriage.pdf; see also R Gokul, Child marriage cases on the rise in Trichy,TheTimesofindia(June5,2013).
4) 12 International Center for Research on Women, Asia Child Marriage Initiative: Summary of Research in Bangladesh, India and Nepal (2013).
5) UNICEF, Child Marriage in India–An analysisof available data (2012) http://www.unicef.in/documents/childmarriage.pdf.
US Department of State, Bureau of Democracy, Human Rights and Labor, Country Reports on Human Rights Practices for 2012: India (2012)
6) International Center for Research on Women, Asia Child Marriage Initiative: Summary of Research in Bangladesh, India and Nepal (2013).

7) Anjala Kanesathasan, Laura J. Cardinal, Erin Pearson, Sreela Das Gupta, Sushmita
8) Mukherjee, Anju Malhotra,Catalyzing Change: Improving Youth Sexual and Reproductive Health through DISHA, an Integrated Program in India (2008)

Webilography:

1) http://middleeast.about.com/od/humanrightsdemocracy/a/child-brides.htm.
2) http://www.trust.org/trustlaw/news/qa-why-does-child marriage-happen.
3) ICRW http://www.icrw.org/what-we-do/adolescents/child-marriage
http://www.unicef.in
4) http://articles.timesofindia.indiatimes.com

Effect On Physical Fitness Of Selected component's In Higher Secondary Level Cross Country Runner's.

Mr. Rajendra Laxmanrao Rokade[1], Pro. Dr. P.R. Rokade[2] , Mr. Narendra Sureshrao Rayalwar[3] , Mr. Sanjay Uttamrao Bhumre[4]

[1]Research Scholar :-Dr. B.A.M.U. Aurangabad
[2]Phy. Director -Moreshwar Coll. Bhokardan
[3]Research Scholar :-Dr. B.A.M.U. Aurangabad
[4]Research Scholar :- S. R.T. M. U. Nanded

Introduction :-

As we all know that the Physical Education is a compulsory subject for school children but many of us just confused about its effect on health and fitness. Many researchers proved that the high-level physical fitness contributes the major role in sports performance but what about healthy life? Now a days we are noticed that physical inactivity is increasing among the school children. So, to acquire a normal physical fitness parameter in growing age of human offspring, various researchers try to investigate the different techniques from ancient and modern exercises. Out of such some advanced training activities plays an important role in physical fitness with recreation. Sullected components exercise training is one of them.The main purpose of this study is to find out the effect of sullected component training exercise program on school children and suggest the right program of this training exercise for higher sec.school cross country runner students. The study has been limited to the higher sec. school children of age group between 16 to 20 years and the duration of the study was restricted to 04 weeks. The observations and finding made in this study would be helpful and beneficial to Trainers and Coaches to develope a Physical fitness. Also, this study may give an opportunity to the researchers to conduct further studies on different aspects of sullected components exercises.

Keywords:-Physical Fitness, sullected components, Higher secondery, cross country

Sullected Components :-

This training exercise group is madeform body conditioning that involves endurance training, resistance training, high-intensity, flexibility, speed,agility,strength and exercises performed in a sullected components, similar to highintensity training.

Physical fitness :-Physical fitness is state of health and wellbeing and, more specially, the ability to perform aspects of sports, occupations and dailyactivities.

Higher secondary School children :-Students who above class 10+ and that acquire knowledge and curious about the new knowledge and explosive physical fitness.

Methodology :-

Design of study: studentplayers were introducing to training session. Pre-test / Post- test and data were analysed

Step 1- Pre-Test
↓
Step 2- Sullected component Training
↓
Step 3- Post Test
↓
Step 4- Comparison and final Result

Sampling : The researcher carried out the research with twenty Sec. School students of age group 16 to 20 years.Toachive the objective of the study 20 male students from **AGRG Higher secondery school, shendurni** there students players were introducing to regular training session. Pre-test / Post- test and data were analysedusing 't'- test at 0.05 level of significance.

Pre test :- This sullected 20 student players were engaged with runninig related genral warm up, excercises, various recreational activities, small games funny games were arranged 04 weeks regularly after pre test.

Sullected components training Exercise:-

The students players weresullected physical fitness components is comprised of this tests

1. Pull Ups **2.** Sit Ups
3. Standing broad jump **4.**50 yard dash
5. Shuttle Run **6.** 1.5 mile run / walk

Sullected ComponentsTrainingSchedule:-

Tests should be administered in the above order. The test process should be sequenced as follows:-

Chart- 01

WEEK /DAY	Exercise/ Number	Repetition / time
1st to 2nd Mon, Tues , Wed, Thurs, Fri, Saturday	Warming exercise Sullected component 1 to 6 Relaxation exercise	15 min Each exercise for 30 sec 15 min
3rd to 4th Mon, Tues , Wed, Thurs, Fri, Saturday	Warming exercise Sullected component 1 to 6 Relaxation exercise	15 min Each exercise for 40 sec 15 min

Selection of variables and test :-

The sullected exercise components make an effect on physiological systems of the body as well as they also effects on physical fitness. Thus assessment of physical fitness is measured scientifically by various approved tests as follows.

Result of the Study:- Below table showing pre and post test, pull ups, sit ups, standing broad jump, 50 yard dash, shuttle run, 1.5 mile run/walk mean,meandifference,calculated‘t’value.

‘t’ 0.05 (20) = 2.093.

Chart - 02

Sr . NO	TEST	Mean	Mean Difference	‘t’
1	Pull Ups	Pre Test 5.95 Post Test 6.20	0.35	1.15
2	SIT UPs	Pre Test 24.65 Post Test 26.25	1.6	2.38
3	Standing Broad Jump	Pre Test 1.79 Post Test 1.83	0.04	1.92
4	50 Yard Dash	Pre Test 6.83 Post Test 6.78	0.05	0.97
5	Shuttle Run	Pre Test 11.53 Post Test 11.50	0.03	0.3
6	1.5 mile run/ Walk	Pre Test 10.20 Post Test 9.44	0.77	3.4

Data Analysis :-

Various stastical scales were used to analysis the data collected by test the statistical scales like mean,mode, median, t-scale,anova,ancova were used for conclusion.

Conclusion :-

Sullected training components are recommended in higher secondery schoolcross country runners for improving factor of stamina of running,speed, strength,flexibility, physical fitness. Also, it is recommended that sullected training components are used to be well for us.

References :-

1. Jarde S.A., ‘SharirikShikshanachaEtihas’, Snglikar Publication, Kolhapur 12, First Edition 1988, Pages 140 Dr. Bhintade V. R., ‘ShishanikSanshodhanPadhati’,NityaNutanPrakashan, Pune 30 First edition 2006, Reprint 2008, Pages 228
2. Dr. Barude R. R.,’ SanshodhanPatdhatishastra’,Pune VidyathriGruhaPrakashan, First edition 2005, Reprint 2008, Pages 397
3. Prof. Dr. VenkateshWangvad, Principal Shankar Tivari,’SharirikShikshanMapanvaMulyamapan’, Dimond Publication, Pune 30 First edition 1995, Reprint 2006, Pages 283 Jarde S.A., ‘SharirikShikshanTantravaPadhati’,Chandrama Publication, Kolhapur 3, First edition 1995, Pages 120 Smt. Jadhav K.G., PagareSachin B., Singh Sinka Kumar, Research Process in Physical Education & Sports: An IntroductionKhelSahitya Kendra, New Delhi 2, 2007 pg.117
4. Campbell, D., & Stanley, J. (1963).Experimental and quasi-experimental designs for research. Chicago, IL: Rand McNally.
5. David Hinchliffe (2008) “Pitch vision cricket academy develop cricket test for players “Pitch Vision technology 2008. Akaike, H. 1974. “A New Look at the Statistical Model Identification.” IEEE Transactions on Automatic Control 19:
6. Web Site = http://Shodthganga.infibnet.ac.in Web Site = http://Shodthgotri.infibnet.ac.in Web Site = https://en.wikipedia.org/wiki/Circuit_training

Synthesis and Characterization of Mixed Ligand Complexes of 1-{(E)-[(2-methyl-5-nitrophenyl)imino]methyl}naphthalen-2-ol and 4-bromo-2-{(E)-[(4-methoxy-2-methylphenyl)imino]methyl}phenol with Co(II), Ni(II), Cu(II) and Zn(II) Ions

Abhay S. Bondge[1] Vijaykumar S. More [2]

[1]Department of Chemistry, Shivaneri Mahavidyalaya Shirur Anantpal, (MS), India
[2]Department of Chemistry, Kai. Rasika Mahavidyalaya Deoni, (MS), India

Abstract:

The mixed ligand complexes of Co(II), Ni(II), Cu(II) and Zn(II) with Schiff bases 1-{(E)-[(2-methyl-5-nitrophenyl)imino]methyl}naphthalen-2-ol (L^1H) and 4-bromo-2-{(E)-[(4-methoxy-2-methylphenyl)imino]methyl}phenol (L^2H) have been synthesized and characterized. The resulting complexes were characterized by thermogravimetric analysis, magnetic moment measurements, conductivity measurements, IR, UV-visible spectral studies. The Schiff bases acts as bidentate monobasic ligands, coordinating through deprotonated phenolic oxygen and azomethine nitrogen atoms. The complexes are non-electrolytic in DMSO. The presence of the two coordinated water molecules in these complexes was indicated by IR spectra and thermogravimetric analysis of the complexes. From the analytical and spectral data the stoichiometry of these complexes have been found to be $[M(L^1)(L^2)(H_2O)_2]$ {where M = Co(II) , Ni(II), Cu(II) and Zn(II)}. It is found that Co(II), Ni(II), Cu(II) and Zn(II) complexes exhibited octahedral geometry.

Keywords: Schiff bases, Mixed ligand, Metal complexes.

Introduction

In the field of coordination chemistry, Schiff base metal complexes have a curious history [1]. The present work is the study of mixed ligand complexes of Co(II), Ni(II), Cu(II) and Zn(II) with Schiff bases 1-{(E)-[(2-methyl-5-nitrophenyl)imino]methyl}naphthalen-2-ol (L^1H) and 4-bromo-2-{(E)-[(4-methoxy-2-methylphenyl)imino]methyl}phenol (L^2H). The structure of ligands L^1H and L^2H are shown in figure 1 and 2 respectively.

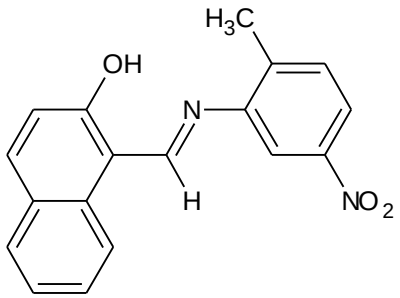


Figure 1. 1-{(*E*)-[(2-methyl-5-nitrophenyl)imino]methyl}naphthalen-2-ol (L^1H)

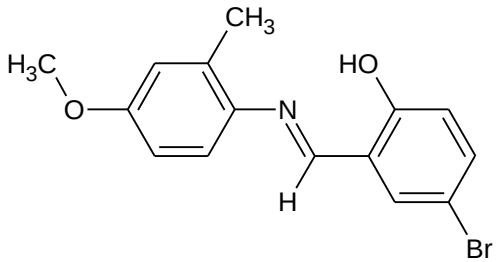


Figure 2. 4-bromo-2-{(*E*)-[(4-methoxy-2-methylphenyl)imino]methyl}phenol (L^2H)

Materials and methods

Synthesis of ligands

The ligands (L^1H and L^2H) were prepared by the condensation of the corresponding aldehyde and amine in 1:1 molar ratio by refluxing in ethanol [2**]**.

Preparation of complexes

The mixed ligand metal complexes were prepared by precipitation method [3].

Results and Discussions

The resulting complexes were characterized by thermogravimetric analysis, magnetic moment measurements, IR and UV-visible studies.

Conductivity Measurements

The molar conductance values of Co(II), Ni(II), Cu(II) and Zn(II) complexes are 0.015, 0.014, 0.018 and 0.023 ohm^{-1} mol^{-1} cm^2 respectively of 10^{-3} M solution in DMSO indicate that the metal complexes are non-electrolytic in nature.

Electronic spectra and Magnetic moment

The electronic spectral studies of Mixed Ligand metal Complexes carried out in DMSO solution. The absorption spectrum of the Co(II) complex shows bands at ~ 10015 cm^{-1} ($\varepsilon \sim 15$) and ~ 19607 cm^{-1} ($\varepsilon \sim 45$) attributed to $^4T_{1g}(F) \rightarrow {}^4T_{2g}(F)$ (ν_1) and $^4T_{1g}(F) \rightarrow {}^4T_{1g}(P)$ (ν_3) transitions respectively in an octahedral field. The Co(II) complex has magnetic moment 5.12 BM also suggest an octahedral geometry [3], [4].. Ni(II) complex exhibits two electronic spectral bands at ~ 10615 cm^{-1} ($\varepsilon \sim 20$) and ~ 16568 cm^{-1} ($\varepsilon \sim 61$) which can be assigned to $^3A_{2g}(F) \rightarrow {}^3T_{2g}(F)$ (ν_1) and $^3A_{2g}(F) \rightarrow {}^3T_{1g}(F)$ (ν_2) transitions in an octahedral field[5]. The Ni(II) complex has magnetic moment 3.44 BM also suggest an octahedral geometry [3], [4]. The Cu(II) complex exhibit broad band centered at ~ 14706 cm^{-1} ($\varepsilon \sim 77$) mainly due to $^2E_g \rightarrow {}^2T_{2g}$ transition suggesting the distorted octahedral geometry. The observed magnetic moment value for Cu(II) complex is 1.83 BM suggestive of distorted octahedral nature for the complex [3], [4]. Zn(II) complex does not exhibit any characteristic d-d transitions and is also found to be diamagnetic in nature [5].

Infrared spectra

The important infrared frequencies exhibited by the ligands L^1H and L^2H and their mixed ligand complexes are given in the Table 1. Infrared spectra of the schiff bases L^1H and L^2H show a broad band centered at around 3455and 3448 cm^{-1} due to the phenolic hydroxyl group respectively in free ligands, which disappeared in spectra of their complexes indicating probably the coordination through phenolic oxygen moiety. The schiff bases L^1H and L^2H show a medium intensity band at around 1328 and 1277 cm^{-1} due to phenolic ν(C-O) group of is shifted to higher region indicating the coordination through the phenolic oxygen atoms [5]. The IR spectra of the schiff bases L^1H and L^2H exhibit a strong band at 1619 and 1615 cm^{-1}

due to ν(C=N) (azomethine) which has been shifted towards lower region in the spectra of complexes indicating the participation of the azomethine groups in the complex formation [2]. The spectra of the complexes show a broad diffused bands in the region at around 3100-3650 cm^{-1}, strong bands at 1535-1538 cm^{-1} and week intensity bands at 825-831 cm^{-1} due to ν(OH), δ(OH) and ρ_r(OH) respectively of the coordinated water molecules [6]. The coordination through nitrogen of azomethine and oxygen of (C-O) group of ligands are further evidenced by the appearance of non-ligand bands in the complexes at around 496-556 cm^{-1} and 420-464 cm^{-1} are due to M-O and M-N bonds respectively [4], [6].

Table 1. Characteristic IR bands of the ligands L^1H and L^2H and their mixed ligand metal complexes.

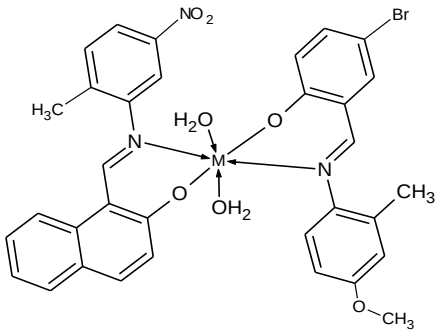
Schiff base / Complex	IR bands (cm^{-1})							
	ν_{OH} (phenolic)	ν_{OH} (H_2O)	$\nu_{C=N}$	δ_{OH} (H_2O)	ν_{C-O} (phenolic)	ρ_{rOH} (H_2O)	ν_{M-O}	ν_{M-N}
L^1H	3455	-	1619	-	1328	-	-	-
L^2H	3448	-	1615	-	1277	-	-	-
$[Co(L^1)(L^2)(H_2O)_2]$	-	3150 – 3650	1614, 1608	1536	1385, 1363	828	556, 501	464, 417
$[Ni(L^1)(L^2)(H_2O)_2]$	-	3200 – 3650	1613, 1609	1533	1386, 1364	826	547, 502	462, 416
$[Cu(L^1)(L^2)(H_2O)_2]$	-	3150 – 3650	1611, 1607	1534	1383, 1364	825	548, 496	461, 420
$[Zn(L^1)(L^2)(H_2O)_2]$	-	3100 – 3650	1612, 1609	1538	1393, 1365	831	547, 505	464, 419

Thermogravimetric analysis

The Co(II), Ni(II), Cu(II) and Zn(II) complexes lose their weight in the temperature range ~ 130-275 °C, 125-257 °C, 125-265 °C and 130-278 °C respectively corresponding to two coordinated water molecules with an endothermic peak in DTA curve indicates that the two water molecules are coordinated in the metal complexes [4].

Conclusion

Magnetic susceptibility, Thermogravimetric analysis and spectral observations suggest the octahedral geometry for the Co(II), Ni(II), Cu(II) and Zn(II) complexes and exhibit coordination number six. The general structure of the complexes is shown in figure 3.



M = Co(II), Ni(II), Cu(II) and Zn(II).

Figure 3. Proposed structure for the complexes.

References

1. Dash, D.C., Meher F.M., Monhanty P.C. and Nanda J. (1987). Complexes of 3-Benzyllideneimino-2-thio-hydantoin and 3-p-Anisylidenemino-2-thiohydantion with Mn(II), Co(II), Ni(II) and Cu(II). *Indian Journal Cheemistry*, 26(A): 698-701.
2. Shriodkar, S. G., Mane, P. S. and Chondhekar, T. K. (2001). Synthesis and fungitoxic studies of Mn(II), Co(II), Ni(II) and Cu(II) with some heterocyclic Schiff base ligands, *Indian Journal Chem*istry, 40A: 1114-1117.
3. Reddy, V., Patil, N. and Angadi, S. D. (2008). Synthesis, Characterization and Antimicrobial Activity of Cu(II), Co(II) and Ni(II) Complexes with O, N, and S Donor Ligands, *E-Journal of Chemistr*y, 5(3):577-583.
4. Thakkar, N. V and Bootwala, S. Z. (1995). Synthesis and characterization of binuclear metal complexes derived from some isonitrosoacetophenones and benzidine, *Indian Journal Chem*istry, 34(A):370-374.
5. Makode, J.T. and Aswar, A.S. (2004). Synthesis Characterization, biological and thermal properties of some new Schiff base complexes derived from 2-hydroxy-5-chloroacetophenone and S-methyldithiocarbazate, *Indian Journal Cheemistry*, 43(A):2120-2125.
6. Ravanasiddappa, M., Sureshg, T., Syed, K., Radhavendray, S. C., Basavaraja, C. and Angadi, S., D. (2008).Transition Metal Complexes of 1, 4(2'-Hydroxyphenyl-1-yl) di-iminoazine: Synthesis, Characterization and Antimicrobial Studies, *E-Journal of Chemistr*y, 5(2): 395-403.

Socio-Economoic Impact Of Watershed Management Program In Apsinga Village Of Osmanabad District, Maharashtra State, India

Nitin P.Patil[1], Amit K.Thorat[2]
[1]Associate Professor and Head, [2]Research Scholar
Department of Water and Land Management, Dr. Babasaheb Ambedkar Marathwada University, Sub Campus Osmanaabad (MS) India

Abstract

The socio-economic impact of a watershed project in Osmanabad district of Maharashtra has been evaluated in a 'before and after' framework. The implementation of the project has facilitated area expansion during the post-rainy season, which was fallow before initiation of the project. The productivity of most of the crops has also increased. Besides, the project could arrest degradation of the land, which was very severe in the command area and was acting as a limitation in improving the crop productivity. Livestock population has also increased considerably. These improvements in the agricultural activity have led to an increase in theemployment opportunities for the farmers of the area. Smallholders have been benefited the most from the project.

Introduction

Together with improved technologies, conservation and judicious use of natural resources is the key to improving productivity and sustainability of agriculture. Soil and water are two most important resources that need to be conserved and utilized efficiently to increase agricultural production. To achieve this, watershed development programs have been started in many regions of India, particularly in the arid and semi-arid regions.Apart from resource conservation, watersheds help the farmers in diversifying and intensifying the agricultural activity in a manner that enables them to augment their income and employment. This paper evaluates the socioeconomic and impacts of a watershed in Apsinga watershed of Maharashtra state.

Methodology

A watershed development project, implemented by the Department of Agriculture, Government of Maharashtra, in Apsinga village of Osmanabad district was selected for assessing its socio-economic and impact. The watershed development unit is a part of the Integrated Watershed Development Program (IWMP). The watershed components adopted in the project were continuous contour trenches, compartment bundings, farm ponds and cement nala bund with deepening. The situation of arability was studied for making a comparison in context of 'before and after' the project. The data regarding number of persons engaged and the employment generation in agriculture and non-agriculture sector per year was assessed. The area under fodder crops and its productivity was also observed in the pre and post implementation period. Number of milchcattle and the milk production was also obtained from the beneficiaries. The extent of water availability in the water resources and its effect on the improvement in the drinking water facilities were also observed. The impact of development of natural resources in the watershed area on the migration, annual household income, mechanization and the socio-economic aspects like banks, shops, healthcare and educational facilities were also observed and compared.

Table No. 1 Changes in socio-economic profile after the implementation of the project in Apsinga watershed

Sr. No.	Particulars	Units	Pre-project	Post-project	% Change
1	Number of persons engaged in own farm	Nos.	1750	1645	6
2	Number of days employed per year	Days/year	210	280	25
3	Number of persons engaged as farm labours	Nos.	850	950	11.76
4	Number of days employed per year	Days/year	150	180	20
5	Number of persons engaged in Non-agriculture sector	Nos.	275	325	18.18
6	Number of days employed per year	Days/year	180	210	16.66

7	No. Of persons engaged in ancillary activities	Nos.	38	78	105.263
8	No. Of children engaged in schools	Nos.	425	615	44.705
9	Reduction in migration	Nos.	125	98	-21.6

Results And Discussion

Watershed creates various impacts on natural resources. Those impacts include crop diversification/intensification and improvements in crop productivity, livestock numbers and employment, and are largely economic in nature. With addition to these impacts also include improvements in degraded land and expansion of arable land and this concern the sustainability of the agricultural production system.

Employment in agriculture and non-agriculture activities among beneficiaries

Intensification and diversification of agricultural activities increase the opportunities for agriculture as well as non-agriculture sectors. Sector wise changes in employment presented in table 1, reveals that number of persons engaged in own farm activities were reduced from 1750 to 1645 (decreased by -6%) after the implementation of the project in Apsinga watershed. The number of days employed per year recorded an increase from 210 days/year to 280 days/year (increased by 25%) in post project evaluation. Another interesting analysis emerged out of this evaluation was a negative relationship between number of persons engaged in own farm activities and number of days employed per year, that number of persons engaged in own farm activity were decreased as the farm mechanization showed its effect in the watershed. Also, the number of days employed per year in own farm was recorded an increase as number of employment opportunities also flourished in watershed led intensification of agriculture. Employment opportunities for farm labors also increased considerably as number of farm labors required had a substantial growth from 850 numbers to 950 numbers (increased by 11.76%) as the components in watershed management consisting land, water and biomass were developed under the project. The number of days employed per year also justifies the watershed management work with an increase from 150 days to 180 days (increased by 20%) in post implementation of the project. The similar effect was observed with respect to the employment in non-agriculture sector as well. The number of persons engaged in non-agriculture related activities was increased from 275 numbers to 325 numbers (increased by 18.18%) in post project period. The number of days employed per year for the same also was increased from 180 days/year to 210 days/year (increased by 16.66%) in post project implementation.

Changes in number of persons engaged in ancillary activities

The ancillary activities in a watershed include fisheries, poultry and rural craftsmanship and like. Ancillary activities create supplemental incomes to farmers and are very much vital in improving their socio-economic status. Table 1 reveals that number of persons engaged in ancillary activities was increased from 38 to 78 (increased by 105.3%) in post project period.

Changes in number of children enrolled in schools

The number of children enrolled in schools was increased from 425 to 615 (increased by 44.7%) in post project period. This is also an important indicator of socio-economic development depicting betterments in the watershed.

Changes in migration

As per the table no. 1, a reduction was observed in migration among the beneficiaries of the project. The project implementation has facilitated number of employment opportunities in agriculture as well as non-agriculture sector.

Changes in area under fodder production

Green fodder is an economic supply of nutrients for milch animals. It is very digestible and palatable. Microorganisms in green fodder help in improving the digestibility of crop residues under different feeding systems. It also helps in maintaining good health and improving the breeding efficiency of animals, which in turns proves very fruitful in socio-economic development of any watershed. As per the table no. 2, the area under fodder production were increased from 10.12 ha to 25.29 ha (increased by 150%) in post project implementation. The fodder production also recorded an increase from 2530 qt/year qt 8851.5 qt/year (increased by 250%) in post project period.

Changes in fuel wood production

Fuel wood has remained the principal component of rural domestic energy in India and in most developing countries. Most of the fuel wood has been reported to be derived from forests with some from trees growing on homesteads, farm lands and common lands outside forests. Since, there was an increase

in the use of LPG in the watershed; there was a reduction in the use of fuel wood from 22338 qt/year to 17337.5 qt/year (decreasedby -22.4%) in post project phase.

Table 2Changes in socio-economic profile and other measurable impacts after the implementation of the project in Apsinga watershed

Sr. No.	Particulars	Units	Pre-project	Post-project	% Change
1	Fodder production (Maize)	Ha.	10.12	25.29	149.90
2	Fuel wood production	Qt/year	22338	17337.5	-22.385
3	Number of milch cattle/livestock	Nos.	390	1000	156.410
4	Milk production (Annual)	KL/year	127.75	730	471.428
5	Duration of flow of water in streams	Months	Up to December	Up to January	14.285
6	Annual mean household income	Rupees	125000	200000	60
7	Farm mechanization	Nos.	27	103	281.481
8	Grocery shops	Nos.	12	25	108.333
9	Health centres	Nos.	2	3	50
10	Agro service centres	Nos.	2	4	100

Changes in milch cattle/livestock and milk production

Livestock is commonly known as domesticated animals rose in an agricultural setting to product labor and commodities such as meat, eggs, milk, fur, leather and wool. Livestock economics plays an eminent role in socio-economic development of any watershed. In Apsinga watershed, number of milch cattle was increased from 390 to 1000 (increased by 156.4%) in post project period. Another interesting analysis emerged from the analysis was that the number of indigenous cows was reduced from 242 to 200 (increased by 21%) and on the other hand number of improved cows was increased from 4 to 200 (increased by 4900%) in post project period. Population of buffaloes also was increased at a tremendous rate from 144 to 600 (increased by 316.6%) in post project period. The increase in livestock population was much higher in the case of buffaloes. This indicated that the watershed project helped in the diversification of crop-livestock mixes and reduced risks.

Changes in milk production

Not surprisingly, cop-livestock linkages improved after implementation of watershed program resulting into higher milk production. As per the table no. 2, the yearly milk production was increased from 127.5 Kl/year to 730 Kl/year (increased by 471.4%) in post project implementation. The dairy milk production in the watershed also recorded an increase from 350 liters/day to 2000 liters/day (increased by 471.4%) after the implementation of the project.

Changes in duration of flow of water in streams and drinking water availability

Duration of flow of water in streams has a direct relationship with availability of water for all purposes. The duration of flow of water had increased up to January month post implementation. It was more than a month when compared with the previous availability up to December in pre project implementation. There were no changes observed in availability of drinking water as it remained available for 9 months, even after the implementation of the project. The quality of drinking water was somewhat improved in post implementation.

Changes in annual mean household income

Household income is the combined net income of all members of a particular household above a set age limit. A reflection of watershed development project was observed in mean annual household income. According to table 1, mean annual household income of households was increased from 125000 rupees to 200000 rupees (increased by 60%) in post project period.

Changes in Farm mechanization

Agricultural mechanization has helped in increasing production, productivity and profitability in the watershed by achieving timeliness in farming operations, bringing precision in metering and placement of inputs. The number of farm assets recorded before implementations were 27 and after implementation it almost grew four times to 103 (increased by 281.4%) in post project period. This indicated that the watershed helped in attaining conservation, regeneration and judicious use of all the resources resulting into better livelihoods at Apsinga watershed.

Changes in other measurable impacts

In other measurable impacts, the number of banks remained 1 and recorded no change even after the implementation of the project. While number of grocery shops increased from 12 to 25 (increased by 108.3%) in post project period. An increase in health centers was also recorded in the watershed; it increased from 2 to 3 (increased by 50%) in post project period. No changes were observed in approach roads as it remained 4 even after the implementation of the project. Agro consultancy services and agri machinery/equipment centers recorded no change as it remained zero. There was a growth recorded in terms of agro service centers as it increased from 2 to 4 (increased by 100%) in post project analysis.

Conclusions

It is found that implementation of watershed development work has resulted in increased employment opportunities, livestock population, yield of milk; persons engaged in ancillary activities, children enrolled in schools, mean annual household income, farm mechanization and in other measurable impacts as well. Besides, the project could also help in arresting degradation of arable and non-arable lands. All of these have enhanced farmer's income and employment opportunities at the local level.

Bibliography

1. Singh SB and Prakash N. 2010. Socio-economic impact of watershed development project in Manipur, Indian Research Journal of Extension Education, 10(1): 78-82.
2. Sripadmini R, Chandrakanth MG and Chandrasekhar H. 2001. Relative economic performance of watershed development projects under different management protocols in Karnataka, University of Agricultural Sciences, Bangalore. 74 p.
3. Palanisami K and Suresh Kumar D. 2005. Leapfrogging the watershed mission: Building capacities of farmers, professionals and institutions, In: Watershed management challenges: Improving productivity, resource and livelihoods, (BR Sharma, JS Samra, CA Scott and SP Wani, Eds.), International Water Management Institute and ICRISAT Publication, Malhotra Publishing House, New Delhi. pp 245-257.
4. Govindbabu, R.K.Sharma and Babusingh. 2004 Socio-economic impacts of watershed development in Kanpur, Agricultural economics research review, vol. 17 (conference no.) 2004, pp 125.130
5. Samuel A. 1999. Rural poverty alleviation through watershed management: Some reflections on the indo-german watershed development programme. Agriculture and Rural Development, 6(2): 64.
6. Deshpande RS and Rajasekaran N. 1997. Impact of watershed development programme: Expereinces and issues. ArthaVignana, 34(3): 374-390.
7. Farrington J, Turton C and James AJ. 1999. Participatory watershed development: Challenges for the twenty first century, Oxford University Press, New Delhi. 382 p.
8. Ingle PO and Kude NR. 1991. Comprehensive watershed development programmes: An evaluation. Yojana, 35: 17-19, 29.
9. Joshi PK, Jha AK, Wani SP, Sreedevi TK and Shaheen FA. 2008. Impact of watershed program and conditions for success: A meta-analysis approach. Global Theme on Agroecosystems Report No. 46, International Crops Research Institute for the Semi-Arid Tropics, Patancheru, Andhra Pradesh, India. 24 p.
10. Narayana NV and Prahalladiah S. 1999. COWDEP- A boon to drought prone areas. Kurukshetra, 47(3): 305.
11. Osman M, ShaikHaffis and Kareemulla K. 2009. Land use diversification as an index of watershed evaluation – A case study of Andhra Pradesh, Agricultural Situation in India, 66(2): 81-90.
12. Palanisami K, Suresh Kumar D and Wani SP. 2011. Application of econometric methods for assessing the impact of watershed programs. Proceedings of the National symposium 1-2 February 2010, NASC Complex, New Delhi, India. pp 106-126.

Rural infrastructure development policies in India

Pravin More
Assistant professor s.p.jain college pabal, tal shirur dist Pune
pravin.more2525@outlook.com

Introduction:

"India lives in the village" – Mahatma Gandhi

As the father of the nation rightly quoted that India lives in villages. As per census of 2011, out of 121 crores of population, 83.84% of population is living in the rural areas. India is predominantly an agrarian economy with prime activity of agriculture and allied activities. In a pre-dominantly agrarian economy like India, rural development is the prerequisite for an overall development of an economy. In the post independence era despite Government efforts, the benefits of economic growth were not much visible in rural areas. Without the development of rural areas, the country can never claim to be developed. For development of three sectors of economy ,infrastructure development is most importantcondition. Indian elections are won bypoliticians on the basis of promising delivery of infrastructure like free electricity drinking water and roads. But in villages infrastructure quality is pathetic and poor.

Objectives of Study: main objectives of the study are:

1.To study the significance or rural development in India.
2.To highlight the areas which urgently require attention for rural development.
3.To study the contemporary schemes launched by Government of India for eradication of poverty and unemployment.

Research Methodology: The paper is purely based on the secondary data collected from books, Research articles, journals, and websites.

Rural Areas: In general, a rural area or countryside is a geographic area that is located outside towns and cities. Typical rural areas have a low population density and small settlements. Agricultural areas are commonly rural, as are other types of areas such as forest. Different countries have varying definitions of rural for statistical and administrative purposes.

Definitions of Rural Development:

According to Planning Commission, a town with a maximum population of 15,000 is considered rural in nature.

1. National Sample Survey Organisation (NSSO) defines "Rural" as follows: An area with a population density of up to 400 per square km. A minimum of 75% of male working population involved in agriculture and allied activities.
1. RBI defines rural areas as those areas with population of less than 49,000.
2. Census 2011 FiguresTotal population: 121 crores

Rural population: 83.3 crore – 68.84%
Urban population: 37.7 crore – 31.15%
Total no of villages: 6, 40,867

Meaning of Rural Development: The term rural development refers to the process of improving the quality of life and socio-economic well-being of people residing in rural areas. It is wider than agriculture development. It implies that agriculture development is a part of rural development.

Components of Rural Development:

There are five components of Rural Development:

1. Health and nutrition: Villagers must have an easy access to health care and health related services within the proximity. Their nutrition standard has to be maintained with sufficient availability of food grains, pulses, cereals, vegetables, and fruits.
2. Education: Access to education is the prerequisite of rural development. Children are supposed to receive qualitative formal education at schools.
3. Safe environment: Provision of clean and pollution free air in villages.
4. Gender equality: No discrimination between male and female on social, economic, and political front.
5. Incom e equality: An equitable distribution of income and wealth to ensure social justice.

Objectives of Rural Development:

The important objectives of Rural Development are:

1. mproving the living standards of rural people by utilising available natural and human resources.
2. Development of village and cottage industries and handicrafts.
3. Development of socio-economic infrastructure such as setting up of rural banks, cooperatives, schools, and primary health centres etc.

4. Development of community services and facilities like clean drinking water, electricity, rural roads, transportation, and communication network.
5. Active participation of people in planning and development like role of sarpanch and Aanganwadi workers.
6. To reduce mass migration of workers from rural to urban areas.
7. Alleviation of poverty.

Some areas which need an urgent attention for rural development in India are:

1. Health and sanitation
2.Literacy
3. Women empowerment
4. Land reforms
5.infrastructure development like roads, power, irrigation etc
6. Ruralcredit

Schemes for Rural Development launched by Government of India:

For uplifting the rural sector of our country, the Ministry of Rural Development, and the Government of India in coordination with Department of Rural Development and Department of Land Resources have been carrying forward various schemes. These schemes are formulated to benefit the citizens of rural India who will eventually become the pillars of Indian Economy in the long run

Some important schemes for Rural Development launched by Government of India are -

Pradhan Mantri Gram Sadak Yojana (PMGSY) Launched on 25 December 2000 by then Prime Minister Atal Bihari Vajpayee, the scheme aims at enhancing rural road connectivity. This scheme provides connectivity to the habitations with less or no connectivity at all and helps in poverty reduction by promoting access to economic and social services. This ensures sustainable poverty reduction in the long run as people get an opportunity to get connected with the rest of the world. The scheme has been benefiting several villagers and is helping them lead better lives. Nearly 82% of roads have been built till December 2017 which have successfully connected several rural areas to cities. Remaining 47,000 habitations will also get connected by all-weather roads by March 2019. Earlier, the scheme was funded only by the central government but after the recommendation of 14th Finance Commission report the expense is shared by both state and central government. DeenDayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) .Deen Dayal Upadhyaya Grameen Kaushalya Yojana, a part of National Livelihood Mission, has the objectives of catering to the career aspirations of the rural youth and adding diversity to the income of rural families. Launched on 25th September 2014, the scheme's prime focus is on the rural youth of poor families aged between 15 and 35. An amount of Rs 1500 crores has been provided for the scheme which will help in enhancing employability. The yojana is present in 21 States and Union Territories across 568 districts and 6215 blocks changing the lives of youth. Around 690 projects are being implemented by 300 partners. As per the government reports, over 2.7 lakh candidates have been trained till now and 1.34 lakh candidates have been placed in jobs.

3.**Swarnjavanti Gram Swarozgar Yojana (SGSY)/ National Rural Livelihood Mission** Swarn Jayanti Gram Swarozgar Yojana which is redesigned as National Rural Livelihood Mission was launched in 2011. Also known as Aajivika, this scheme aims at empowering women self-help model across the country. Under this scheme, the government provides a loan of 3 lakh rupees at an interest rate of 7% which can be reduced to 4% at the time of repayment. The scheme was aided by World Bank and aimed at creating efficient and effective institutional platforms for poor people. It also helped in increasing the household income by improving access to financial services' also helps in harnessing the capabilities of the poor so that they can participate in the growth of the economy of the country.

4.**Sampoorna Grameen Rozgar Yojana (SGRY)** The Sampoorna Grameen Rozgar Yojana (SGRY) was launched in 2001 to provide employment to the poor. It also aimed at providing food to people in areas who live below the poverty line and improving their nutritional levels. Other objectives of this Yojana were to provide social and economic assets to the people living in rural areas. The scheme did not include the employment of contractors or middlemen.

5.**Sarva Shiksha Abhiyan (SSA)** Pioneered by former Prime Minister Atal Bihari Bajpayee, the SarvSiksha Abhiyan was launched in 2000. It is an attempt to provide an opportunity to all children between 6 and 14 years of age to get free education which is also a fundamental right. The state and the central government share the expenses of this project.

6.**Sansad Adarsh Gram Yojana (SAGY)** Sansad Adarsh Gram Yojana (SAGY) is a rural development project launched in 2014 by the Government of India in which each Member of Parliament will take the responsibility of three villages and look after the personal, human, social, environmental, and economic

development of the villages. This would substantially improve the standard of living as well as the quality of life in the villages. No funding has been provided to this project as funding can be raised through existing schemes.

National Social Assistance Programme:

National Social Assistance Programme signifies the fulfilment of Directive Principles in Article 41 and 42 of the constitution which states that it is the duty of the state to provide assistance to the citizens in terms of sickness, unemployment, old age in limits of the economic capabilities. It is basically a centrally sponsored scheme of Government of India which provides financial help to widows, elderly, people with disability in form of pensions. The scheme was launched on August 15 in 1995.

Pradhan Mantri Awaas Yojana (Gramin)/ Indira Awas Yojana: Indira Awas Yojana revamped as Pradhan Mantri GraminAwaas Yojana in 2016 is a welfare programme created by the Indian Government to provide housing to rural poor people in India. The goal of this scheme is to provide home to all citizens till 2022. The cost of constructing the houses will be shared by the centre and the state. The scheme has been implemented in rural areas throughout India, except in Delhi and Chandigarh. Houses developed under this scheme will have basic amenities such as toilet, electricity connection, drinking water connection, LPG connection etc. The allotted houses will be jointly under the name of husband and wife.

Antyodaya Anna Yojana (AAY): Launched by the former Prime Minister Atal Bihari Vajpayee in 2000, the Antyodaya Anna Yojana aimed at providing food grains to around 2 crore people at subsidised rates. As per the scheme Below Poverty Line (BPL) families were provided 35 kgs of food grains. Rice was provided at the rate of Rs 3/kg and wheat at the rate of Rs 2/kg. The scheme was first launched in Rajasthan but has now been implemented in all Indian states.

10.**Provision of Urban Amenities in Rural Areas (PURA)** PURA is a strategy for Rural Development in India which was proposed by former President APJ Abdul Kalam in his book Target 3 billion. PURA proposes that urban infrastructure and services should be provided in rural areas to create opportunities outside the cities. This will also prevent the migration of youth from the rural areas to urban areas. The Central Government has been running PURA programs in various states since its launch in 2003.

11.**Pradhan Mantri Ujiwala Yojana** It is an ambitious social welfare scheme of Narendra Modi Government launched on 1st May 2017 from Ballia in Uttar Pradesh. Under the PM Ujjwala Yojana, the government aims to provide LPG connections to BPL households in the country. The scheme is aimed at replacing the unclean cooking fuels mostly used in the rural India with the clean and more efficient LPG (Liquefied Petroleum Gas). Need In India, the poor have limited access to cooking gas (LPG). The spread of LPG cylinders has been in the urban and semi-urban areas with the coverage mostly in middle class and affluent households. But there are serious health hazards associated with cooking based on fossil fuels. According to WHO estimates, about 5 lakh deaths in India alone due to unclean cooking fuel. Most of these premature deaths were due to non-communicable diseases such as heart disease, stroke, chronic obstructive pulmonary disease and lung cancer, Indoor air pollution is also responsible for a considerable number of acute respiratory illness in young children. Providing LPG connections to BPL households will ensure universal coverage of cooking in the country. This measure will empower women and protect their health. It will drudgery and the time spent on cooking. It will also provide employment for rural youth in the supply chain of cooking gas.

Target beneficiaries under the scheme, five crore LPG connections are to be provided to BPL households. The identification of eligible BPL families will be made in consultation with the State Governments and the Union Territories. It provides financial assistance of Rs 1600 for each LPG connection to BPL household.

Conclusions: Though it seems that the task of rural development is easy and simple. However, it is much complex due to its multi dimensionality. The following are the three main conclusion which have been derived during the study.

1.Besides agriculture, other areas of alternative employment have to be promoted.

2.Credit and infrastructure should be given top most priority for a sustainable livelihood in rural areas.

3.Rural development and environment goes hand in hand and therefore, organic farming is to be promoted.

References

1. Katar Singh: Rural Development: - Principles, policies and management.
2. Moseley, Malcolm: Rural Development: - Principles and practices.
3. Mehta Shiv R: Rural Development policies and programmes.
4. Satish P: Rural infrastructure and growth: An overview, Indian journal of Agricultural

E-Governance in India: Issues and Challenges

Smt. Archana Pandurang Kshirsagar
Assistant Professor, Mahila College of Education, Market Yard, Kolhapur – 416005.
Email Id -archana110781@gmail.com

Abstract:

India is a developing Country. There are many challenges in E-governance model in India. The actual challenges is how to develop and withstand successful e-governance role. The enabling role of the information and communication technology (ICT) is the delivery of services in the public government sector has gained acceptance. E-governance assumes greater importance in the context of management. The development of any country depends on the uses of e-governance and their penetration. Development of any country can be judge by the scope of e-governance in that country. Mean, While, Govt. of India launched several projects to support e-governance. There are many challenges which creating problems for Indian government to run e-governance. In this paper we want to explore the usefulness of e-governance for the government, Evolution of E-Governance, Benefits of E-governance, E-governance in Education challenges and issues of E-governance in India.

Introduction :

E-governance is becoming a buzzword. Across the world, we have been hearing about e-governance.as socio-economic issues' expanding day to day, every government has started to extend its administration from high level to low level for mitigating of the various kinds of problems of socio-economic, science and technology, etc. with immense use of electronic devices (ICT). In fact, mostly in the world, both developed and developing economies extensively using all types of electronic devices to make government administration faster, transparent and accountable.In the context of India, being the one of the largest countries democratically, demographically and geographically; as stated, it still has gap of using govt. services to its large population. In addition to it, there are still problems related to socio-economic prevailing in the country like unemployment, poverty, education, health, banking and business, etc. As a result, govt. of India has been launching the various initiatives in order to overcome these problems with minimum govt. and maximum governance by enormous use of electronic devices.

Concept of E-Governance : Governance refers to that structures and processes that are designed to ensure accountability, transparency, responsiveness, rule of law, stability, equity and inclusiveness, empowerment, and broad-based participation. Especially, e-governance is defined as "the application of ICT to transform the efficiency, effectiveness, transparency and accountability of exchange f information and transaction between government, between government agencies, between government and citizens, between government and business. Through e-governance, government services will be made available to citizens in a convenient, efficient and transparent manner.

E-Governance in Education : Providing basic education (elementary, primary, secondary) to children, providing computer education to children, Results for 10^{th} & 12^{th} classes, information on eligibility for "Distribution of books" scheme.

Issues and Challenges of E-Governance :

Issues of e-Governance

Technical Issues	**Economic issues**	**Social Issues**
1) Interoperability	1) Cost	1) Accessibility
2) Security	2) Reusability	2) Usability
3) Privacy	3) Maintainability	3) Use of Local language
4) Authentication	4) Portability	4) Awareness about E-governance

1) Technical Issues :

1. Interoperability: It is one of the critical issues of e-governance. Interoperation among ministries and departments is difficult, and it became hurdle for processing and sharing data. In other words, web based data how to be captured and in which format these seem to be major issues of e-governance.

2. Security : Now days, security of online transaction is becoming big issue; insurance, banking, utility bill payments, all these services done by e-governance. In fact, there is still discontent to citizens on availing government services due to lack of security. E-Governance in India: Issues and Challenges

3. Privacy: This is another key issues of e-governace.any information provided by citizens should be ensured by govt. otherwise, any person or institution may misuse the valuable information.

4. Authentication: It is very important to know the right user of the services or it may be misused by private competitors. Meanwhile, the digital signature plays major role in providing authenticity. In fact, it is expensive and causes for frequent maintenance.

2) Economic issues :

1. Cost: It is one of the economic issues, implementation of e-governance operations and maintenance of services fetch huge cost to govt.

2. Reusability : Any models developed by government, must be reusability. E-governance is being national plan, what it incorporates any software or modules should be used by other administrations.

3. Maintainability : Maintenance should be given due importance. Because, IT ministry has been continuously developing new soft ware's in order to fill the current needs of citizens. Consequently, govt. launched new projects for example, digital India.

4. Portability : The primary requisite for portable applications is independence of components from hardware and software platforms in order to help in possible reuse by administrations.

3) Social issues :

1. Accessibility : In the era of technology, mostly number of people using internet via computers and mobile phones. In the context of India, there is still gap arising between users and nonusers; it is because of language barrier, inadequate infrastructure in rural areas, etc.

2. Usability : Users of e-governance may be literate or illiterate. Any technology or software to be used as user friendly to greater extent, only then, citizens could use it as smoothly as possible. **3. Use of local languages:** India's population is second next to china, over 65 % only literate citizens are there; rest of population cannot understand the English language. Therefore, govt. should make it more comfort by translating this language into their regional languages for the sake of benefit of e-services.

4. Awareness about e-governance : Number of people in the country has not been aware of it, on account of illiteracy, non-accessibility of internet in rural areas, lack of will using internet services, etc. Therefore, educated citizens, concerned institution and dept. should come forward to get rural people benefited by eservices.

Challenges of e-governance : Although the government has come up with several initiatives to facilitate the access to public, service, the desired outcomes are yet to be fully realized. This can be largely attributed to various front-end and back-end challenges that the government continues to face. Front-end challenges relate to user-specific issues such as, high illiteracy levels, non-availability of use rfriendly interfaces, inadequate power supply in rural areas, low broadband penetration and most importantly, lack of awareness of e-governance initiatives.

1. Trust: It is the emerging challenges of e-governance. Trust can be defined regarding users of new software and trust of the govt. former aspect implies that users of any type of software or technology must be confident, comfortable and trusting of it. Another very important aspect related to trust of govt. Nowadays, citizens using e-governance services, trusting the innovations of e-governance to some extent. Furthermore, there might be some fraudulent activities done by any other entity for the sake of finance, valuable info and even about personal information, etc. Besides, in govt. offices, dept. valuable info sometimes left out or missed; it definitely erodes trust about e-governance among all classes citizens of the economy.

2. Digital divide : Even in the era of science and technology, there is still huge gap exists between users and nonusers of e-govt. services. In fact, in India, majority of the masses, who living below poverty line and they deprived of govt. services. In contrast, some portion of people are immensely using the e-services of government .However, this gap needs to be made narrow, then only ,the benefits of e-governance would be utilized equally.

3. Cost : One of the difficult tasks of the govt. is to spend on implementation of e-governance initiatives to which govt. has to bear huge cost. Few other developed countries UK and Singapore spending 1% of GDP and 0.8% of GDP respectively. India spending only 3% of GDP, indeed, govt. should motivate the officials, administrators and common people using services of e-governance subject to conscious use of public finance on these types of projects.

4. Privacy and Security : It is one of the critical challenges of e-governance. Financial services, medical services and personal information are to be protected with security, and then only, there will be number of people trusting of it. Therefore, implementation of e-governance projects must have security standard and protocols for safeguarding the interest of all classes of masses; otherwise, citizens will lose trust and confidentiality of e-governance.

5. Infrastructure : It is essentially required for implementation of e-governance as much as possible in India. Electricity, internet and poor adaptability of technology will retard the progress of e-governance. In

the context of developing countries, there should be enough basic facilities in order to give impetus to e governance.

6. Funding : Funding is the foremost issue in e-Governance initiatives. The projects that are part of the e-governance initiatives need to be funded either through the Government sector or through the private sector.

7. Management of change : These changes need not only be accepted by the Government and citizens but also be accepted by various interests groups like Employees unions. Under such circumstances bringing in a change will involve changing the mindsets of the people, and a complete Reengineering process needs to be carried out for the same.

8. Authentication : Secured ways of transactions for the Government services are another issue of concern. The identity of citizens requesting services needs to be verified before they access or use the services .

9.Interoperability : A major design issue for integrated service delivery sites is, how to capture data in a Web-based form and transfer it to an agency's systems for processing and sharing that information in a common format. Infact the interoperation of various state Governments, the various ministries within a state Government is a critical issue. Further how the various islands of automation will be brought together and built into one is another key issue of e-Governance.

10. Delivery of Services : The ability of citizens to access these services is another major issue. Since the penetration of PCs and Internet is very low in the country, some framework needs to be worked out for delivery of the e-Services that would be accessible to the poorest of the poor.

11. Standardization : Defining the standards for the various Government services is another issue that needs to be addressed. The standards need to be worked out not only for the technologies involved but also for issues like naming of websites to creating E-Mail addresses.

12.Technology issues : The e-Governance initiative would have to address these Technology Issues/Objectives by identifying the appropriate hardware platforms and software application packages for cost-effective delivery of public services.

13. Use of local language : The access of information must be permitted in the language most comfortable to the public user, generally the local language. There already exist technologies such as GIST and language software by which transliteration from English into other languages can be made.

Benefits of E-governance -

1) Fast, Convenient and Cost Effective Service Delivery :
2) Transparency, Accountability and Reduced Corruption :
3) Increased Participation by People :

Conclusion : There are various challenges for the implementation of e-government in india. E-governance is getting momentous in India. E-governance has had great role in each sphere of the economy over number of years. India economy has been progressive one on account of good governance. Conventionally, govt. used to struggle to provide services to its citizens before initiatives of e-governance. When government started launching many initiatives for e-governance; it has become one of the emerging economies due to its potentiality of ICT. Till now, govt. has implemented various initiatives with different projects (Digital India, e-kranthi, etc). However, it still has some hurdles regarding e-governance, such as: digital divide between urban and rural, poverty, illiteracy, security and cost of implementation, etc. Each of these issues and challenges are posing serious concern to government. Mean while, previous and current govt. launched multiple initiatives by overcoming the above issues and challenges. Under twelve five year plan, some of the future prospects outlined and partly achieved by every government. However, govt. should spend more on this initiative to make it transparent, convenient, safer and citizen friendly in order to enhance people confidence in to good democratic e-governance..E-governance is the key to the 'Good Governance' for the developing countries like India to minimize corruption, provides efficient and effective or quality services to their citizens.

References :

1. https://en.wikipedia.org/wiki/E-governance
2. http://vikaspedia.in/e-governance/national-e-governance-plan/concept-of-e-governance
3. www.thehansindia.com
4. http://indiaegovernance.blogspot.in/2008/03/e-governance-what-does-it-mean.html
5. Meghashyam Athalye Shrinivas. (Sep, 2013)-"e-Governance: issues and challenges",
6. epitome: an online interdisplinary, multidisplinary journal, volume 2, issue. 2.
7. Beniwal, V.S., and Sikka, Kapil. (2013) -"e-Governance in India: prospects and challenges,
8. International Journal of Computer & Communication Technology, issn: 0975-7449, volume-4, issue.3.

9. Malik, Poonam, Dhillan, Priyanka and Verma, Poonam. (July, 2014) -"Challenges and future prospects for E-governance in india", International Journal of Science, Engineering and Technology Research, volume-3, issue:7.
10. Khan Intekhab , Khan Nadeem and Nazia. (Jan, 2015)-"e-governance reforms in India: issues, challenges and strategies-an overview", International Journal of Computer Science Issues, volume.12, issue: 12, No.2.
11. Annual Report. (2015) – "e-Governance Policy Initiatives under Digital India", Dept. of Electronics and Information Technology, Ministry of Communication and Information Technology, Govt. of India.
12. www.researchgate.com

Attitude And Perception Of Diabetic Patients Towards Covid-19 And Black Fungus In Ambala District Of Haryana

Pragati Singh[1], Pankaj Chhabra [2]
[1]Research scholar, C.C.S.University Meerut,U.P. (India)
[2]Deptt. of Home Science M.L. & J.N.K. Girls PG College, Saharanpur,U.P. (India)

Abstract

India continues to battle a devastating second wave of covid-19. The B.1.617 variant is a recently-emerged infectious disease. It differs from previous corona virus infections (SARS and MERS) due to its high infectivity and pre-or asymptomatic transmission, properties that have contributed to the current global covid-19 pandemic (Muniangi et.al.(2020). The most common co-morbidities with covid-19 infection are metabolic diseases including diabetes, hypertension, obesity, and cardio-vascular disease **(Guo et al. (2020)**, **Guan et al. (2020)**, **Simonnet et al. (2020)).** The reasons for these associations are still largely obscure. Evidences also emerged that covid-19 and black fungus infection exacerbated hyperglycemia in people with diabetes. This study aims to determine the awareness of covid-19 disease, it's related infections and practices followed by diabetic to control these deadly diseases. Covid-19 can only be managed by following preventive practices recommended by experts to avoid further complications of diabetes (**Davison, Negrato, et al., 2014**)**.** An online survey was conducted on 50 diabetic patients between May 03 to May 10, 2021. The survey instrument consisted of Socio-demographic characteristics, 25 items on knowledge, 6 items on attitudes and 7 items on practices. The majority of the participants were aware about covid-19, B.1.617 and black fungus. It was shown that women were more aware then men in terms of the knowledge, attitude and preventive practices related to the spread of Covid-19, B.1.617 and black fungus. The mean knowledge score was **17.7 (**SD = 2.66**,** range 0–25**)**, indicating a medium level of knowledge. The mean score for attitude was 21.3 (SD = 8.42, range 6–12), indicating optimistic attitudes. The mean score for practices was 4.8(SD = 1.87, range: 0–7), indicating effective practices. In our study, the high rate of correct answers to knowledge-related questions among participants was not surprising. This may be due to the characteristics of the sample, as 72% were highly educated (graduate and post graduate degree), mature and experienced and have a medical condition of diabetes mellitus. People may have gained knowledge and awareness about the disease and its transmission, infection via television, news paper, internet and social media etc., to protect themselves and their families. The positive association found between knowledge, educational and background, supports our claim.

Introduction

The SARS-CoV-2(covid-19) emerged in China at the end of 2019. Since then, it had spread to 200 countries and by the end of January 2020 World Health Organization (**WHO,2020**) had declared the Novel Corona virus, covid-19 as a pandemic. Although it was in the limelight since the 30th January 2020 in India and in Haryana, it's first case was reported on 17.03.2020.

On May 2021 covid-19 had affected 216 countries, infected 15.7 billion people and caused 3.3 million deaths. Most severely affected countries were the United States of America, India, Brazil, France, Russian Federation, Turkey etc. (haryanahealth.nic. in). On the global scenario, Indians grappled with a worldwide health crisis, it had the 4th ranking in overall case load of covid-19. However, on the basis of related covid-19 mortality indicator, India internationally stood at the 8th position and Haryana stood at the 10th position in India. (Gupta,U. 2020).

Indians struggled with the second wave of the health crisis as the number of SARS-CoV-2 infections reached over 23.7 million, the B.1.617 variant was classified as a 'variant of corona virus ' at a global level by the World Health Organization (WHO, 2021). It is differs from previous corona virus infections (SARS and MERS) due to its high infectivity and pre or asymptomatic transmission, properties that have contributed to the current global covid-19 pandemic. (Muniangi et.al.(2020) It has several mutations which could increase it's virulence, now people are facing another deadly infection, known as mucormycosis (black fungus).Mucormycosis is a rare but horrific fungal infection, and can result in disfiguring, it can affect post covid-19 patients and vulnerable group i.e. children, elderly, diabetics, people with hypertension and obesity. The reasons for these associations are still largely obscure. The disease often manifests in the skin and also affects the lungs and the brain.Sometimes indiscriminate steroids were used to treat critically ill covid-19 patients, to reduce inflammation in the lungs. It dampened immunity and raised blood sugar levels, uncontrolled diabetes, elevated risk of contracting black fungus. Evidence also emerged that covid-19, B.1.617 and black fungus infection exacerbated the underlying path physiology of hyperglycemia in people with diabetes. (Muniangi et.al.(2020)

India has the second-highest diabetic population in the world, according to the International Diabetes Foundation's atlas, which makes up 70.2 million people. Diabetic patients in India are more vulnerable to infections, as in general they are slightly immune compromised, because elevated blood glucose impairs the immune system. Apart from this, diabetics are at a higher risk of covid-19, B.1.617 and black fungus. The fungi love iron-rich, acidic environments and diabetic ketoacidosis, a condition in diabetics that causes the blood to become acidic makes them prone to it. As stated by the Centers for Disease Control and Prevention (CDC), if your diabetes control is poor, it might increase the risk of getting infected and having more serious complications, it's important to immediately begin improving underlying health conditions and follow covid-19, B.1.617 and black fungus safety precautions Despite the unprecedented national measures in combating the outbreak, in order to contain the spread of the virus, Haryana Government had strengthened the surveillance and control measures against the disease but the success or failure of these efforts is largely dependent on community behavior. Specifically, community adherence to preventive measures established by the government is of prime importance to prevent the spread of the disease. Adherence is likely to be influenced by the community's knowledge and attitudes toward covid-19, B.1.617 and black fungus. It's related knowledge is significant factor to enhance their health status in our society. Knowledge plays a vital role and it can prevent serious complications among diabetes patients. (**Lesser et al. 2014**)Evidence shows that public knowledge is important in tackling pandemics (**Chirwa 2019**). By assessing diabetes patient's awareness and knowledge about the corona virus, deeper insights into existing perceptions and practices can be gained, thereby helping to identify attributes that influence the patients in adopting healthy practices and responsive behavior (Podder**2019**).Thus, this study aims to analysis the knowledge, attitude and practices (KAP) of Ambala residents diabetes patients, toward covid-19 , B.1.617 and black fungus during the pandemic spike. The findings of this study are expected to provide useful information to inform public health officials on further public health intervenions, awareness, and policy improvements pertaining to the covid-19 outbreak

Materials and methods

The number of covid-19, B.1.617 and black fungus etc. infections was spreading at an increasing rate, the safety and well-being of our society had become paramount. State governments were rolling out local lockdowns and diabetic patients were not interested in direct interviews. So online survey (as MHRD also support to shifting of working habits from offline to online) was the best approach for data collection. The participation in the survey was done by volunteers and open for diabetes patients residing in Ambala. Mode of data collection was google form and period of the online survey was during (the link was open for seven days i.e., May 03 to May 10, 2021) the lockdown in Haryana. A google form was designed with the help of available information from sources like literature, newspaper social media and MoHFW website (Ministry of Health & Family Welfare Government of India), regarding the diabetes patients and covid-19, B.1.617 and black fungus etc. The tool was developed in both hindi and english languages, which was further converted in electronic mode (Google form) for convenient reach to respondents during lockdown period. It had four sections questions regarding socio-demographics, knowledge, attitude, and practice.

Socio-demographic measures

Socio-demographic information was collected, including gender, age, education, marital status, monthly and family income. Monthly family income was categorized into four classes: low income group, lower middle income group , upper middle income group and high income group.

Knowledge, attitude, and practice (KAP)

To assess the level of knowledge, attitude, and practice of the respondents, a total of 38 questions (including 25 for knowledge, 6 for attitude, and 7 for practice) were included. The survey questions were adapted and modified from previously published literature regarding viral epidemics related to covid-19, B.1.617 and black fungus, infection prevention and control measures for covid-19 by World Health Organization [**WHO (2020**)], guidelines suggested by Ministry of Health & Family Welfare Government of India (MoHFW).

The knowledge section consisted of 25 items and each question had a possible response of "*Yes*", "*No*" (e.g., covid-19 infections spreads more easily between people who are within 6 feet of one another). The correct answer (*Yes*) was coded as 1, while the wrong answer (*No*) was coded as 0. The total score ranged from 0–25, with an overall greater score indicates more accurate knowledge. A cut off level of ≥ 25 was set for more accurate knowledge.

The attitude section consisted of 6 items, and the response of each item was indicated on a 3-point Likert scale as follows, 0 ("*Disagree*") 1 ("Neutral") and 2 ("*Agree*"). The total score was calculated by summating the raw scores of the six questions ranging from 0 to 12, with an overall greater score

indicating more positive attitudes towards covid-19. A cut off level of ≥11 was set for more positive attitudes towards the prevention of covid-19.

The practice section included 7 items practice measures responding to the covid-19, and each item was responded as "*Yes*", "*No*" (e.g., Washing hands is essential to protect from covid-19 , B.1.617). Practice item i.e, May 03 to May 10, 2021s total score ranges from 0–7 with an overall greater score indicates more frequent practices towards the covid-19. A cut off level of ≥ 7was set for more frequent practices.

Statistical analysis

Descriptive analysis was reported as frequency, percentage, mean scores, standard deviation and ANOVA were used to analyze the relationship between the dependent (knowledge ,practice and attitude), and independent variables (demographic characteristics of the participants). All the differences of estimated variables were considered statistically significant if $p<0.05$

Results & Discussion

Social Demographic Characteristics of Respondents

The information was collected from only 50 respondents through administered online questionnaires. In terms of response percentage, 72% were female and 28% male. On marital status, the majority the respondents (94%) were married, out of which (46%) belonged to the age group of 40–50 years, (82%) of them were belong to middle income group, of which (46%) respondents were from lower middle income group, followed by (36%) who belonged to upper middle income group, 18% respondents from higher income group while none of respondents belonged to economically weaker section. With regarded to literacy, 48% of the respondents were post graduate pass out, followed by up to senior secondary(28 %) & graduate (24%).

Table 1 Social and demographic characteristics of the study participants (N = 50).

	Characteristic	Variables	Number	Percentage (%)
1	Sex	Male	14	28
		Female	36	72
2	Age	40-50	23	46
		50 -60	12	24
		60 -70	15	30
3	Marital statuts	Married	47	94
		Unmarried	3	6
4.	Income group	lower middle income group	23	46
		Upper middle income group	18	36
		Higher income group	9	18
5	Education	Up to senior secondary	14	28
		Graduate	12	24
		Post graduate	24	48

Assessment of knowledge

A total of 25 questions were used to measure knowledge on the covid-19 virus. Average knowledge score for participants was 17.7 (SD = 2.66, range 0–25). The overall correct answer rate of the knowledge questionnaire was 70% (17.7/25*100) while the range of correct answer rates for all participants were between 64% to 92%. About 70% of participants were able to obtain scores above 19, representing an acceptable level of knowledge on covid-19.

In the knowledge component, Table 2 depicts our findings for the mode of transmission, more than half of the respondents (60 %), reported close contact with an infected person or eating animals causes covid-19 and (58%) recorded that direct transmission through touching contaminated surface or object and then touch their faces (mouth, nose or perhaps eyes) with infected hands whereas 70 per cent respondents believes that covid-19 patient can transmit the virus to others if symptoms is not present. Even so, there was noticeable confusion among participants regarding transmission of the virus among vulnerable group. Only sixty four percent participants answered correctly when asked pregnant women are more susceptible to infections than others and just 62% answered correctly that older adults were at a higher risk to be infected by covid-19 and they often tend to be more severe cases. Cent percent respondents reported that the viral load presents in the respiratory droplets of infected persons spreads the infections. Almost similar result has been opinioned by Modi *et al* (2020). The disease covid-19 spreads through respiratory droplets and personal contact with the infected person (Wang *et al,* 2020). Cent percent respondents considered cold, fever, fatigue, dry cough and shortness of breath as main symptoms of covid-19. Only thirty eight

percent respondents had knowledge about the basic clinical symptoms of black fungus i.e. facial deformity, headache, facial pain, nasal congestion, loss of vision or pain in eyes, swelling in cheeks and eyes, toothache, loosening of teeth etc. On the other hand, more than half of the respondents (66 %) reported unlike the common cold, congestion, runny nose, and sneezing are less common in people infected with SARS-CoV-2 whereas less than half of the respondents (42%) reported that excess usage of steroid and high blood glucose are the causes of black fungus.Majority of the respondents (90 %) believed that they could prevent covid-19 infection by maintaining social distancing of at least 6 feet to one another, only 10 per cent of them believed that it is not going to spread no matter what, however 88 percent showed people must avoid going to crowded places and taking public transport and also avoid touching their eyes, nose, and mouth with unwashed hands (100%).The data (Table 2) most of all participants (100%) knew that people who had contact with an infected person should immediately seek treatment and be in Isolation for a period of 14 days and majority of the respondents (98%) reported that quarantine is an effective way to reduce the spread of the virus. Cent percent of the respondents (100%) believed that after being in a public place, they could prevent from covid-19 infection by adopting collective practices including wearing masks, frequent hand washing with soap or use hand sanitizer containing at least 60% alcohol, for at least 20 seconds. Social distancing and maintaining hygiene with alcohol based sanitizers is the best way to prevent the spread of this virus (Yang *et al,* 2019).

Table 2 results from respondents about their knowledge towards covid-19 , B.1.617 and black fungus pandemic (N= 50)

	Statements	Yes	%	NO	%
1	Covid-19 spreads more easily between people who are within 6 feet of one another.	45	90	5	10
2	Covid-19, B.1.617 and black fungus spread through the viral load present in the respiratory droplets of infected persons	50	100	-	-
3	Covid-19 can be direct transmits by touching contaminated surface or object, and then touching one's mouth, nose or perhaps, eyes.	29	58	21	42
4	Close contact or eating animals causes covid-19.	30	60	20	40
5	Covid-19 infected People cannot transmit the virus to others when a symptoms is not present.	15	30	35	70
6	The basic clinical symptoms of covid-19 are fever, fatigue, dry cough, and shortness of breath	50	100	-	-
7	Unlike the common cold, congestion, runny nose, and sneezing are less common in people infected with covid-19	33	66	17	34
8	Facial deformity, headache, facial pain nasal congestion, loss of vision or pain in eyes, swelling in cheeks and eyes, toothache, loosening of teeth are possible basic clinical symptoms of black fungus.	19	38	31	62
9	Are excess usage of steroid and high blood sugar the causes of black fungus ?	21	42	29	58
10	Antibiotics and vaccine are an effective treatment for covid-19 , B.1.617 and black fungus .	41	82	9	18
11	Currently, there is no effective cure for covid-19, but taking the vaccine early, symptomatic and supportive treatment can help most patients recover from the diseases.	46	92	4	8
12	Older adults and those with serious chronic illnesses, such as heart or lung disease and diabetes, are at increased risk of developing more serious complications from covid-19	47	94	3	6
13	Not all people with covid-19 have severe cases. Only older adults with chronic illnesses tend to be more severe	31	62	19	38
14	Pregnant women are more susceptible to infections than non-pregnant women	32	64	18	36
15	Children do not appear to be at a higher risk for covid-19 , B.1.617 and black fungus as compared to adults	7	14	43	86
16	It is not necessary for children or young people to take precautionary measures to prevent covid-19 , B.1.617 and black fungus transmission	3	6	47	94

17	After being in a public place, after nose-blowing, coughing or sneezing, people must wash their hands with soap and water, or use hand sanitizer containing at least 60% alcohol, for at least 20 seconds.	50	100	-	-
18	People should avoid touching their eyes, nose, and mouth with unwashed hands	50	100	-	-
19	Ordinary residents can wear general medical masks to prevent the covid-19 , B.1.617 and black fungus	13	26	37	74
20	People should only wear a mask if they are infected with the virus, or if they are caring for someone with suspected covid-19 , B.1.617 and black fungus	18	36	32	64
21	Healthy food and drinking water increase the body's immunity and resistance to covid-19 .	46	92	4	8
22	Isolation and treatment of people infected with the covid-19 are effective ways to reduce the spread of virus.	49	98	1	2
23	People in contact with someone infected with covid-19 should be immediately quarantined, in an appropriate location, for a general observation period of 14 days.	50	100	-	-
24	To prevent transmission of covid-19 , people must avoid going to crowded places and avoid taking public transport	44	88	6	12
25	Controlling hyperglycemia and Monitoring blood glucose level are precaution for black fungus infection post covid-19	42	84	8	16

Vaccination and antibiotics is strongest possible shield in the battle against this pandemic. The majority of the respondents (92%) reported that symptomatic and supportive treatment can help to recover from the diseases similarly (82%) mentioned antibiotics also effective treatment for Covid-19, B.1.617 and black fungus.

It was important to observe the risk of serious complications from covid-19, B.1.617 and black fungus, 94 per cent respondents were aware that elderly and those with serious chronic illnesses, such as heart or lung disease and diabetes, are at increased risk of developing serious complications from covid-19. Ordinary residents cannot wear general medical masks to prevent these infections (74%), however 36 per cent showed inclination to people should only wear a mask if they are infected with the virus, or if they are caring for suspected patient. Almost similar result has been opinioned by Modi *et al* (2020). Only 7 (14%) respondent reported that children do not appear to be at higher risk for covid-19 than adults and fewer respondents (6%) believed that there is no need for children or young people to take precautionary measures to prevent for covid-19 , B.1.617 and black fungus transmission. 92% percent of respondents were aware of that healthy food and drinking water increases the body's immunity and resistance to covid-19. As regards to role of diabetes management related practices to control black fungus infection, up to 84% of them were aware about controlling hyperglycemia and blood glucose level are good precaution for the above same.

Attitude and perception towards covid-19, B.1.617 and black fungus control and Preventative measures

The mean score attitude and practices for the infections was 21.3 (SD = 7.99, range: 6–12)and 4.8 (SD = 1.87, range: 0–7) respectively indicating positive attitudes and good practices.

Results about respondent's attitudes and perceptions towards the infectious diseases are illustrated in Table 3. The above results were calculated as 50%, which was set as the baseline of positive attitude. Furthermore, after being asked about their safety perceptions, the majority of participants (64%) agreed that it is safe to stay at home and maintaining social distancing (78%).Rates of disagreement and uncertainty were at 10% and 14% respectively. While (84%) of them also stated that washing hands with soap or sanitizer is essential to protection from covid-19. Maintaining social distancing and hygiene with alcohol based sanitizers is the best way to prevent the spread of this virus (Yang *et al*, 2019) A large percentage of participants had positive attitude towards the infections and believed it would successfully be controlled (76%). Even so (16%) of participants were neutral whether the virus would be controlled and a smaller number of participants disagreed that it would be successfully controlled (8%), more then half of participants had confidence that strict measures of Ministry of Health would be able to win the battle against the infectious diseases (54%), while a small percentage (8%) were neutral and thirty eight percent participants disagreed that it would help in successfully eradicating it.

Table 3 Results from respondents about their attitude towards covid-19 , B.1.617 and black fungus (n= 50)

	Statements	A	%	N	%	D	%
1.	It is important to keep my distance from others, to avoid spreading covid-19 , B.1.617.	39	78	4	8	7	14
2	Washing hands is essential to protect from covid-19 , B.1.617 .	42	84	0	0	8	16
3.	To protect myself from covid-19 , B.1.617 exposure, I should stay home if I am sick, unless I am receiving medical care	32	64	13	26	5	10
4	Covid-19, B.1.617 and black fungus will eventually be successfully controlled	38	76	8	16	4	8
5	Strict measures of Ministry of Health can help win the battle against covid-19, B.1.617 and black fungus .	27	54	4	8	19	38
6.	Compliance with the Ministry of Health precautions will prevent the spread of covid-19, B.1.617 and black fungus .	35	70	9	18	11	22

A- *Agree*, N- Neutral, D- *Disagree*

Practices of preventative measures

Practices were measured using seven questions (Table 4). As many scores were above 70% which was the baseline for practices to be followed in this study.

The results show that the majority of the respondents (72%) keenly followed all the preventive practices, which were announced by the government. The results indicate that more then half respondents (68%) refrained cultural behaviors, such as shaking hands. Majority (78 %) of participants reported that they were maintaining social distance and mostly (84%)did not involve in any social event and gathering, the other 16% did not avoid crowded places. When enquired about hand hygiene, a majority of participants (86%) reported that they adhere to all the prescribed precautionary measures, practiced proper hand hygiene by frequently washing their hands with soap and water and using hand sanitizer, for at least 40 seconds especially after going to a public place, or after Nose-blowing, coughing, or sneezing. More than half of the participants reported wearing a N95 or double face mask ,when going out in public place(56%). The remaining participants did not wear a mask (44%) and state that WHO and the CDC also recommend faces mask should only be worn by those who are sick or caring for people suspected of having covid-19. These findings highlight the need to continue to encourage and emphasize maintaining social distancing, as a means of preventing the spread of the virus. Lastly, when enquired about diabetes control related practices, sixty four percent respondents reported that they adhere to all precautionary preventive practices such as blood glucose level monitoring and hyperglycemia controlling to avoid the infections

Table 3 Results from respondents about their practice towards covid-19 , B.1.617 and black fungus (n= 50)

	Statements	Yes	%	No	%
1	Do you follow all preventive practices related to the spread covid-19, B.1.617 and black fungus , which were announced by the government ?	36	72	14	28
2	Have you recently avoided cultural behaviors, such as shaking hands	34	68	16	32
3	Have you recently been to a social event involving a large number of people	8	16	42	84
4	Have you been practicing social distancing?	39	78	11	22
5	Recently, have you frequently washed your hands with soap and water, for at least 40 seconds, especially after going to a public place, or after nose-blowing, coughing, or sneezing?	43	86	7	14
6	Have you been wearing two N95 masks for B.1.617	28	56	22	44
7	Do you follow precautions such as Controlling hyperglycemia and Monitoring blood glucose level to avoid post covid-19 diseases (black fungus)	32	64	18	36

Results on the Sources of covid-19, B.1.617 and black fungus related information amongst respondents (N=50)

Social media plays an important role in raising the public awareness about protective measures. 86% respondents stated that, their main source of information for disease control and preventative measures was the social media, one of the campaigns issued against covid-19 was “stay home stay safe”.

The results indicate that majority of them extracted information from the Internet (62%), followed by caller tune, TV, and Radio (24%), family and friends (14%) (Table 2).

Table 5: Sources of information about the control infectious diseases and preventative Measures

S.No.	Source of Information)	Frequency	Percent (%)
1.	**Internet Platforms**	**31**	**62**
2.	**Caller tune, TV, and Radio**	**12**	**24**
3	**Family and Friends**	**7**	**14**

Differences in Knowledge, Attitudes, and Practices toward the infectious diseases

Looking at the univariate statistics for each variable of interest, we took another step to assess the difference in the scores for Knowledge, Attitudes, and Practices (KAP) among diabetic patients.

The association of demographic characteristics, knowledge, attitude and practice(KAP) of diabetic patients were presented in Table 6 in which age, income, group, gender and education were correlated with knowledge score According to our findings, in the 40-50 years age group of diabetic patients knowledge, attitude and practice score was higher compared to other age groups which was statistically significant.($p< 0.001$). Similarly, highly educated patients had better knowledge and attitude score about the infections as compared to other educated patients which was statistically significant ($p< 0.001$). Females had statistically significant higher knowledge ($p = 0.28$), attitude and practice level ($p < 0.001$ and $p = 0.092$ respectively) than males. Moreover, those patients who belonged to lower middle-income group had higher mean knowledge and attitude score compared to others ($p=0.0055$). Over 72% of the patients had positive attitude towards the infectious diseases. Those patients belong to higher income group were found to have higher practice score than others which was statistically significant ($p=0.516$)

Table 6: Distribution of the studied participant's demographic data regarding scores of knowledge, attitude and practice toward covid-19, B.1.617 and black fungus

Demographic data	Knowledge			Attitude			Practice		
	Score ± SD	*f*-value	*P*-value	Score ± SD	*f*-value	*P*-value	Score ± SD	*f*-value	*P*-value
Sex									
Male	11.68±2.60	1.19	.28	9.67 ±1.51	140	<0.00 1	4.66 ± 2.08	.092	.76
Female	29.32±6.24			27.5 ±5.54			4.85.±1. 95		
Age									
40-50	18.92±5.29	27. 88	<0.001	21.5±3. 99	49.1	<0.00 1	5.2 ± 1.79	1.23	.30
50 -60	9.2±2.29			8.3±.41			4 ± 2.83		
60 -70	10.96±3.21			5.16±.9 8			4.67 ± 2.08		
Income group									
lower middle income group	19.6±4.27	5.82	.0055	27.5±4. 59	23.11	<0.00 1	4.5±1.87	.67	.516
Upper middle income group	11.72±4.34			4.17±.9 8			5±2.82		
Higher income group	11.41±17.6			16.8±2 5.27			5.5±.2.1 2		
Education									
Up to senior secondary	10.29±2.79	85.15	<0.001	8.33±1. 21	151.07 1	<0.00 1	5.5±2. .12	1.41	.254

Graduate	9.04±1.92			7.83±1.94			.4±2.83		
Post graduate	22±4.07			19.17±2.78			4.67±2.08		
Data were expressed as mean ± SD. and ANOVA test (F) were used to a comparison between demographic characteristics of diabetic patients and the score of knowledge attitude and practices, P<0.05.									

This finding is supported by other studies that were done on KAPs covid-19 in countries like Nigeria, China, and India where they also found that many people had a positive attitude towards covid-19 and believed that they would fight and win this battle as we did from Cholera**.** (Rahman *et al* (2020). Dkhar *et al* (2020).,Latief *et al* (2018)).

Conclusion

Covid-19, B.1.617 and black fungus are emerging infectious diseases that pose a significant threat to the health of diabetic mellitus patients. Knowledge of the disease is considered the first stepping stone to any awareness raising interventions. Adequate knowledge, positive attitude and preventive practices play an essential role in reducing infection rates and controlling the spread of the disease.

Thus, this study aimed to assess the knowledge, attitudes, and practices (KAP) among the diabetes mellitus patient of Ambala residents, for covid-19, B.1.617 and black fungus. Our findings indicate that most study participants were knowledgeable about covid-19, B.1.617 and black fungus. Study participants achieved a mean of 70% in the knowledge questionnaire. This finding has shown satisfactory levels of knowledge, across diabetic patients, for a epidemic, such as covid-19. In our study, the high rate of correct answers to knowledge-related questions among participants was not surprising. This may be due to the characteristics of the sample, as as 72% were highly educated (graduate and post graduate degree), mature and experienced and have a medical condition of diabetes mellitus. It may also be due to the distribution of the questionnaire, amid the second wave of covid-19 outbreak. In that time, people may have gained knowledge and awareness about the disease and its transmission, infection via television, news paper, internet and social media etc., to protect themselves and their families. The positive association found between knowledge, educational and background, supports our claim. The results of this study suggests that more emphasis should be placed on mass media, to target less educated, high-income and men to improve public knowledge on the Covid-19, B.1.617 and black fungus. The findings also may help policymakers to identify the target populations.

References

1. CDC. Centers for Disease Control and Prevention: Coronavirus (COVID-
2. 19) 2020. Available online at: https://www.cdc.gov/coronavirus/2019-nCoV/
3. index.html (accessed 1 March, 2020)..
4. Chirwa GC. “Who knows more, and why?” Explaining socio -economicrelated inequality in knowledge about HIV in Malawi. Sci African. (2020) 7:e00213. doi: 10.1016/j.sciaf.2019.e00213
5. Chirwa GC. Socio-economic Inequality in Comprehensive Knowledge about HIV in Malawi. Malawi Med J. (2019) 31:104–11. doi: 10.4314/mmj.v31i2.1
6. Dkhar S, Quansar R, Saleem S, Khan SMS. Knowledge, attitude, and practices related to COVID-19pandemic among social media usersin J&K, India. *Indian J Public Health*. 2020;64(6):205. doi:10.4103/ ijph.IJPH_469_20
7. Guo W, Li M, Dong Y, Zhou H, Zhang Z, Tian C, et al. Diabetes is a risk factor for the progression and prognosis of COVID-19. Diabetes Metab Res Rev (2020). doi: 10.1002/dmrr.3319
8. Guan W, Liang W, Zhao Y, Liang H, Chen Z, Li Y, et al. Comorbidity and its impact on 1590 patients with Covid-19 in China: A Nationwide Analysis. Eur Respir J (2020) 55(5):2000547. doi: 10.1183/13993003.00547- 2020
9. Latief R, Lefen L. Analysis of Chinese government scholarship for international students using analytical hierarchy process (AHP).*Sustainability*. 2018;10(7):2112. doi:10.3390/su10072112
10. Ministry of Health And Family Welfare. (2020). Government of India. https://www.mohfw.gov.in/. Accessed on 25 April 2020.
11. Modi PD, Nair G, Uppe A, Modi J, Tuppekar B, Gharpure AS, Langade D. COVID-19 awareness among healthcare students and professionals in Mumbai metropolitan region: A questionnaire-based survey. *Cureus*. 2020;12(4):e7514. doi: 10.7759/cureus.7514. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

12. Muniangi-Muhitu H, Akalestou E,Salem V, Misra S, Oliver NS and Rutter GA (2020) Covid-19 and Diabetes: A Complex Bidirectional Relationship.Front. Endocrinol. 11:582936.doi: 10.3389/fendo.2020.582936
13. Parajuli J, Mishra P, Sharma S, et al. Knowledge and attitude about COVID-19 among health care workers working in seti provincialhospital. *J Nepal Health Res Counc*. 2020;18(3):466–471.doi:10.33314/jnhrc.v18i3.2816
14. Podder D, Paul B, Dasgupta A, Bandyopadhyay L, Pal A, Roy S. Community perception and risk reduction practices toward malaria and dengue: a mixedmethod study in slums of Chetla, Kolkata. Ind J Public Health. (2019)
15. Rahman A, Sathi NJ. Knowledge, attitude, and preventive practices receiving the pandemic news and reports through various channels [23Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et63:178. doi: 10.4103/ijph.IJPH_321_19
16. Simonnet A, Chetboun M, Poissy J, Raverdy V, Noulette J, Duhamel A, et al. High prevalence of obesity in severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) requiring invasive mechanical ventilation. Obesity (2020) 1195–9. doi: 10.1002/oby.22831
17. **Gupta, U. Covid-19 weekly status report of haryana, Directorate of Health Services, Haryana,(No. 9 / June 28th 2020).**
18. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, Ho RC. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*. 2020;17:1729. doi: 10.3390/ijerph17051729..
19. Wong CL, Chen J, Chow KM, et al. Knowledge, attitudes and practices towards COVID-19amongst ethnic minorities in Hong Kong. *Int J Environ Res Public Health*. 2020;17(21):7878.doi:10.3390/ijerph17217878
20. World Health Organization. Coronavirus disease (COVID-19) advice for the public: Myth busters. 2020 [cited 2020 June 02]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters.
21. World Health Organization. Coronavirus disease 2019 (COVID-19): Situation report–91.[internet].WHO;2020.Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200420-sitrep-91-covid 19.pdf?sfvrsn =fcf0670b_4
22. WHO. Coronaviruses (COVID-19) 2020. Available online at: https://www.
23. who.int/news-room/q-a-detail/q-a-coronaviruses (accessed 1 April, 2020).
24. World Health Organisation (2020b). Rolling Updates on Corona Virus COVID −10. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen. Accessed on 25 April 2020.
25. **World Health Organisation (2020c). Coronavirus disease (COVID−2019):Situation report −46 https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200425-sitrep-96-Covid-19.pdf?sfvrsn=a33836bb_4. Accessed on 25 April 2020**
26. World Health Organization. Weekly epidemiological update on covid-19. 11 May 2021.www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19-11-may-2021.
27. World Health Organization. Timeline of WHO's response to COVID-19.
28. https://www.who.int/news-room/detail/29-06-2020-covidtimeline. Accessed
29. 9 Jul 2020.
30. Yang C, Ma QY, Zheng YH and Yang YX. (2020).Transmission routes of 2019-novel coronavirus (2019-nCoV).**54**:374-77
31. **Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. Int J Biol Sci 2020;16;1745–52.**

Diversity of Agricultural Planning of Latur District, Maharashtra (India)

Asso. Prof. Birajdar S. G.
Head, Dept. of Geography Rajiv Gandhi Mahavidayalaya, Mudkhed Nanded-431 606

The scale of planning that determines the size of regional unit is basically important. The politically defined and delimited regions are not likely to serve the purposefully for the simple reason that many times they miss the geographic entity. Even the broad backward and problem of regions recognized by the regional planners do contain sub regional disparities inherently there due to varying land resources within their entities. It is therefore necessary to identify micro level agricultural planning units which have a geographic character reflected in its land resources. A comprehensive integrated geographic analysis of the package of land resources may lead to identify spatial planning units at micro level. This may be possible through the indicators of cropping pattern and agricultural productivity which emerge as a product of physical and cultural factors of the land unit. An appropriate technique would help to indicate the degree of integrity and the evenness demanding improvement for better economic planning. In the present study an attempt is made by using equal weighting technique to decide comprehensive and homogeneous agricultural regions so that problems of small-scale planning can be identified and remedied upon. A review of the past work of agricultural regionalization reveals that an emphasis is generally given on general features rather than on specific agricultural considerations, while spate gave emphasis on physical features, Thomer had based his regional analysis of India on socio-economic systems, type of land holding labour supply etc. These considerations hardly touched the land resource capability. The NCAER also attempted division of states according to geographic, physical and agricultural factors. A noteworthy task to present micro level units on the basis of tahsil as data base was done commendably by the Indian statistical institute. Again, a tahsil, an administrative unit cannot obviously be taken as a geographic unit according to Ashok Mitra stated that district as a base unit and divided the country into 7 regions, 31 sub-regions and 89 divisions. Here agricultural infrastructure and traditional economy along with other general indicators were taken into account. P.Sengupta and G. Sduyuk did broad based analysis considering administrative divisions to give 129 micro-economic units at the lowest hierarchy. Sengupta touched the basic problems by pointing out 19 problem regions. This work needed to be strengthened by move appropriate studies of small spatial units.

The study region:

A region which is basically known for its diverse land resources and variable environment is purposely selected for the application of the technique to make out micro level landuse patterns, The Latur lies in South-East of Maharashtra, Karnataka, and its western half is a drought prone area. Taking the district as a planning unit result in to aggregation of resources and thus the drought prone part is left deprived of special efforts. It is therefore, tried to bring out the resource, diversity with appropriate technique. The district is included in South-East part of Maharashtra plateau occupying over an area of 7157. Km. It had a population of about 24.5 lakh (2011) about 80 percent of population is in rural areas, Physio-graphically the district has two divisions, one of the Balaght plateau and second is the North-Eastern region. It receives about 600 mm rainfall annually, whereas the eastern part receives only about 200 mm rain fall which is also highly variable. The soil is of volcanic origin and are derived out of the Balaght plateau. The soil of the district is essentially derived from the trap rocks and can broadly be classified into three groups viz. shallow soil, medium soil and deep soil. Their diverse physical factors are responsible for different environmental patterns, which are further confirmed in the emergence of various land use patients. The cropping pattern and agricultural productivity are the indices to show the interaction between physical and cultural factors. The present status of this interaction and the future projections are to be studied from the regional planning point of view.

Research Methodology:

A composite picture of the agriculture in the district is obtained with the help of carefully selected indicators, tahsilwise data was collected. The tahsils in this region almost coincide, with the geographical entities and hence variations in intra-tahsil physical set-up are negligible. The indicators are: per capita value of agricultural output (PCVA), per rural capita value of agricultural output (PRCVA), per hectare value of agricultural output (PHVA) area under non-food crops area under food crops (ANFC), irrigated areal unirrigated area (UA), net area sown total area-net area sown (NTAS) number of iron ploughs / number of wooden ploughs (IWP), number of tractor / net sown area (TRSA) and number of milk cattle / total livestock population (MCL).

Table No. 1 Indies of Indicators for Geographic Entities									
Tahsil	PCVA	PRCVA	PHVA	ANFC	IUA	NTAS	IWP	TRSA	MCL
Renapur	390.55	390.55	479.79	0.0344	0.0344	1.4140	0.4950	0.0000454	0.1240
Chakur	314.14	315.49	454.40	0.1443	0.0240	2.4321	2.4304	0.000124	0.1154
Latur	437.23	521.33	1741.91	0.6412	0.1513	3.4440	2.2926	0.00182	0.2911
Udgir	260.44	523.33	1502.39	0.4256	0.1579	3.2461	3.2354	0.00133	0.2123
Ahamdpur	469.33	511.24	1482.23	0.4123	0.1442	2.3337	4.0523	0.00121	0.1794
Nilanga	354.54	354.54	757.9	0.3200	0.04159	2.2014	0.000445	0.3223	0.1553
Ausa	355.23	355.23	624.2	0.1024	0.0543	1.3556	2.3403	0.000117	0.1929

Analysis:

In the present paper study Latur District is chosen for the diversity of agricultural planning. Latur District is divided into 10 tahsils. The data of 3 new tahsil are not available, so that only 7 tahsil are taken into consideration for the study in this paper. In Latur, utilized Layer area of Land is under agriculture, but the other like Udgir. Ahamedpur carried out Dairy farming. So it needs to be developed this area under agricultural planning. Agricultural situations are different in different tahsils, Latur tahsil which is favourable placed with regard to the red water supply cash crop-orientation and transportation facility stand at highest level of all other tahsils. The agricultural planning in this region needs to be concentrated on providing innovative services and marketing facilities. The tahsils of Udgir and Ahamadpur which are further cast of the Balaghat plateau range are less endowed with natural resources especially water. However, they are gifted with rich alluvial soils. Dairy farming is an important activity in these tahsils. The individual indicators show that efforts are needed in animal husbandry and improved cropping pattern with greater stress on non-food crops. Rest of the tahsils are mostly drought prone. The ratio between Irrigated and unirrigated area ranges from 0.024 to 0.085. The rain fed character of agriculture does not allow the rural folk to rely more on the cultivation, but encourages to seek some other allied activity i.e., seasonal industrial employment and the milk cattle rearing the situation indicates that this fact has to be brought in for any regional development planning. Carefully selected indicators as per the demand of the region as shown in this study may prove useful to bring out the distinctive intra-regional entities and to suggest the agricultural planning strategy. Thus, the study clearly brings forth that geographic diversity has to be looked in to before formulating any plans for regional planning if not done so, the regional imbalances may like to persist.

References:

1) Amani A. Z. (1976)- "Agricultural Landuse in Aligarh District." Kumar publication Aligarh.
2) Census Hand Book (2001) "Latur District Census hand book" The Maharashtra Census Office Bombay
3) Datye V.S. and other (1969)- Slope and Agricultural Landuse – An analytical Study with reference to Poona District (Maharashtra) Transactions Institute of Indian Geographers,
4) Deshmukh S.B. & Other (1983) - Agricultural Planning for Heterogenous Region. The Indian Geographical Journal
5) Majid Husain - 2003 - 2003: - Agricultural Geography Anmol Publication New Delhi.
6) Noor Mohammad (1978)- Agricultural Landuse in India: A case study Inter India Publications New Delhi.
7) Singh Jasbir (1974) An Agricultural Atlas of India. – A Geographic Analysis Vishal Publication Kurukshetra India.
8) Socio Economic Abstract -(2001) Latur District - Socio-Economic Abstract Z.P. Publication Latur.

"A Study On Impact Of Crypto Currency On Investors And Indian Economy"

Dr. Pragati Richa Pandey
Assistant Professor G.S.College Of Commerce & Economics, Nagpur
Pragatirichapandey7@Gmail.Com

Introduction:

The Battle Is Finally Over. For Nearly Two Years The Indian Courts Have Been Fighting To Lift The Ban Of Cryptocurrency In India. It Is Remarkable That On March 4, 2020, The Supreme Court Of India Lifted The Ban On Cryptocurrency Including The Bitcoins. The Rbi's Circular Of April 2018 Has Been Declared Unconstitutional. The Rbi's Proposed Ban Has Become A Rallying Point For Multiple Stakeholders In The Crypto Industry To Come Together And Push For Stronger Regulation Rather Than Shunning Cryptocurrency For All Its Potential. The Positive Decision Has Taken The Nation Into A State Of Utter Exuberance And Hope For What Is To Come In The Future For Us. With This Upliftment Of The Ban, India Has An Opportunity To Draw On India's Huge Population Of Over 300 Million Unbanked People. While India's Counterparts Around The Globe Are Moving Into Blockchain Technology, We Risked Giving Up The Potential Promised By Co-Opting Crypto. A Cryptocurrency Is A Digital Or Virtual Currency Protected By Cryptography Which Makes Counterfeiting Or Double-Spending Almost Impossible. Most Cryptocurrencies Are Decentralized, Blockchain-Based Networks — A Public Database Operated By A Dispersed Computing Network. One Distinguishing Characteristic Of Cryptocurrencies Is That They Are Usually Not Distributed By Any Central Agency, Rendering Them Potentially Resistant To Intervention Or Abuse By The Government. The First Cryptocurrency Based On Blockchain Was Bitcoin, Which Remains The Most Popular And Valuable. Bitcoin Was Introduced In 2009 By A Person Or Collective Known As "Satoshi Nakamoto." As Of November 2019, More Than 18 Million Bitcoins Were In Circulation With A Cumulative Market Cap Of About $146 Billion. Bitcoin Is One Of The First Digital Currencies To Use Peer-To-Peer Technology To Enable Online Transfers. Some Of Bitcoin's Success Spawned Competing Cryptocurrencies, Known As "Altcoins," Including Litecoin, Peercoin, And Namecoin As Well As Ethereum, Cardano, And Eos. Today The Aggregate Value Of All Existing Crypto Currencies Is Around $214 Billion — Bitcoin Currently Accounts For More Than 68 Per Cent Of The Total Value.

Relevance Of The Study

1. This Study Is Relevant To Understand Deeply The Impact Of Cryptocurrency On Investors Decision Making And The Economy..
2. It Plays Vital Role In Financial Investments Nowadays And Helps Raising Digital Capital And Does Affects Growth Of Economy.
3. To Meet The Current Requirements Of The Digital Era And Influence Decisions Of The Investors.
4. Analysing The Strengths And Weaknesses Of Crypto Currency In India.
5. Analysing The Current Position Of Crypto Currency And Its Investors.
6. Providing Information About The Economic Position Of The Economy Post Introduction Of Crypto Currency.
7. Studying The Change Crypto Currency Have Made On Investors And Economy.

Objectives Of The Study

1. The Objectives Of This Study Are As Follows:
2. To Learn The Impact Of Cryptocurrency On Indian Economy
3. To Study The Current Status Of Cryptocurrency In India And The Future It Holds
4. To Understand The Significance Of Cryptocurrencies According To The Perception Of Investors.
5. To Analyse The Perception Of Investors Towards Cryptocurrencies.
6. To Study The Factors Considered By The Investors & Those Which Ultimately Influence Him While Investing.
7. To Predict The Future Prospects Of The Cryptocurrency Investment Market.
8. Examining The Current Profitability Of Various Cryptocurrencies. Analysis Helps In Finding Out The Earning Capacity And Returns Of Cryptocurrencies.

Need Of The Study

1. This Study Will Help Us To Gain Knowledge About Cryptocurrencies And Its Impact And Will Help Us Understand Various Topicssuch As-
2. Will India Have Any Positive Financial Leverage By The Usage Of Bitcoin?
3. Should India Say Yes To Bitcoin?
4. The Crafting Of This Study Is To Make Us Have Better Understanding Towards-
5. Bitcoin, Lakshmi Coin And Cryptocurrency.

6. . This Study Provides An Opportunity To Develop Analytical Skills, Technical Skills And Give Exposure Towards Digital Currency Revolution.
7. To Give The Overview Of The Cryptocurrency Market In India.
8. To Find Out The Financial Position Of The Company.
9. To Find Out Profitability Of The Company.
10. To Know The Assessing Operating Efficiency.

Hypothesis

Hypothesis 1-

H0- There Is Positive Impact Of Cryptocurrency On Indian Economy.
H1-There Is Negative Impact Of Cryptocurrency On Indian Economy.

Hypothesis 2

H0 - Cryptocurrencies Have Significantly Impacted The Investment Decisions Of Investors .
H1- Cryptocurrencies Have Least Impact On Investment Decisions Of Investors .

Data Collection And Research Methodology

Type Of Research Used.

Research Can Be Classified In Many Different Ways On The Basis Of Methodology Of The Research, The Knowledge It Creates, The User Groups, The Research Problem It Investigates, Etc. Following Is The Methodology That We Have Used In Research:

Quantitative Research:

Quantitative Research Is Generally Closely Affiliated With Ideas From 'The Scientific Method', Which Can Include:

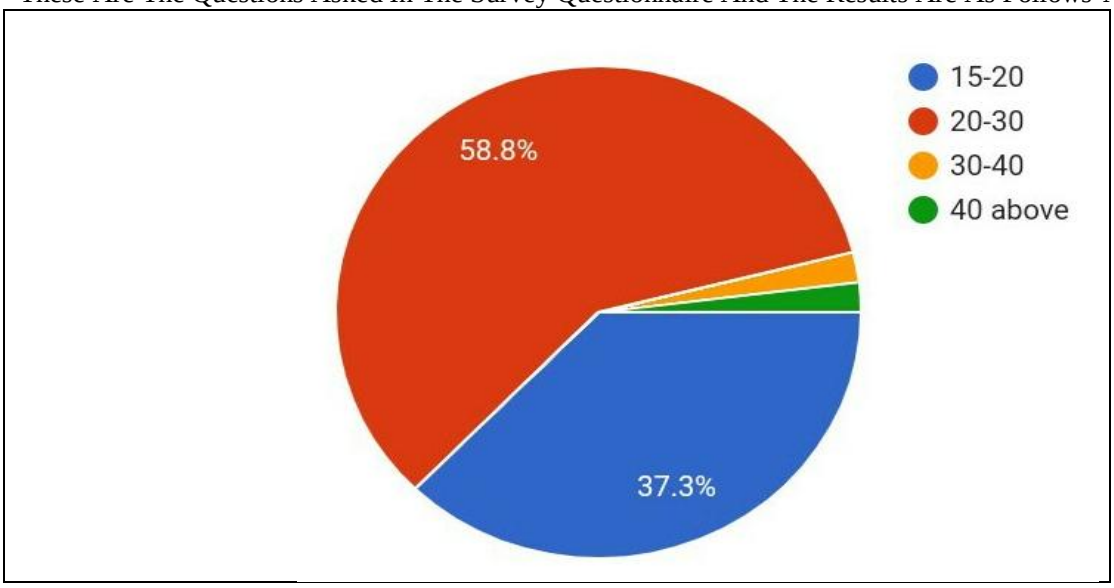
1. The Generation Of Models, Theories And Hypotheses.
2. The Development Of Instruments And Methods For Measurement.
3. Experimental Control And Manipulation Of Variables.
4. Collection Of Empirical Data.
5. Modelling And Analysis Of Data

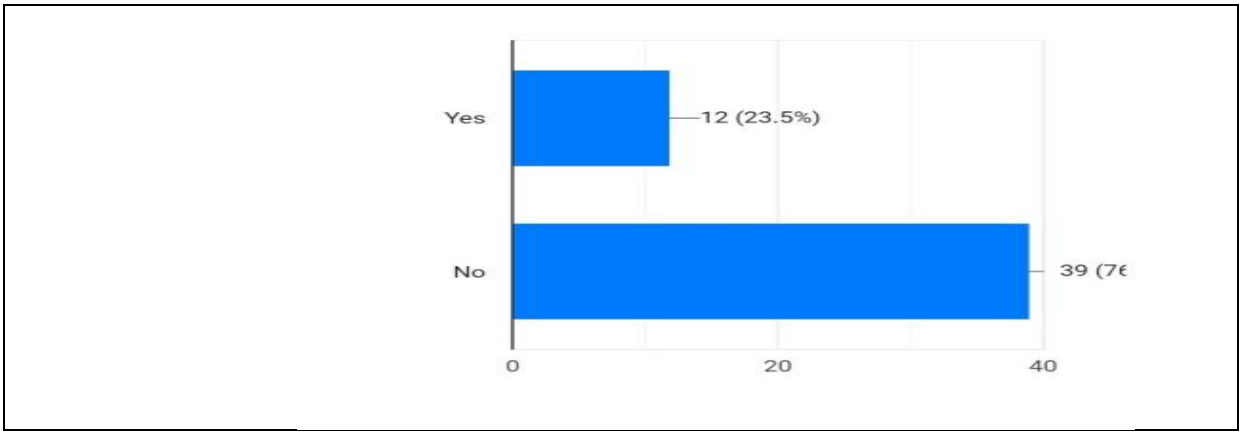
Types Of Data Used

Here, We Have Used Both Primary And Secondary Data While Conducting Research.
In This Project Questionnaire Method For Survey Is Used For Collection Of Primary Data.
Here, Various Websites,Books And Journals Are Been Reffered For Secondary Data

Data Analysis And Interpretation

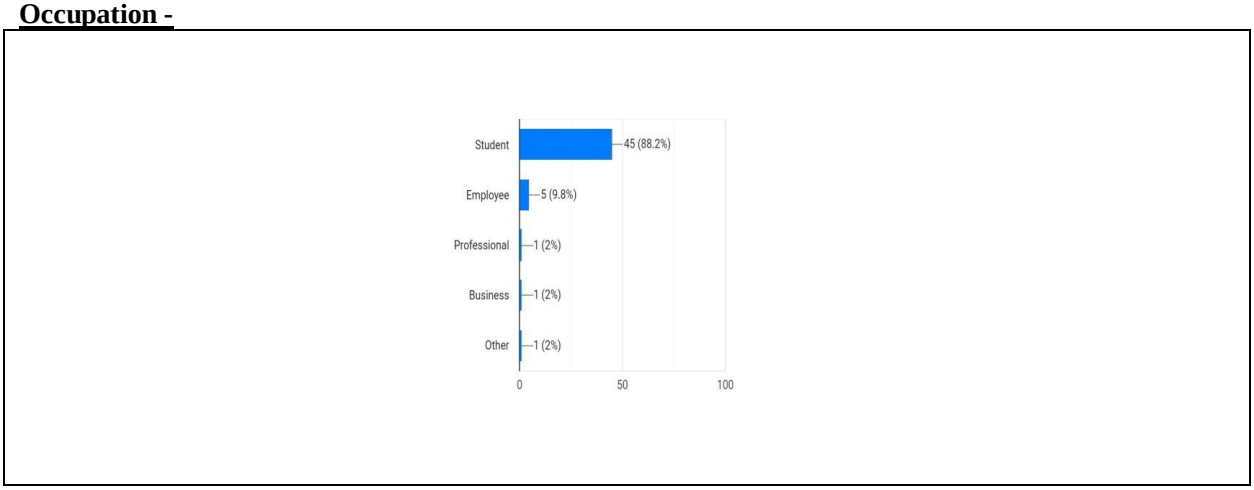
The Purpose Of Analyzing Data Is To Get Usable And Useful Information. The Analysis, Irrespective Of Whether Data Is Quantitative Or Qualitative, May:
Describe And Summarize The Data, Identify Relationship Between Variables, Compare Variables, Identify Difference Between Variables, Forecast Outcomes.
The Research Method Used Was Survey Through Questionnaire.
A Sample Size Of 50 People Was Taken.
These Are The Questions Asked In The Survey Questionnaire And The Results Are As Follows-Age





Interpretation – Almost 95 % Of The People In The Sample Were Between The Age Of 15-30 Years .This States That Most Of The People Were From The Young Generation.

Occupation -

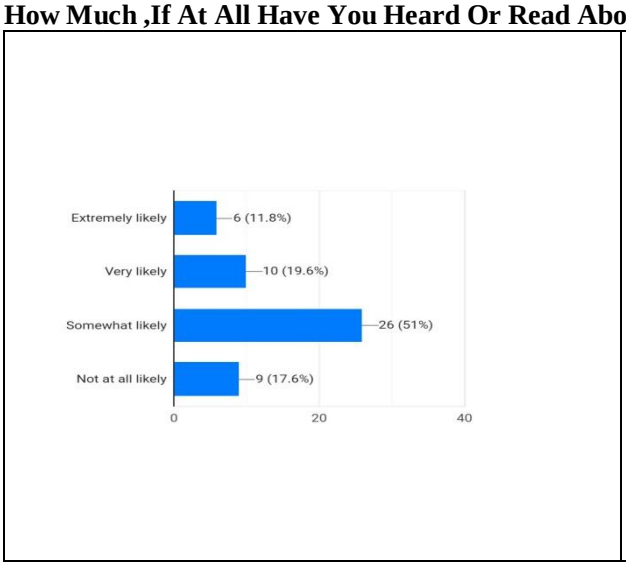


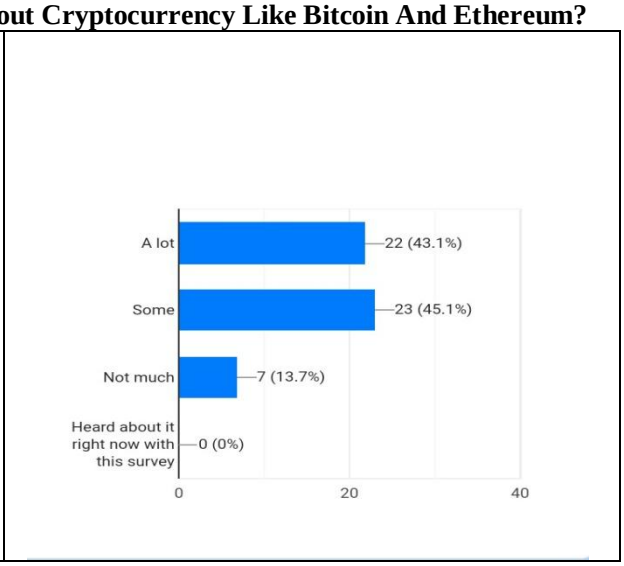
Interpretation - Out Of The Sample Of 50 Most Of Them Were Students And Some Working Employees

Do You Own Cryptocurrency?

Interpretation – As Most Of The People From The Sample Were Learning Students Majority Of Them Did Not Own Any Type Of Cryptocurrency,Yet There Are Some Who Did Own Cryptocurrency.

How Much ,If At All Have You Heard Or Read About Cryptocurrency Like Bitcoin And Ethereum?



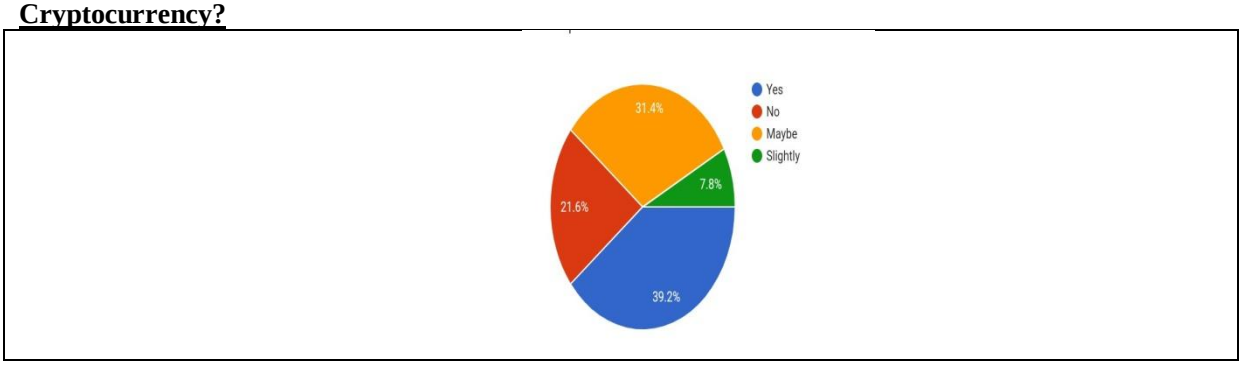


Interpretation – Majority Of The People From The Sample Are Aware About The Concept Of Cryptocurrency And Have Good Knowledge About It As Most Of Them Are Learning Students And People Of The Current Generation.

How Likely Are You To Invest In Cryptocurrency This Year ?

Interpretation- Most Of The People Are Somewhat Likely To Invest In Cryptocurrency This Year And Considering The Decision Of Buying Cryptocurrency.

Cryptocurrency Is Still In Its Infancy Stage And May Undergo Many Changes In The Near Future Which Makes It Extremely Volatile. How Likely Would This Affect Your Decision To Use Cryptocurrency?



Interpretation – The Extreme Volatile Nature Of Crypto Currency Have Affected The Decision Of Investment In Cryptocurrency Of Most Of The People.

Hypothesis Analysis

Hypothesis 1-

1. **H0- There Is Positive Impact Of Crypto Currency On Indian Economy**.
2. H1-There Is Negative Impact Of Crypto Currency On Indian Economy.
3. According To The Research Analysishere H0 Stands True And Verified As Cryptocurrency Have Positively Impacted The Economy Of India . Though There Are No Drastic Changes As Such But Still A Lot Of Scope For A Good Effect Of Cryptocurrency Market Inindia.
4. H1 Stands Nullified As Per The Research As There Do Not Seem Any Harsh Negative Impact Of Cryptocurrency On The Economy Of India And Currently Seems No Scope For The Same.

Hypothesis 2

1. **H0 - Crypto Currencies Have Significantly Impacted The Investment Decisions Of Investors.**
2. H1- Crypto Currencies Have Least Impact On Investment Decisions Of Investors.
3. According To The Data Collected And Research Analysis ,Here H0stands True And Verified As The Introduction Of Crypto Currency And Changes In Its Nature Have Clearly Shown Significant Impact On The Investment Decisions Of The Investors .
4. H1 Stands Nullified As The Statement That Crypto Currency Had Least Impact On Investors Stands To Be Proven False Clearly As Per The Data Collected.

Conclusion:

Crypto-Currency Is Such An Invention Which Has Become A Global Phenomenon. Earlier Rbi Warned The Indians From Using Crypto Currency That To Be Associated With Money Laundering And Terrorist Financing. However, Crypto Currency Is A Modern Technology And A Tool Which Needs To Look Forward For. Even Though There Has Been No Regulatory Response From The Indian Government, The Number Of Investors In Crypto Currency Is Increasing Rather Swiftly Over The Last Few Years. Indian Government Should Take Responsible Steps Now To Regulate Such Currency As Its User In India Is Rapidly Growing. Future Of Cryptocurrency In India Looks Promising And There Is Ray Of Hope.Crypto Currencies Could Provide A Significant Benefit By Overcoming The Lack Of Social Trust And By Increasing The Access To Financial Services As They Can Be Considered As A Medium To Support The Growth Process In Developing Countries By Increasing Financial Inclusion, Providing A Better Traceability Of Funds And To Help People To Escape Poverty .

Bibliography

1. Www.Wikipedia.Com, Www.Investopedia.Com, Https://Www.Analyticsinsight.Net,
2. Www.Slideshare.Net, Www.Blog.Ipleaders.In, Www.Financialexpress.Com, Https://Docs.Google.Com/Forms
3. Www.Academia.Edu, Www.Scroll.In, Www.Economictimes.Indiatimes.Com.

Useful Google Meet Application for Online Teaching-Learning in Education sector.

Latika Ramdas Bedare
M.A. B. Ed.
latikasawant77@gmail.com

Abstract

The Covid-19 epidemic includes all activities approved online from home, as well as teaching-learning activities. It uses Google Meet in online-based platforms. This is helpful in learning progress at this atmosphere. This application can be recycled Google Meet and therefore it is a video communication service. The purpose of this study is to explain the advantages and disadvantages of using Google Meet or using Google Meet in the process of learning stimulating text content in school. Qualitative lessons with incitement methods are used in study.And the results of the research are obtained through observation and interview which are then discovered by relating them. The learning outcomes show that Google Meet is perfect for providing evocative text learning material when practicing for 10th graders. However, this app cannot be used for written evaluation as a means of accompanying other media.

Keywords: Online Teaching-Learning, Google Meet, Descriptive Text,

Introduction:-

At the opening of 2020, a new virus has started from Wuhan, China. The corona has interrupted the grind of people around the world. As well as in the field of education (Al-Maruf et al., 2020). Given the rapid spread and spread of the corona virus, the Indonesian government is trying various ways to combat it. One of them is learning from home policy. "The Minister of Education and Culture of the Republic of Indonesia attracted all the University Leaders", "Heads of Higher Service Institutions, Heads of Regional Education Offices, Heads of District / City Education Offices of Circular No". 36962 MPK.A HK 2020". Head of the Systematic Application Unit of the Ministry of Education, as well as the Culture of the Republic of Indonesia to reschedule the schedule of invited events. It gathers masses and switches them with teleconference or other online availability. The functionality of the online-based platform can at this time fix the efficiently run learning method(Pratama" et al., (2020). Meetings created by computer through online presentation have many advantages, especially through video conferencing. This makes the learning process effective, useful and safe. Through this video conferencing the feeling of attachment can be assimilated and collaborative communication can take place. Further, features in various online applications facilitate the learning process as users can send files during the learning process or use digital whiteboards in online application features. Online teaching-learning is an opportunity that may be used as a teaching-learning device in times situation. The mainstream of schoolchildren and teachers have learned this online teaching-learning for the first time. However, the wishes of many students are fulfilled because they need communication in online classes, direct inspiration from teachers, curriculum institutes and satisfactory facilities etc. Using online learning through video conferencing "(Baber, 2020)". The Google Meet app is also used for video communication services. This app is very suitable, mainly in situations where you have to keep your distance to stay away from Covid-19 virus. For students, teachers or workers who work from home, this application is very useful as we can easily join our respective homes through live video or video conferencing. Boundaries delivered by Google Meet allow users to meet face-to-face directly and effectively, but it's also very light and fast. Organization is not difficult. Many participants can follow it "(Singh and Soumya, 2020)". Likewise, Google Meet is a secure application because Google recognizes that they have built and operated all of their products on a secure basis. So they consider the user data of their creation and they will be left alone. In their Google Meet creation, Google also offers built-in security by stealing to keep users' meetings secure (St. John's, 2020). Due to the various benefits of Google Meet as a video conferencing application, many people in business and education love to use this application. Users find Google Meet easy to use, so it creates a positive perception of the platform. And day by day, the number of Google Meet users is growing significantly (Purwanto&Tannady, 2020). Further, the Google Meet application is a medium used for teaching descriptive text content and for learning activities for classes. Descriptive text is a type of text in English that clearly defines the characteristics of something, such as humans, animals, plants, and inanimate objects. The emphasis of this text is to provide the reader with clear information about the object being depicted. Furthermore, in this descriptive text material, some classmates learn about world famous places or objects related to visitor magnetism. From the above explanation, the ability to use the Google Meet application in the teaching-learning process, especially to accept descriptive text content, is the goal of recent research. Accepting the use of the Google Meet application in the teaching-learning process is likely to be considered for other teachers using the same application in the current virus age. Teachers and students who have recently used

this online application believe that it can be a central factor in improving teaching-learning outcomes in these critical times.

Method

While this type of study is a qualitative study, the method uses a descriptive method. Descriptive research is the study of the objectives of the result and its features and is more directed at the "what" question "(Nasaji, 2015). The persistence of this study is to describe the online teaching-learning placed in the classrooms using Google Meet Media. This research was planned as a descriptive study. The study confuses the researcher, who conducted the school in the odd semester of the 2020/2021 school year and taught English subjects in a specific class, with 30 students. Through descriptive research, researchers describe focused actions and events without focusing on these events. Stages are as follows: (1), formulation of research problems (2), determining the type of information required (3), defining data collection procedures, the researcher chose to conduct observations and conduct interviews. English teacher. (4) After collecting the data, the researchers sort out which data is to be used and which is not. Combining research questions and all these answers into one conclusion that summarizes the overall research problem.

Results and discussion

Investigator 7 procedures online teaching-learning concluded Google Meet in specific classes for meetings. During the teaching-learning process, the researcher always makes observations, observing every detail of what happened in the process of learning and teaching descriptive text content in the classrooms. In accumulation, the investigators also showed teacher interviews, in which the questions were as follows;

Table 1. Interview questions

1. Why did you choose to use Google Meet?
2. Is Google Meet used consistently?
3. What are the benefits of using Google Meet?
4. What are the disadvantages of using Google Meet?
5. Do teachers use Google Meet only as a means of learning or other means of learning as support? After repeated observations and interviews, the results discovered by the researcher will be described as follows; (1) Many students join the Google Meet Room on time knowing that there is an English class. So after the teacher shared the link to join the Google Meet Room, the students immediately ran and joined the Google Meet Room. Students have no problem operating Google Meet because Google Meet is very easy to operate. As Purwanto, E. and Tannady, H. (2020) expose in their research. Google Meet users find it easier . wecan choose to use Google Meet for our needs. Google Meet users are growing significantly. (2) During the teaching and learning process, many students turn off their videos or cameras. Therefore, teachers cannot confirm whether students are there to listen to explanations of content or just to join the Google Meet Room, but students are not there or will report additional programs available. (3) Can't remember so when teachers distribute content, another voice comes from students who forgot to turn off the audio feature in Google Meet. Students- teachers need to express their opinion. It appears that the audio feature has not been activated, (4) Postponementsensue when the teaching-learning process ensues multiple times. (5) The strategies used when participating in Google Meetings also affect the endurance of this teaching-learning process. The tools used are in an irregular state. This will disrupt the learning process.For example, it often happens that when teachers call to ask for students' names during the Google Meet learning process, they don't respond or they respond to the teacher, but they don't notice because of an error from the student speaker. (6) Due to an error from the device or the Internet network, both students and teachers often opt out of the Google Meet application without any intention of doing so. (7) In the learning process, teachers use the share screen feature to display the material created in PowerPoint (PPT) so that the students can also view the material. If the teacher uses a computer / desktop when organizing a Google Meet meeting, the video conference from the teacher can still be viewed. However, if the teacher organizes a Google Meet meeting with the smartphone and shares the screen, the teacher's face will not be visible. (8) Teaching is done for 60 minutes in classes using Google Meet which includes introductory, material distribution and concluding activities. (9) The Google Meet application is used for the teaching-learning process, to provide content and to engage. Oral qualities. For the written assessment, teachers use the WhatsApp application to assign assignments to students, (10) The learning process is made as efficient and efficient as possible to carry out the teaching and learning process, keeping in mind that lesson hours are limited to 60 minutes only. . However, these 60 are considered sufficient to clarify the main points of the presented material and (11) descriptive text topics are meant to enhance reading and writing skills so that teachers need to think creatively about how students understand and acquire skills. To write this text, but via video conferencing. Furthermore, the benefits of using the Google Meet app for learning

descriptive text content in classes. Including; (1) Teachers and students may meet face to face and greet each other. Only when students stop their video conferencing does the teacher ask students to activate their video attendance on the day they are participating in the learning activities. In addition, teachers and students can exchange stories or inspire each other directly, especially in times of peer pressure. The study conducted by also expressed where many students lost the motivation to learn during this online learning, most of the students were late in completing the assignment or proved unhappy. Which was given by the teacher. After learning virtual face-to-face using Google Meet, their motivation increased by 79.4%. Results shown that students are very active. In addition, when they can do their assignments according to the wishes of their teachers. Increases student motivation. (3) Descriptive text content can be carried 90% clearly in the classroom because in this Google Meet application, teachers can present the content in PowerPoint while explaining the content to the students. Google Meet also has a white board feature so that teachers can draw concise but clear pictures with this feature if the content is not clear. (4) We can score speaking through Google Meet application. For example, teachers give assignments to students in a group of 3 members to practice dialogues asking about descriptive text content. So that teachers and students can learn each student's speaking skills and teachers and students can respond directly and give suggestions for improvement so that each student's English language skills can be improved, (5) Google Meet application can also be used. It will use to present students their project. Such as creating descriptive text through the shared screen feature of each student's smartphone, and (6) using the Google Meet application to invite students to practice descriptive text. Share screen feature. Teachers and students can then discuss these questions directly using Google Meet. So that students 'descriptive text material and comprehension of various exercises can be clearly articulated. Unknown insufficiency when using the Google Meet application to learn descriptive text in classes, including; (1) Additional means are required so that students do not forget about this descriptive text content. For example, teachers may ask students to summarize orally distributed descriptive text material in their respective notebooks, (2) Students need other means to provide written assignments, to practice their reading and writing skills. One medium is WhatsApp (online communication or messaging medium for smartphones). Teachers can give homeworkthrough other tools. Sometimes there are delays, which obscure the information received or received. It is then repeated while expressing opinions from teachers and students, there will be no misunderstandings. Overall, it happens during teaching-learning activities using Google Meet. Students are very active .and can understand the descriptive text content with the given exercises. In an epidemic situation like what is currently happening, teachers are forced to innovate. Students understand their school subjects easily.

Conclusion

The results of the research is done. It concluded that the use of Google Meet in the process of teaching-learning descriptive text content is considered effective. From the results of the research, it can be concluded that Google Meet is an option that can be chosen as an online learning medium in times of epidemic, although video conferencing alone is enough to change the process of face-to-face learning.

Nevertheless, teachers need to use additional means to speed up and strengthen the teaching and learning process. In addition, teachers should innovate to be able to make this online learning environment interesting with teachers'. Unique teaching-learning concepts are good in learning-teaching and easily understand the content taught by the teacher. "As stated by the carpenter etc. (2020)". Teachers requirement to have a learning strategy so that teaching activities can run effectively. Also, this learning strategy is expected to increase students 'interest in learning so that they feel comfortable and understand their learning content.

References

1. Al-Maroof, R. S., Salloum, S. A., Hassanien, A. E., &Shaalan, K. (2020). Dread from COVID-19 and technology adoption: the impact of Google Meet during Coronavirus pandemic. Interactive Learning Environments, 0(0), 1–16. https://doi.org/10.1080/10494820.2020.1830121
2. Baber, H. (2020). Determinants of students' perceived learning outcome and satisfaction in online learning during the pandemic of COVID19. Journal of Education and E-Learning Research, 7(3), 285–292. https://doi.org/10.20448/JOURNAL.509.2020.73.285.292
3. Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis. Language Teaching Research, 19(2), 129–132. https://doi.org/10.1177/1362168815572747
4. Pratama, H., Azman, M. N. A., Kassymova, G. K., &Duisenbayeva, S. S. (2020). The Trend in Using Online Meeting Applications for Learning During the Period of Pandemic COVID-19: A Literature Review. Journal of Innovation in Educational and Cultural Research, 1(2), 58–68. https://doi.org/10.46843/jiecr.v1i2.15

5. Purwanto, E., &Tannady, H. (2020). The Factors Affecting Intention to Use Google Meet Amid Online Meeting Platforms Competition in Indonesia. Technology Reports of Kansai University, 62(06), 2829–2838.
6. Putra, R. W. P. (2021). Improving the Students' Motivation in Learning English through Google Meet during the Online Learning. English Learning Innovation, 2(1), 35–42. https://doi.org/10.22219/englie.v2i1.14605
7. Sette-de-Souza, P. H. (2020). Motivating learners in the pandemic period through WhatsApp and Google Meet. Journal of Dental Education, July. https://doi.org/10.1002/jdd.12352
8. Singh, R., &Soumya, A. (2020). Updated comparative analysis on video conferencing platforms-Zoom, Google Meet, Microsoft Teams, WebEx Teams, and GoToMeeting. EasyChair: The World for Scientists, 1–9. https://easychair.org/publications/preprint/Fq7T
9. St John, A. (2020). It's not just Zoom. Google Meet, Microsoft Teams, and Webex have privacy issues too. Consumer Reports, 3.
10. Sutarto, S., Sari, D. P., &Fathurrochman, I. (2020). Teacher strategies in online learning to increase students' interest in learning during COVID-19 pandemic. JurnalKonseling Dan Pendidikan, 8(3), 129. https://doi.org/10.29210/147800

Crop Diversification Pattern of Beed District: A Geographical Study

Dr. Pradip P. Laggad
Department of Geography, M.S.S. Arts College, Tirthpuri, Tq. Ghansawangi, Dist. Jalna.

Abstract:

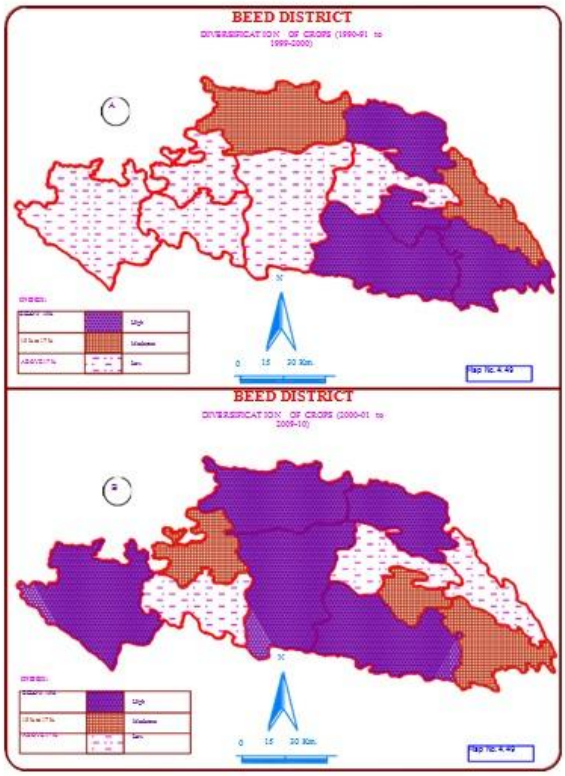
Crop diversification is a concept, which is opposite to crop specialization Diversification in cropping pattern means a variety of crop involving intensity of competition among field crop for arable land. The diversification in structural forms of agricultural such as cropping pattern, livestock structural or agricultural enterprises explain why is it is possible or necessary to rise a variety of these forms which passes nearly an even proportion. Essentially, activities which obviously involve intense competition among various activities for space.

Key Word: Crop diversification, Spatio-Temporal variation, Pattern.

Introduction:

The keener the competation the higher the magnitude of diversification and lesser the competation greater will be the trend towards specialization or monoculture where, emphasis is on one or two crops[1]. Though the pattern of crop diversification is influenced by physical, socio-economic and techno-organizational factors, physical environment is more strong. The study of crop diversification is of vital importance in judging the competation amongst crop for area, scope for rotation for the maintenance of fertility of soils, which affects on the productivity. The level of crop diversification largely depends on the geoclimatic & socio- economic condition and technological development in a region. In general, higher the level of agricultural technology, lesser the degree of concentration. Moreover the rich farmers prefer to specialize in agriculture enterprise while the poor and subsistent farmer's are generally more interested in the diversification of crops[2].

Beed district is one of the agriculture-based district in the Maharashtra state. Agriculture is the backbone of study area economy and district agriculture is foodgrain oriented. Agriculturally district divided in two main growing seasons which is one of the Kharif (summer) and Rabi (winter).



Study Area:

Beed district is situated on the central part of the Maharashtra and lies between 18°27' and 19°27' north latitudes and 74°49' and 76°44' east longitudes[3]. The east west extension of Beed district is 268 kms. The shape of the Beed district is broadly that of a trapazed, the northern and southern sides of which are nearly parallel.

The total geographical area of Beed district is 10615.3 sq.kms and its proportion as compared with Maharashtra state it is about 3.5 percent. The proportion of area of the Beed district in Marathwada division is 19.20 percent.

Objectives:

1. To study the crop diversification of the region.
2. To find out crop diversification pattern of the district.
3. To find out the major crop regions of the district.

Database and Methodology:

The data collected and used for the period 1990-91, 1999-2000 to 2000-01, 2009-10, comes both from primary and secondary sources. The primary data is the raw data collected through different sources particularly questionnaires and personal inter views.

Secondary data obtained from Socio-Economic Review, District census, Handbooks, Gazetteers, Agricultural, Epitomes, Periodicals, Season and Crop Report published by the different Agricultural Department.

The data thus collected through primary and secondary sources were processed by statistical and cartographic techniques. On the basis of primary and secondary data with the help of various statistical and cartographical methods and techniques, researcher studied spatial as well as temporal changes in food grain cultivation in Beed district from 1990-91, 1999-2000 To 2000-01, 2009-10. For the present research

work author has been used the following method to calculate different aspects.

There is a relationship between crop combination and crop diversification and that is a greater number of crops in combination, higher is the diversification. To investigate the spatial pattern of crop diversification Jasbir Singh's (1976)[4].

Formula is used as given below.

$$\text{Index of Crop Diversification} = \frac{\textit{percentage of total cropped area in 'n' crops}}{\textit{Numbers of 'n' crops}}$$

Where 'n' crops are those, which individually occupy 5% of more are the totalcropped area in the tahsil.

The index of diversification provides a method for generalizing the relationship between the relative strength and the number of crops grown. The regional dominance of some crops in an area do have some relationship with other crops, indicating a strong bearing on the degree of crop diversification or specialization.

Pattern of Crop Diversification:

The indices of crop diversification are calculated for the period i.e. 1990-91 to 1999- 2000 and 2000-01 to 2009-10 are showed in table no 1.1 and map no 4.49 A and B. The diversification index grouped into three categories.

Table N. 1.1 : Changes in Crop Diversification in Beed District(1990-91 to 2009-10)

Sr. No.	Tahsils	1990-91 to 1999-2000			2000-01 to 2009-10		
		No. of Crops	Area in %	Crop Diversification Index	No. of Crops	Area in %	Crop Diversification Index
01	Asti	03	58.24	19.41	04	57.34	14.34
02	Patoda	03	65.04	21.68	03	66.89	22.89
03	Shirur (K.)	04	80.11	20.03	04	67.34	16.84
04	Gevorai	05	78.85	15.77	06	76.09	12.68
05	Majalgaon	07	80.23	11.46	06	80.08	13.35
06	Wadwani	04	73.64	18.41	04	74.29	18.57
07	Beed	03	63.35	21.12	05	69.27	13.85
08	Kaij	05	66.57	13.31	06	67.04	11.23
09	Dharur	05	71.03	14.26	04	63.23	15.81
10	Parali (V.)	04	64.78	16.20	03	59.02	19.73
11	Ambajogai	06	65.45	13.09	05	79.36	15.87
12	Total District	05	68.51	13.70	05	65.98	13.20

Source: *Computed by the Researcher.*

1. **Areas of high crop diversification (below 15%)**
2. **Areas of moderate crop diversification (15% to 17%)**
3. **Areas of low crop diversification (above 17%)**

Table No. 1.1 indicates that crop diversification was found in Majalgaon, Kaij, Dharur and Ambajogai tahsils while moderate crop diversification was noticed in Gevorai and Parali (V.) tahsils whereas low crop diversification was experienced in Asti, Patoda, Shirur (K.),

Wawani and Beed tahsils in the study area in during 1990-91 to 1999-2000 (Map No. 4.49 A).

After the laps of first half of study period. Changes in the crop diversification can be obtained from the comparison of both them Map No. 4.49 A and B by comparing them. Low to high degree of crop diversification changes was recorded in Asti and Beed tahsils while Shirur (K) tehsil was observed in low to moderate zone of crop diversification and Gevorai tahsil was noticed moderate to high crop diversification zone shifted whereas downward shift from high to moderate

crop diversification zone was registered in Dharur and Ambajogai tahsils and Parali (V.) tahsil shift from

moderate to low crop diversification while Majalgaon, Kaij, Patoda and Wadwani tahsils was present no change in the crop diversification zone in the study region in during period of investigation (Map No. 4.49 B).

Conclusion:

Crop diversification was found in Majalgaon, Kaij, Dharur and Ambajogai tahsils while moderate crop diversification was noticed in Gevorai and Parali (V.) tahsils whereas low crop diversification was experienced in Asti, Patoda, Shirur (K.), Wawani and Beed tahsils in the study area in during 1990-91 to 1999-2000. In 2001 to 2009-10, high crop diversification was noticed in Ashti, Georai, Beed, Kaij and Majalgaon tahsils whereasmedium crop diversification was observed in Shirur K. and Ambajogai tahsil. While low cropdiversification was registered in Patoda, Wadwani and Parli tahsil.

Reference:

1. Coppock J. T. (1968): 'Changes in landuse in Great Britain' Landuse and Resources studies in Applied Geography, Institue of Britain Geographes, London, Special Publication No. 1. P. 111.
2. Bhatia S. S. (1965): 'Pattern of Crop Combination and Diversification in India' Economic Geography., Pp. 40, 41, 53, 55 and 56.
3. *Jasbir Singh and Dhillon S. S. (1947): 'Agricultural Geography' Tat McGraw HillPublishing Co. Ltd., Delhi P. 220.*
4. *Census of India, Beed District.*
5. *Majid Hussain (1996): 'Systematic Agricultural Geography' Rawat Publication,Jaipur Pp.241.*

Impact of Globalization on agriculture sector inIndia

Dr. B.V. Dakore
ACS College Shankarnagar
Gmail : dakorebalaji@gmail.com

Abstract :

Globalization is the process of integratingvarious economies of the world without creating any barrier in the free flow of goods and services technology capital and even labour or human capital.Agriculture is the backbone of the Indian economyThe central statistical organization (cso) revels that in 1950-51 the share of agriculture in gross domestic product (GDP) was around 55 percent. Agriculture is the art and science of cultivating the soil increasing crops and raising livestock it includes the preparation of plant and animal products for people to use and their distribution of markets.The prime objective of the paper is to know the impact of globalization on Indian agricultures.The general objectives of economic planning for the agricultural sector are as increase in agriculture production, employment opportunities, reduce the pressure of population, inequality of incomes. The study is in the wake of the importance of agriculture sector such as industrial development, role in Indian trade, national economy, large purchasing power, employment generationetc. change in globalization policies positive or negative will have multiplier effect on the agriculture sector in India.

Keywords : Globalization, Agriculture

Introduction

Globalization is the process of integrating various economies of the world without creating any barrier in the free flow of goods and services technology capital and even labor or human capital. The term globalization has therefore some parameters :**i.e.** reduction of trade barrier to permit free flow of goods and services among nation states, creation of environment in which free flow of capital can take place about nation states. creation of environment, permitting free flow of technology and last but not least form the point of views of developing countries, creation of environment in which free movement of labor can Take place in different countries of the world. Agriculture is the backbone of the Indian economy it provides employment to around 60 percent of the total employment in the country. The central statistical organization (cso) revels that in 1950-51, the share of agriculture in GDP was around 55 percent As the process of industrialization and economic growth gathered momentum under the five year plan. Manufacturing and service sectors growing rapidly and agricultural sector stop breaker along the percentage share of agriculture in GDP declinedand reached a level of 13.9 percent in 2013-14. Comparison can be made between the position of agriculture in India with that in the other counties as regards the share of agriculture in employment in the united kingdom and united states only 2 to 3 percent of the working population is engaged in agriculture in France the preparation is about 7 percent and in Australia this about 6 percent it is only backward and less developed countries that the working population engaged in agriculture is quite high for instance it is 35 percent in Egypt 59 percent in Bangladesh 50 percent in Indonesia and 68 percent in china.

Definition of Agriculture & Globalization :

Agriculture is the art and science of cultivating the soil increasing crops and raising livestock it includes the preparation of plant and animal products for people to use and their distribution of markets. Agriculture provides most of the world's food and fabrics acceding to Branko milanovice "Globalisation means free movement of capital, goods, technology ideas and people". Stiglize " Globalization isthe closer integration of the countries and peoples of the world which has been brought abut by the enormous seduction of costs of transportation and communications, and the breaking down of artificial barriers to the flow of goods and services, capital, knowledge and people across borders " Bhagwati defines globalization **:** " Economic globalization constitutes integration of national economies to international economics through trade, direct foreign investment (by corporation and multinationals) short term capital flows, international flows of workers and humanity generally and flow of technology ".

Objectives of the study : The prime objective of the paper is to know the impact of globalization on Indian agricultures.

The general objectives of economic planning for the agricultural sector are as follows :

Increase agricultural production, Increase employment opportunities, reduce the pressure of population and reduce inequality of incomes in the rural sector

The Study is in the wake of the importance of agriculture sector such as

Industrial development : Indian agriculture is the source of supply of raw materials to our leading industries such as cotton and jute textile industries sugar, flour mills, Vanaspati and plantation all these

depends on agricultural directly. Many of small scale and cottage industries like handloom weaving, oil crushing, rice husking etc. depends upon agriculture for their raw materials together their account for 50 percent of income generated in the manufacturing sector in India.

Role in Indian trade : Agriculture products i.e. tea sugar , oil seeds , tobacco, spices etc. constituted the main items of export of India. The preparation of agricultural goods which were exported came to 50 percent of our exports and manufacturing uses with agricultural content contribute another 20 percent or so and the total comes 70 percent of Indian experts in 1950-51.

National economy : Agriculture is the main support for Indian transport systems, secure bulk their business from the movement of agricultural goods. Internal trade is mostly in agricultural products.

Large purchasing power /poverty eradication : Goods implying large purchasing power with the farmers lead to greater demand for manufactures and therefore better prices agricultural growth has direct impact on poverty eradication.

Employment Generation : It is an important factor in containing inflation, raising agricultural wages and for employment generation

Globalization and its impact on agriculture sector.

Change in globalization policies positive or negative will have multiplier effect on the agriculture sector in India.

Boost to the production of cereals. The major achievement of the globalization is to boost the production of majer cereals viz. wheat and rice. The production of wheat which stood at 11 million tonnes in 1960-61 rose to 96 million tennes in 2013-14.

Increase in the production of food grains : The globalization was mainly directed to increase the production of foodgrains. Improvement in the output of sugarcane, oil seeds, and potatoes etc.

Significant changes in crop pattern : The crop pattern in India has undergone two significant changes, the output of cereals has risen at the rate of 3 to 4 percent per annum. Among cereals, the preparation of wheat in the total cereals output has more than doubled i.e. from 15 percent in 1950-51 to 38 percent in year 2014-15.

Boost to agricultural employment : The adoption of new technology in globalization has also given a boost to agricultural employment because of diverse job opportunities created by multiple cropping and shift towards hired workers.

Growing inequalities : In Globalization period poverty has declined from 36 percent in 1993-94 to 26.1 percent in 1999-2000 through at relatively decreasing rate in post liberalization period. The estimates of growth rates in per capita expenditure between 1993-94 to 1999-2000 point to significant increase in rural and urban inequalities at the all India level, as also in most of states.

Indian agriculture is still a gamble in the monsoons : The output of foodgrains rose to 176 millions tonnes in 1990-91 and touched 213 million tonnes in 2001-02. On account of extensive drought conditions, the output of foodgrains declined steeply to 174 million tonnes during 2002-03.

Innovations & communication of ideas : Expanded trade spurs the spread of technology, innovation and the communication of ideas. The best ideas for market leaders special more easily.

Better quality and variety: Competition from abroad drives united states firms to improve their products. Consumers have better product and more choices as a result.

Conclusion:

The agriculture sector in India is the backbone of Indian economy. It has a lion's share in boosting the overall economy of the nation. The share of employment in agriculture is high rate comparison to other country in the world. Globalization has opened the doors of agriculture economy in the myriads of ways. The Indian agriculture produce is exported with ease. The development of agriculture sector along with food processing industries enabled India to make Indian agriculture produce sell in international market.

Reference :

1) Indian economy : Gaurav Datt, Ashwini Mahajan- s. chand & company Pvt. ltd. New Delhi.
2) Indian economy, Development and Environmental Economics- Dr. G. M. Jhamre, Nagpur., Pimplapure Publication, Nagpur.
3) Agricultural Economics- Dr. Gangadhar V. kayande Patil, Chaitnya Publication, Nasik.

Challenges And Opportunities Associated With Waste Management In India

Dr.Kumaraiah
T.S Faculty, Dept. Of Sociology PG Centre in Ramanagara Affiliated to Bangalore University, Bangalore-560056, Karnataka
Email: kumaraiahts@gmail.com

Abstract

Now a days impact of Urbanization, Industrialization, occupational opportunities are increased. People are migrated from inter places, inter states, because of this reason, day by day immigrants are coming to cities. Apart from this, when was increasing the crowd automatically increase wastes from various sources. Present scenario this is a unsolved problem in the society. This paper reviews the challenges, barriers and opportunities associated with improving waste management in India. It is the output from an international seminar on 'Sustainable solid waste management for cities: opportunities in SAARC countries' organized by the Council of Scientific and Industrial Research-National Environmental Engineering Research Institute and held in Nagpur, India in 2015. SAARC is the South Asian Association for Regional Cooperation and includes Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka and Afghanistan.

Keywords: waste management, issues, challenges, India

Introduction

Solid waste management is a major problem for many urban local bodies in India, where urbanization, industrialization and economic growth have resulted in increased municipal solid waste generation per person. Effective is a major challenge in cities with high population density. Achieving sustainable development within a country experiencing rapid population growth and improvements in living standards is made more difficult in India because it is a diverse country with many different religious groups, cultures and traditions. Despite significant development in social, economic and environmental areas, Solid Waste Management systems in India have remained relatively unchanged. The informal sector has a key role in extracting value from waste, with approximately 90% of residual waste currently dumped rather than properly landfilled. There is an urgent need to move to more sustainable, and this requires new management systems and waste management facilities. Current systems are inefficient, with waste having a negative impact on public health, the environment and the economy. The waste Management and Handling Rules in India were introduced by the Ministry of Environment and Forests, although compliance is variable and limited.

Infrastructure development for public health and protection of the environment

Improvements in civil infrastructure are required for India to become a world leading economy. Developing high-quality infrastructure that meets
the needs of the people and protects the environment is fundamental to achieving effective economic growth. Waste management infrastructure has an important role in delivering sustainable development. Rapid population growth in India has led to depletion of natural resources. Wastes are potential resources and effective waste management with resource extraction is fundamental to effective Solid Waste Management. Value extraction from waste can be materials, energy or nutrients, and this can provide a livelihood for many people. The transition from wastes to resources can only be achieved through investment in Solid Waste Management as this depends on a coordinated set of actions to develop markets and maximize recovery of reusable/recyclable materials. Materials, energy and nutrient recovery must be the aim of future Solid Waste Management infrastructure development in India. Resources can be recovered from wastes using existing technologies and India has an extremely effective recycling tradition. The 'scrap dealer' systems produce recycled materials through an extensive and well-coordinated network across the country.

Role of the informal sector in waste materials reuse and recycling

The informal sector has a very important role in India and this must be integrated into formal Solid Waste Management systems. The informal sector is characterized by small-scale, labor-intensive, largely unregulated and unregistered low-technology manufacturing or provision of materials and services. Waste pickers collect household or commercial/industrial waste and many hundreds of thousands of waste pickers in India depend on waste for an income, despite the associated health and social issues. Pickers extract potential value from waste bins, trucks, streets, waterways and dumpsites. Some work in recycling plants owned by cooperatives or waste picker associations. Waste picking is often the only source of income for families, providing a livelihood for significant numbers of urban poor and usable materials to other enterprises. Waste pickers in Pune collect organic waste for

composting and biogas generation. Waste pickers also make a significant contribution by keeping cities clean. A recent study of six Indian cities found that waste pickers recovered approximately 20% of waste, with 80 000 people involved in recycling approximately three million tones.

Waste collection and transport

Waste collection, storage and transport are essential elements of any Solid Waste Management system and can be major challenges in cities. Waste collection is the responsibility of the municipal corporations in India, and bins are normally provided for biodegradable and inert waste. Mixed biodegradable and inert waste is often dumped, with open burning a common practice. Improvements to waste collection and transport infrastructure in India will create jobs, improve public health and increase tourism. Local bodies spend around Rs. 500–1000 per tonne on Solid Waste Management with 70% of this amount spent on collection and 20% spent on transport.

Waste-to-energy in India

The problems associated with improper waste disposal could be significantly mitigated by requiring material recovery. Source separation of inert and high moisture content fractions would maximize the potential for thermal recovery and other treatment options in India. The waste processed in thermal recovery is residual waste that remains after all commercially viable recyclable materials have been extracted. Waste-to- energy technologies produce energy, recover materials and free land that would otherwise be used for dumping. The composition of residual waste is important for energy recovery and waste composition is changing in India, with the amount of high calorific waste generally increasing. A significant increase in the use of waste-to-energy technologies has been proposed, but this depends on location, climate, demographics and other socioeconomic factors. The most widely used waste-to-energy technology for residual waste uses combustion to provide combined heat and power. Adopting maximum recycling with waste-to-energy in an integrated waste management system would significantly reduce dumping in India. Waste-to-energy technologies are available that can process unsegregated low-calorific value waste, and industry is keen to exploit these technologies in India. Several waste-to- energy projects using combustion of un-segregated low-calorific value waste are currently being developed. Alternative thermal treatment processes to combustion include gasification, pyrolysis, production of refuse derived fuel and gas-plasma technology.

Barriers to improved waste management in India

The current status of Solid Waste Management in India is poor because the best and most appropriate methods from waste collection to disposal are not being used. There is a lack of training in Solid Waste Management and the availability of qualified waste management professionals is limited. There is also a lack of accountability in current Solid Waste Management systems throughout India. Municipal authorities are responsible for managing in India but have budgets that are insufficient to cover the costs associated with developing proper waste collection, storage, treatment and disposal. The lack of strategic plans, waste collection/segregation and a government finance regulatory framework are major barriers to achieving effective in India.

Limited environmental awareness combined with low motivation has inhibited innovation and the adoption of new technologies that could transform waste management in India. Public attitudes to waste are also a major barrier to improving in India.

Conclusion

The current situation is that India relies on inadequate waste infrastructure, the informal sector and waste dumping. There are major issues associated with public participation in waste management and there is generally a lack of responsibility towards waste in the community. There is a need to cultivate community awareness and change the attitude of people towards waste, as this is fundamental to developing proper and sustainable waste management systems. Sustainable and economically viable waste management must ensure maximum resource extraction from waste, combined with safe disposal of residual waste through the development of engineered landfill and waste-to-energy facilities. India faces challenges related to waste policy, waste technology selection and the availability of appropriately trained people in the waste management sector. Until these fundamental requirements are met, India will continue to suffer from poor waste management and the associated impacts on public health and the environment.

References

1. Census of India. 2011. Ministry of Home Affairs, Government of India, New Delhi, India. See http://censusindia.gov.in/ (accessed 27 June 2015).
2. ISWA (International Solid Waste Association). 2012. Globalization and waste management

final report from the ISWA task force. See http://www.iswa.org/knowledgebase/tfgfinal (accessed 27 June 2015).

3. World Economic Forum. 2010. Committed to improving the state of theWorld.
   a. See http://www.idfc.com/pdf/publications/wef_positive_infrastructure_ report.pdf (accessed 1 July 2015).
4. Kumar S, Bhattacharyya JK, Vaidya AN, Chakrabarti T, Devotta S, Akolkar AB. 2009. Assessment of the status of municipal solid waste management in metro cities, state capitals, class I cities, and class II towns in India: an insight. Waste Manage. 29, 883–895. (doi:10.1016/j.wasman.2008.04.011) [PubMed]
5. Kumar KN, Goel S. 2009. Characterization of municipal solid waste (MSW) and a proposed management plan for Kharagpur, West Bengal, India. Resour. Conserv. Recycling 53, 166–174. (doi:10.1016/j.resconrec.2008.11.004)

Impact of Agricultures Development on India Economy

Dr. M. P. Pagare
Asstt. Professor Dept. of Commerce, Siddharth Arts' Commerce & Science College Jafrabad Dist Jalna (M.S.)

Introduction:-

The development of any country depends on its economy and its agriculture and industry if agriculture is developed, then the various researches available in the country are used wisely and as a result the life expectancy of the farmers increases. And increase in agribusiness eliminates the overall fiscal deficit and contributes to the balanced development of the country As a result, the country becomes self-reliant and the country's economic development begins on a large scale Therefore, in today's society, giving importance to the agricultural sector and providing various government schemes to the agricultural sector has become the need of the hour. India is known as an agricultural country. India gained independence from the British rule on 15 August 1947. And then on January 26, 1950, India adopted a constitutional republic Prior to that, India was facing a dire poverty-stricken industry, illiteracy and various difficulties Later, India started moving towards a welfare state. From 1951, the country adopted the scheme Agriculture is the basic sector and industry, rural development, education, poverty alleviation and job creation, energy, etc. Deciding to make radical changes in various fields, the government continued to participate in development till the 1990 And encouraging the account sector by adopting a new industrial policy after 1991 to increase the competitive sector To increase international trade, to make radical changes in the fields of information technology and engineering However, in the face of the current crisis in the country, agriculture and the peasantry are on the rise.

India is known as an agricultural country. Agriculture is of paramount importance in the Indian economy If the share of agriculture in the gross national product of any country is high, then that country is known as an agricultural country Today, more than 60 per cent of India's population is dependent on agriculture. Agriculture is said to be the backbone of the Indian economy Despite the rise of post-independence industrialization in India, the share of agriculture has not diminished The loss of agricultural crops in India during the food year will create an imbalance in the economy as a whole In the future, economic growth will accelerate and the number of people dependent on agriculture will decrease However, as India's economic growth is heavily dependent on agriculture, it is clear that agriculture will continue to be important In India, the Five Year Plan started from 1951. Apart from the 12 Five Year Plans, the importance of agriculture has been given importance in all the Five Year Plans in India. This means that if India is to develop, it must first develop the agricultural sector But even at the beginning of the 21st century, the Indian agricultural sector has not developed as it should have so it is necessary to development of agricultural sectors.

Impact of Agriculture on Indian Economy:-

The Indian economy is called the agrarian economy similarly agriculture is a major business in India But compared to developed countries, India is known as an agricultural and developed country Even at the beginning of the 21st century, agriculture in India does not seem to have developed much In the age of globalization, there are many unfavorable and favorable effects of globalization on agriculture Similarly, many adversities are facing the Indian agricultural sector. The impact of the Indian economy on the agricultural sector to some extent is evident from the following points.

1. It has become imperative to increase productivity as agricultural productivity in India is very low compared to other developed countries.
2. The availability of agricultural labor for agriculture in India has become a major challenge for farmers This is because the younger generation has changed their view of agriculture Also, there has been a significant increase in the wages of agricultural laborers, which has led to an increase in the cost of agricultural production Due to the increase in migration of people from rural to urban areas, the availability of agricultural labor in rural areas has decreased.
3. The most important challenge facing the agricultural sector in India is the availability of markets although farmers in India are taking over the manufacturing sector, they do not have a near market to sell their produce so the market is a big challenge for them.
4. In India, the number of farmer suicides in the agricultural sector has increased dramatically
If this is to be stopped, the government needs to give fair prices to agricultural and farmers' products and implement various agricultural schemes for farmers.

5. To improve the agricultural sector, farmers have to ask for different types of loans And as loans are not available to the farmers, the government should provide various types of expenses to the farmers.
6. India's regional development is unbalanced. Some regions or states are developed while some states are underdeveloped therefore, by developing the agricultural sector, we can achieve balanced regional development. This is a big challenge for the farmers and the state as a whole.
7. The challenge for the Indian agricultural sector is to develop itself and to develop the country economically by developing agriculture along with its own development. This can lead to economic development of the country if agriculture is developed.
8. In today's modern way of farming, Indians have the potential to earn a large amount of foreign exchange Good quality crop production in agriculture increases the demand for it in foreign markets With little foreign exchange available in India, this is a great opportunity to balance India's bribes by getting foreign exchange from agriculture.
9. Lack of infrastructure in Indian agriculture India needs a lot of infrastructure along with agricultural development.
10. Along with agriculture, side business is very important to farmers in India To do this, the government needs to provide various schemes to different farmers.

Objective of the Study:-

1. To make a comparative study of the favorable or unfavorable effects of the agricultural sector on the Indian economy.
2. To study the impact of agriculture on the Indian economy.
3. To find out what are the problems facing the Indian economy.
4. To study the impact of the Indian economy on the agricultural sector.
5. To finding solutions to the problems facing the Indian economy.

Importance of the Study:-

India is known as an agricultural country and the agricultural sector in India has not developed as it should similarly, the agricultural sector has a huge impact on the Indian economy It is very important to know that this result is unfavorable when it is favorable If the result is favorable, the Indian economy will not falter And economic growth can be achieved by overcoming various obstacles in the Indian economy And overall, it contributes to the economic growth of the country by increasing the national income and per capita income As a result, the country becomes self-reliant and the economy as a whole creates a positive environment and runs smoothly. Therefore, the development of the economy of any country depends on the agricultural development of that country and the development of the agricultural sector is important for the smooth running of the economy in any country.

Scope & Limitations of the Study:-

Although its contribution in the gross domestic product (GDP) has reduced to less than 20 per cent and contribution of other sectors increased at a faster rate, agricultural production has grown. This has made us self-sufficient and taken us from being a begging bowl for food after independence to a net exporter of agriculture and allied products. Total foodgrain production in the country is estimated to be a record 291.95 million tones, according to the second advance estimates for 2019-20. This is news to be happy about but as per the estimates of Indian Council for Agricultural Research (ICAR), demand for foodgrain would increase to 345 million tonnes by 2030. Increasing population, increasing average income and globalisation effects in India will increase demand for quantity, quality and nutritious food, and variety of food. Therefore, pressure on decreasing available cultivable land to produce more quantity, variety and quality of food will keep on increasing.

Research methodology:-

For this study primary data had collected from the responded through the questionnaire and personal interview by the various types of responded. The secondary data has been collected from journal books, study report, published government report, website and varies other publication and also from personal discussion with the various types of agriculture agencies group.

Conclusion of the Study:-

The Indian agricultural sector has had an impact on the Indian economy in various ways The Indian agricultural sector is spread all over the country. The impact on the agricultural sector is affecting the entire economy the adversity facing the Indian agricultural sector needs to be addressed The Government of India must acknowledge the need to address such adversities It is the first duty of the Government of India to provide all kinds of assistance. This adversity cannot be overcome without the help

of the Government providing various schemes to the farmers as well as flooding various schemes to the farmers will adversely affect the Indian economy. Therefore, the Government of India and the State Government should develop the agricultural sector and provide various facilities to agriculture and the agricultural sector The above study proves that it has a positive impact on the Indian economy Similarly, if India's economy is well-organized, people's living standards will increase significantly.

Reference:

1. Prof. Lalchndra R. Snate, Dept. of Economies, Shantarambhau Gholap Arts & Science And Gotirambhau, Commerce College Shivale Ta. Murbad District Thane (M.S.) INDIAN AGRICULTURE SECTOR: SUITABILITY AND ADVERSITY ISSN 2455-314X Vol 3, ISSUE 5 An International Multidisciplinary Journal.
2. There is a need for work on cost-effective technologies with environmental protection and on conserving our natural resources by the **MADHU SHARMA Published: Thursday 04 February 2021**
3. Weakipidia.com
4. Research Mythology- Kothari
5. DIC
6. Online Journal of Commerce & Management.

India: Issues and Priorities for Agriculture

Dr. B. S. Devkar[1] Asst. Prof. Patil N.A.[2]
[1]Dept. of Geography Sant Ramdas Arts, Commerce and Science College, Ghansawangi Dist. Jalna
[2]Dept of Geography D.V. Arts college & G.C.U.B. Science &Commerce College, Goregaon -Raigad.

Introduction:

The agriculture is an art of raising plant life from the soil for the use of mankind. The basic aim of agriculture is to raise stronger and more fruitful crops and plants and to help them for their growth by improving the soil and supplying the water. Agriculture is a backbone of Indian economy.India is a global agricultural powerhouse. It is the world's largest producer of milk, pulses, and spices, and has the world's largest cattle herd (buffaloes), as well as the largest area under wheat, rice and cotton. It is the second largest producer of rice, wheat, cotton, sugarcane, farmed fish, sheep and goat meat, fruit, vegetables and tea.

Overview:

While agriculture's share in India's economy has progressively declined to less than 15% due to the high growth rates of the industrial and services sectors, the sector's importance in India's economic and social fabric goes well beyond this indicator. First, nearly three-quarters of India's families depend on rural incomes. Second, the majority of India's poor (some 770 million people or about 70 percent) are found in rural areas. And third, India's food security depends on producing cereal crops, as well as increasing its production of fruits, vegetables and milk to meet the demands of a growing population with rising incomes. To do so, a productive, competitive, diversified and sustainable agricultural sector will need to emerge at an accelerated pace.

Challenges:

Three agriculture sector challenges will be important to India's overall development and the improved welfare of its rural poor:

1. **Increasing agricultural productivity per unit of land:** Raising productivity per unit of land will need to be the main engine of agricultural growth as virtually all cultivable land is farmed. Water resources are also limited and water for irrigation must contend with increasing industrial and urban needs. All measures to increase productivity will need exploiting, amongst them: increasing yields, diversification to higher value crops, and developing value chains to reduce marketing costs.
2. **Ensuring that agricultural growth responds to food security needs:**The sharp rise in food-grain production during India's Green Revolution of the 1970s enabled the country to achieve self-sufficiency in food-grains and stave off the threat of famine. Agricultural intensification in the 1970s to 1980s saw an increased demand for rural labour that raised rural wages and, together with declining food prices, reduced rural poverty.
3. **Reducing rural poverty through a socially inclusive strategy that comprises both agriculture as well as non-farm employment:** Rural development must also benefit the poor, landless, women, scheduled castes and tribes. Moreover, there are strong regional disparities: the majority of India's poor are in rain-fed areas or in the Eastern Indo-Gangetic plains. Reaching such groups has not been easy. While progress has been made - the rural population classified as poor fell from nearly 40% in the early 1990s to below 30% by the mid-2000s (about a 1% fall per year) – there is a clear need for a faster reduction. Hence, poverty alleviation is a central pillar of the rural development efforts of the Government and the World Bank.

Priority Areas for Support

1. **Enhancing agricultural productivity, competitiveness, and rural growthPromoting new technologies and reforming agricultural research and extension:**Major reform and strengthening of India's agricultural research and extension systems is one of the most important needs for agricultural growth. These services have declined over time due to chronic underfunding of infrastructure and operations, no replacement of aging researchers or broad access to state-of-the-art technologies. Research now has little to provide beyond the time-worn packages of the past. Public extension services are struggling and offer little new knowledge to farmers. There is too little connection between research and extension, or between these services and the private sector.

- **Improving Water Resources and Irrigation/Drainage Management:** Agriculture is India's largest user of water. However, increasing competition for water between industry, domestic use and agriculture has highlighted the need to plan and manage water on a river basin and multi-sectoral basis. As urban and other demands multiply, less water is likely to be available for irrigation. Ways to radically enhance the productivity of irrigation ("more crop per drop") need to be found. Piped conveyance, better on-farm

management of water, and use of more efficient delivery mechanisms such as drip irrigation are among the actions that could be taken. There is also a need to manage as opposed to exploit the use of groundwater. Incentives to pump less water such as levying electricity charges or community monitoring of use have not yet succeeded beyond sporadic initiatives. Other key priorities include: (i) modernizing Irrigation and Drainage Departments to integrate the participation of farmers and other agencies in managing irrigation water; (ii) improving cost recovery; (iii) rationalizing public expenditures, with priority to completing schemes with the highest returns; and (iv) allocating sufficient resources for operations and maintenance for the sustainability of investments.

- **Facilitating agricultural diversification to higher-value commodities:** Encouraging farmers todiversify to higher value commodities will be a significant factor for higher agricultural growth, particularly in rain-fed areas where poverty is high. Moreover, considerable potential exists for expanding agro-processing and building competitive value chains from producers to urban centres and export markets. While diversification initiatives should be left to farmers and entrepreneurs, the Government can, first and foremost, liberalize constraints to marketing, transport, export and processing. It can also play a small regulatory role, taking due care that this does not become an impediment.
- **Promoting high growth commodities:** Some agricultural sub-sectors have particularly high potential for expansion, notably dairy. The livestock sector, primarily due to dairy, contributes over a quarter of agricultural GDP and is a source of income for 70% of India's rural families, mostly those who are poor and headed by women. Growth in milk production, at about 4% per annum, has been brisk, but future domestic demand is expected to grow by at least 5% per annum. Milk production is constrained, however, by the poor genetic quality of cows, inadequate nutrients, inaccessible veterinary care, and other factors. A targeted program to tackle these constraints could boost production and have good impact on poverty.
- **Developing markets, agricultural credit and public expenditures:** India's legacy of extensive government involvement in agricultural marketing has created restrictions in internal and external trade, resulting in cumbersome and high-cost marketing and transport options for agricultural commodities. Even so, private sector investment in marketing, value chains and agro-processing is growing, but much slower than potential. While some restrictions are being lifted, considerably more needs to be done to enable diversification and minimize consumer prices. Improving access to rural finance for farmers is another need as it remains difficult for farmers to get credit. Moreover, subsidies on power, fertilizers and irrigation have progressively come to dominate Government expenditures on the sector, and are now four times larger than investment expenditures, crowding out top priorities such as agricultural research and extension.

2. **Poverty alleviation and community actions:**

While agricultural growth will, in itself, provide the base for increasing incomes, for the 170 million or so rural persons that are below the poverty line, additional measures are required to make this growth inclusive. For instance, a rural livelihoods program that empowers communities to become self-reliant has been found to be particularly effective and well-suited for scaling-up. This program promotes the formation of self-help groups, increases community savings, and promotes local initiatives to increase incomes and employment. By federating to become larger entities, these institutions of the poor gain the strength to negotiate better prices and market access for their products, and also gain the political power over local governments to provide them with better technical and social services. These self-help groups are particularly effective at reaching women and impoverished families.

3. **Sustaining the environment and future agricultural productivity:**

In parts of India, the over-pumping of water for agricultural use is leading to falling groundwater levels. Conversely, water-logging is leading to the build-up of salts in the soils of some irrigated areas. In rain-fed areas on the other hand, where the majority of the rural population live, agricultural practices need adapting to reduce soil erosion and increase the absorption of rainfall. Overexploited and degrading forest land need mitigation measures. There are proven solutions to nearly all of these problems. The most comprehensive is through watershed management programs, where communities engage in land planning and adopt agricultural practices that protect soils, increase water absorption and raise productivity through higher yields and crop diversification.

Emerging Trends:

The agriculture sector recorded satisfactory growth due to improved technology, irrigation, inputs and pricing policies. Livestock, poultry, fisheries and horticulture are surging ahead in production growth in recent years and will have greater demand in the future. Industrial and service sectors have expanded faster than agriculture sector resulting in declining share of agriculture in national accounts. Despite the

structural change, agriculture still remains a key sector, providing both employment and livelihood opportunities to more than 70 per cent of the country's population who live in rural areas. The contribution of small farmers to the national and household food security has been steadily increasing. The water availability for agricultural uses has reached a critical level and deserves urgent attention of all concerned.

Main Issues:

- In national priority setting, the following recurring and emerging issues for sustainable agricultural development and poverty alleviation must be considered:
- Population pressure and demographic transition,
- Resource base degradation and water scarcity,
- Investment in agriculture, structural adjustment and impact on the poor,
- Globalization and implication on the poor,
- Modern science and technology and support to research and technology development, and
- Rapid urbanization and urbanization of poverty, and deceleration in rural poverty reduction.

In addressing the above issues, a policy statement on agriculture must take note of the following uncommon opportunities:

- Conservation of natural resources and protection of environment.
- Vast untapped potential of our soil and water resources and farming systems.
- Technology revolution especially in the areas of molecular biology, biotechnology, space technology, ecology and management.
- Revolution in informatics and communication and the opportunity of linking farmers, extension workers and scientists with the national and international databases

Conclusion:

Although agriculture contributes only 20 per cent of India's GDP, its importance in the country's economic, social, and political fabric goes well beyond this indicator. The rural areas are still home to some 72 percent of the India's 1.2 billion people, a large number of whom are poor. Most of the rural poor depend on rain-fed agriculture and fragile forests for their livelihoods. The sharp rise in food grain production during India's Green Revolution of the 1970s enabled the country to achieve self-sufficiency in food grains and stave off the threat of famine. Agricultural intensification in the 1970s to 1980s saw an increased demand for rural labour that raised rural wages and, together with declining food prices, reduced rural poverty.

References:

1. (http://pib.nic.in/newsite/PrintRelease.aspx?relid=183146)
2. Agriculture Census (201011), Department of Agriculture & Cooperation Ministry of agricultureGovernment of India New Delhi, Available online: https://agcensus.nic.in/document/ac1011/ac1011rep.html
3. Behera, B.S.; Panda, B.; Behera, R.A.; Nayak, N.; Behera, A.C.; Jena, S. Information Communication Technology Promoting Retail marketing in agriculture sector in India as a case study. (ICCC-2014). Procedia Comptd. Sci. 2015, 48, 652-659.
4. Chand, R. (2014). Agricultural growth, farmers income and nutrition security: Linkages and challenges. Professor L S Venkataramanan Memorial Lecture-12, Institute for Social and Economic Change, Bangalore.
5. Dev, S.M., & Rao, N.C. (2010). Agricultural price policy, farm profitability and food security. Economic and Political Weekly, 45(26&27), 174-182.
6. Dev, S.M., & Rao, N.C. (2015). Improved terms of trade for agriculture: Results from revised methodology. Economic and Political Weekly, 50(15), 19-22.
7. GOI (2017). Strategy for Doubling Farmers Income by 2022, Report of the Expert Committee Vol 1, Vol.2, Government of India.
8. GOI (2014). Situation Assessment Survey of Agriculture Households in India, NSSO Report 70th Round, Dec.

Solid Waste Disposal Site Suitability Analysis Using Geospatial Technology: A Case Study Of Satara City (Maharashtra)

Dr. R. S. Mane-Deshmukh[1] Mr. P. R. Vhatkar[2]
[1]Assistant Professor, Department of Geography, Chh. Shivaji College, Satara.
ramrajemsd@gmail.com
[2]Assistant Professor, Department of Geography, Chh. Shivaji College, Satara.
pandurangvhatkar@gmail.com

Abstract

Suitable site is mostly necessary for the disposal of solid waste. It is important to determine the right place when disposing of solid waste. Modern technologies are used in solid waste management for improvement in the system. Before some decades, under developing countries like India, mostly solid waste was disposed without any process and unscientifically. If solid waste is not disposed scientifically, resulted in different kinds pollutions and creates unhygienic condition in that region. This has adverse effects on human health and the environment. Solid waste disposal sites should be at the appropriate place, generally away from human settlements, agricultural areas, industrial areas, sources of water etc. In present situation, geospatial technology is playing a vital role in finding out the suitable solid waste disposal site.

Keywords: solid waste, solid waste management, human health, environment, solid waste disposal sites, etc.

Introduction:

Site Suitability Analysis is a useful to determine potential site of a given area for a specific use. Site suitability analysis model is a key to determine suitable location for disposal of solid waste. Proper disposal site of solid waste avoids the hazards of human health as well as the environment. So it seems that Geospatial technology has significantly contributed in site suitability and decision making for efficient solid waste management. in Satara city and proposed planning area, municipal solid waste disposal plant is at Songaon. Besides, at Kodoli, industrial area is authorized but without planning waste disposal site is selected. Currently there will be expansion of the Satara city urban area. In a few years, the Satara city will be expanded even further. In future, the municipal Council needs to find more solid waste disposal sites for well-planned solid waste management.

Study Area:

Satara city and proposed planning area is located in the Satara District of Maharashtra state of India. The absolute location of Satara city and proposed planning area is between 17^0 36' 30" to 17^0 43' 50" North latitude and 73^0 56' 50" to 74^0 04' 27" East longitude. Satara city and proposed planning area includes Karanje, Godoli, Pirwadi, Khed, Dhangarwadi, Sambhajinagar, Kodoli, Khindwadi, Karandwadi, Degaon, Dare Khurd, Saidapur, Kondhave urban area and Songaon, Jakatwadi, Shendre, Darebudruk rural area (See fig. No. 1.1).

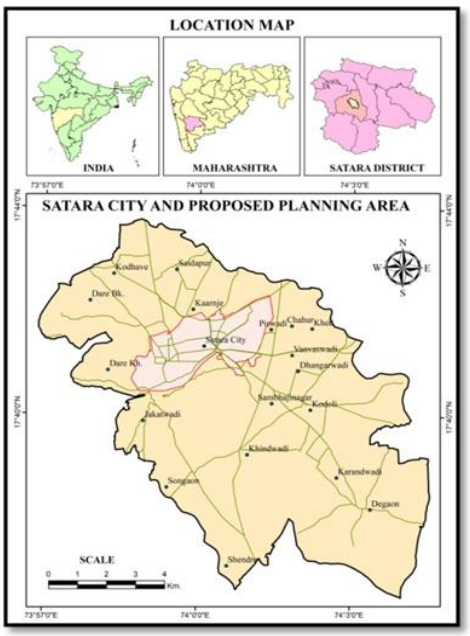


Figure No. 1.1:Location Map

Objectives: Present research is about the suitable site selection for solid waste disposal. The main objectives of this research are as follows.

1) To investigate the suitable site for solid waste disposal.
2) To study the current situation of waste disposal site.
3) To analyze solid waste disposal site suitability through multi-factor criteria of the different factors.

Database and Method:

Spatial Data: Topographic Sheet, Satara: 47G/14, 47K/2. (Survey of India) Sentinel 2A data: 10 Meters Resolution.

Cartosat I Digital Elevation Model data (Slope Map): 2.5 Meters Resolution.

Geomorphology and Geology Map: (Download from Bhukosh)

Non-spatial Data:

Soil data: (Download from Bhukosh)

Population Zone Data: Satara city and proposed planning area 2019-20.

Importance of solid waste disposal suitable site in Satara city:

In present situation, in Satara city and proposed planning area, municipal solid waste disposal plant is at Songaon. Besides, at Kodoli, industrial area is authorized but without planning waste disposal site is selected. Currently there will be expansion of the Satara city urban area. In a few years, the Satara city will be expanded even further. In future, the municipal Council needs to find more solid waste disposal sites for well-planned solid waste management. Currently, the capacity of the waste depot at Songaon is 100 MT/day only. In the year 2019-20, total 69.40 MT/day municipal waste was collected and disposed. If Satara Municipal Council area increases in future, ultimately waste generation will increase, so the additional burden of waste generation exerts on the present waste disposal depot. Thus more solid waste disposal sites will necessarily be found for proper management of increasing solid waste.

Generation of Thematic Maps: Spatial data and non-spatial data are used for analytical work of site suitability. All thematic maps were generated from spatial and non-spatial data by GIS software. Geo-referencing of raster imagery is done in ArcGIS software. Transportation and Drainage maps are generated by topographic sheets of 47G/14, and 47K/2. Digitization and geometric corrections are done in ArcGIS 10.2 software. Drainage and transportation maps are generated with its Buffer zone. Slope and contour maps are generated by Aster Digital Elevation Model data. Land use / land cover map is generated by Sentinel – 2A data with visual interpretation. Geomorphology and geology maps have been generated from collected map of Satara district Geological Survey of India. Soil map is digitized and geometrically corrected by map of National Bureau of Soil Sciences. Population zone map is generated by present population data of 2019-20. The population density related information is collected from the Municipal Council of Satara city.

Overlay of Thematic Maps and Multi Criteria Analysis for Site Suitability: Multi Criteria Analysis based waste disposal site suitability has been assessed according to the methodology adopted by **Abessi and Saeedi (2009).** Some physical and socio-economic factors are included in site suitability analysis model. Here, land use and land cover, Geomorphology, Geology, Ground water quality, Soil, Slope, Population density, Transportation etc. Above mentioned multi criteria analysis factors are used for evaluating the suitable site of solid waste.

Weightage Overlay Analysis: The weightage overlay analysis is useful for the suitability classification. The weightage overlay analysis is determined on the basis of the overlaying thematic raster maps. Then multiplying each by its given weight and summing them together. Multi criteria based weightage overlay analysis has been synthesized by using ArcGIS software (ARC GIS 10.2). Besides, the weights were assigned to different thematic raster layer for the finding of site suitability on the basis of their surrounding influences. Final site suitability map is obtained on the base of weighted overlay analysis. The raster layer of land use / land cover, geomorphology, geology, ground water, soils, slope, population density and transportation etc have overlaid, analyzed and obtained final site suitability map. According to suitable site selection decision rule, all thematic maps are categorized on the basis of ranking into four categories, unsuitable, less suitable, moderately suitable, and highly suitable.

Figure No. 1.2: Final Site Suitability Map of Satara City and Proposed Planning Area.

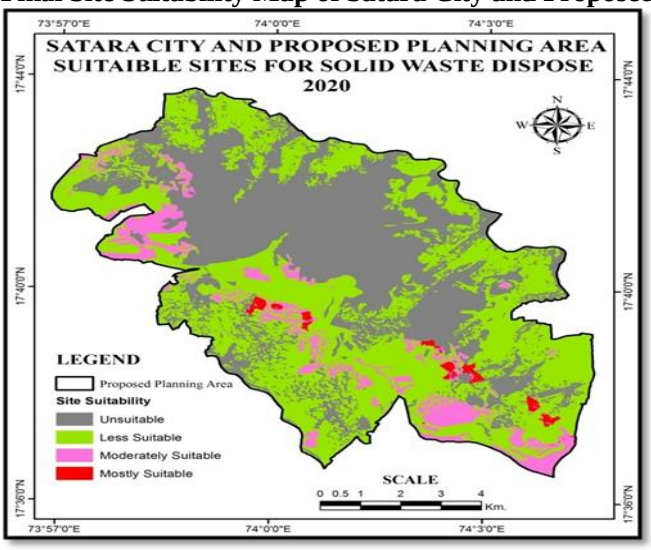


Table No. 4.13: Solid Waste Disposal Site Suitability Area in Satara City and Proposed Planning Area (2020)

Sr. No.	Site Suitability Class	Area in Sq.Km.	Area in Percentage
1	Unsuitable	43.65	42.84
2	Less suitable	47.19	46.31
3	Moderately suitable	8.47	8.31
4	Mostly suitable	2.58	2.53
Total		101.89	100.00

Source: Compiled by the researcher.

The final site suitability map shows four classes of site suitability areas as like unsuitable, less suitable, moderately suitable and highly suitable. Total 2.58 sq.km area is highly suitable (2.53%), 8.47 sq.km area is moderately suitable (8.31%), 47.19 sq.km area is less suitable (46.31%) and 43.65 sq.km area is unsuitable (42.84) for solid waste disposal sites (See fig. no. 1.2).

Result:

In present study area, valuable factors like land use / land cover, geomorphology, geology, ground water, soils, slope, population density and transportation have been considered for finding suitable waste disposal site. Out of total (101.89 sq. km.) area of Satara city and proposed planning area, 2.58 sq. km. area is most suitable and 8.47 sq.km areas is moderately suitable for solid waste disposal. Expansion of the Satara city is in progress some of the villages in the vicinity are going to merge in future. It will be resulted in increase in households and population ultimately there will be increase in solid waste of the city. Industrialization and urbanization process will be more responsible generation of excess of solid waste. So the disposal of large volume of solid waste will be problematic especially considering the area of most suitable solid waste disposal site (2.58 sq. km.). It becomes necessary to make arrangement of considering moderately suitable area (8.47 sq. km) for solid waste which is near by the most suitable sites. From the ground truth verification in the present study, it is found that disposal sites depicted in the map are eco-friendly and economically feasible.

References:

1. P. R. Vhatakr, Dr. R. S. Mane-Deshmukh (2020), "A geographical analysis of solid waste management in Satara city", 'Juni Khyat' UGC Care Group I Listed Journal, volume-10, issue 6, June 2020.
2. Akbari V., Rajabi M.A., Chavoshi S.H., Shamas R,. (2008), Landfill site selection by combining GIS and fuzzy multi criteria decision analysis, Case study: Bandar Abbas, Iran, World Applied Sciences Journal, 3, pp39-47.
3. Paul Suman, (2012), Location allocation for urban waste disposal site using multicriteria analysis: A study on Nabadwip Municipality, West Bengal, India, International Journal of Geomatics and Geosciences, 3,(1), pp 74-88.

Involvement Of Farm Women Under Various Agricultural Practices

Dr. Ms. Pallavi L. Tagade
D.K. Mahila Mahavidyalaya, Kurkheda.

Abstract

Farm women play a vital role in the society. She has to perform the dual responsibilities for the family. Findings showed that fertilizer application, transplanting, drying, storage, processing, harvesting, marketing, weeding, winnowing are the major farm operations mainly performed by farm women. But it is unfortunate that they remain invisible workers. Hence the present study was conducted to determine the contribution of farm women in agriculture. The main objectives are to collect general information of the farm women, to determine the contribution of farm women in agriculture, to find out the different activities performed by women, to find out the supplementary income of the farm women. The study has been conducted in gothangaon village of kurkheda district having 210 samples by random sampling technique. It is because the majority of farm women are illiterate, have little knowledge about the latest techniques of farming, face dominance by males and restricted mobility due to several cultural and traditional practices in the society.

Keywords: Farm women, different activities, supplementary income**.**

Introduction

Women play a significant role in agriculture and contribute one third of labour force required for farming operations. Data on the economically active population in agriculture are available for many countries, and provide the most comprehensive measure of the participation of women in agriculture. In this measure, an individual is reported as being in the agricultural labour force if he or she reports that agriculture is his or her main economic activity. However, these data may underestimate female participation in agriculture for reasons discussed below, and caution is advised in interpreting changes over time because improvements in data collection may be responsible for some of the observed changes. Hence this study was undertaken to understand the role of farm women in agriculture. Women in agriculture make up a substantial portion of the Indian rural population. Like men, they are engaged in farm operations like seed treatment, sowing, manuring, interculture, harvest and post-harvest technology. Apart from these, women participate in various forms of processing and marketing of agricultural produce.

Women make essential contributions to the agricultural and rural economies in all developing countries. Their roles vary considerably between and within regions and are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector. Rural women often manage complex households and pursue multiple livelihood strategies. Their activities typically include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, engaging in trade and marketing, caring for family members and maintaining their homes.

Data on the economically active population in agriculture are available for many countries, and provide the most comprehensive measure of the participation of women in agriculture. In this measure, an individual is reported as being in the agricultural labour force if he or she reports that agriculture is his or her main economic activity. However, these data may underestimate female participation in agriculture for reasons discussed below, and caution is advised in interpreting changes over time because improvements in data collection may be responsible for some of the observed changes.

Objectives

1. To collect general information of the farm women.
2. To determine the contribution of farm women in agriculture.
3. To find out the different activities performed by women.
4. To find out the supplementary income of the farm women.

Research Methodology

The study was conducted in gothangaon village of kurkheda district. The total sample for the study were 210 using random sampling technique. A list of farm women obtained from gram panchayat which is located in each village. Item pool of roles was prepared by reviewing literature and discussing with the people, subject matter specialists, and leaders in the village.

Result And Discussion

Table 1 Age distribution of the farm women

S.No.	Age	Total No. of Respondents	Percentage
1	Below 25 yrs.	10	4.76%
2	26-35 yrs.	50	23.80%
3	36- 45 yrs.	69	32.87%
4	46-55 yrs.	81	38.57%
		210	100.0%

The above table indicates that 38.57% of the farm women having 46-55 years of age whereas 32.87% of the farm women comes under 36-45 years, 23.08% belongs to 26-35 years and negligible farm women below 25 years of category.

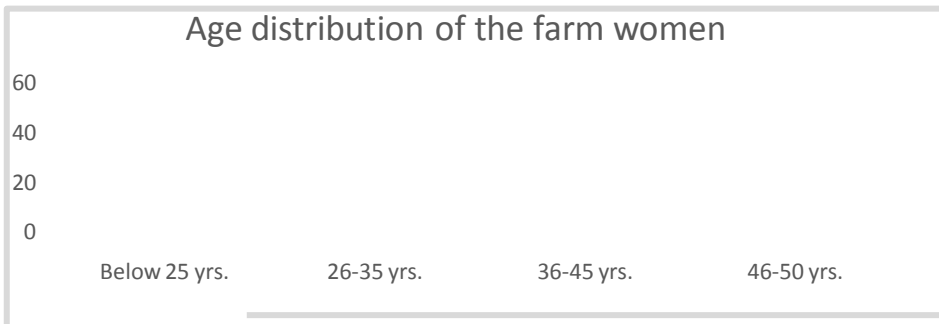


Table 2 Education of the respondent

S.No.	Education	Total No. of Respondents	Percentage
1	Illiterate	50	23.80%
2	Primary class	85	40.47%
3	Middle class	55	26.19%
4	High school	10	4.79%
5	Junior college	08	3.80%
6	Graduation	02	0.95
		210	100.0%

The above table shows that 40.47% having education upto primary level, 26.19% of the farm women had taken education upto middle class, 23.80% of the farm women found to be illiterate whereas negligible percentage of farm women are having high school education (4.79%,), Junior college (3.80%) and graduation (0.95%) respectively. It was surprising to note that though there are "adult education campaign" in every village for the betterment of education so that their standard of living will increase but still farm women were not much aware towards education. Though the opportunity she is getting but still she is not taking advantage of it and that's why there is lack of education in the society.

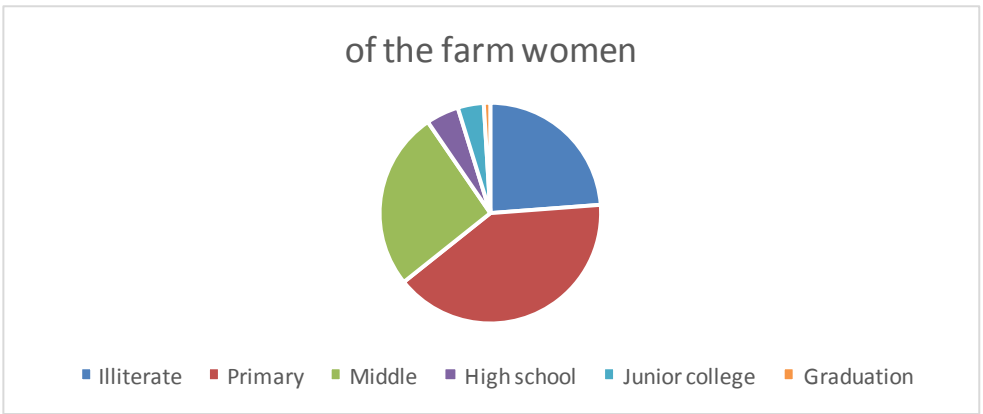


Table 3 Contribution of the farm women

S.No.	Farm activities	Total No. of Respondents (N= 210)	Rank Order
1	Weeding	205	I
2	Fertilizer application	202	II
3	Transplanting	200	III
4	Harvesting	198	IV
5	Thinning & gap filling	196	V
6	Threshing	193	VI
7	Winnowing	191	VII
8	Drying	189	VIII
9	Packing	186	IX
10	Marketing	180	X

A view of table 2 reveals that farm women most often performed farm activities in the field. They performed work like weeding, fertilizer application, transplanting , harvesting, thinning & gap filling, threshing, winnowing, drying, packing and marketing. The rank order has been given above. This are the activities contributed by farm women.

Table 4 Different activities performed by women

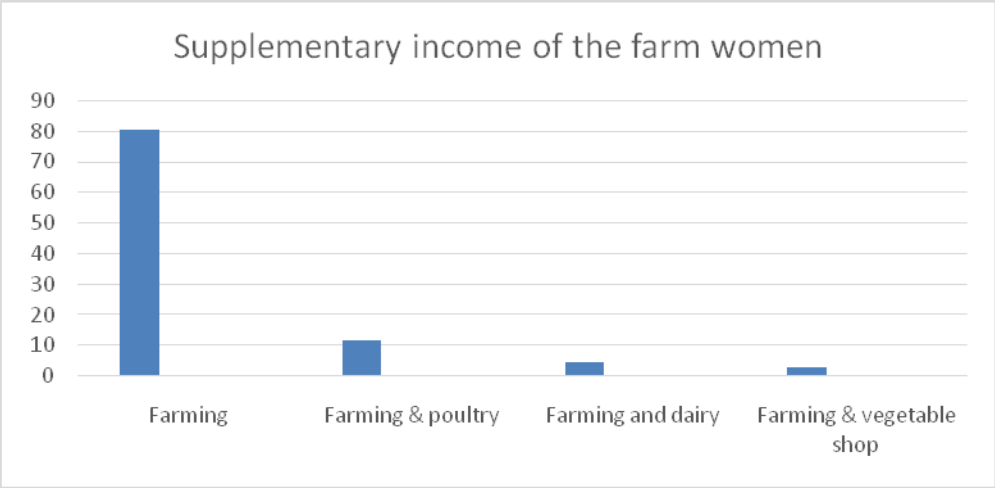
S.No.	Different activities	Total No. of Respondents (N=210)	Rank Order
1	Drying	203	I
2	Preparation of vegetable and fruit products	201	II
3	Kitchen gardening	199	III
4	Cleaning	196	IV
5	Storing	192	V
6	Threshing	187	VI
7	Preservation of fruits and vegetables	183	VII

It is assumed from the above table that it is a basic activity done by families. They perform majority of the field operations in their own land and engage in post harvest operations in other farm families to earn an extra source of income. Rank order has been given as per their performance of farm work towards farm women.

Table 5 Supplementary income of the farm women

S. No.	Supplementary work	Total No. of Respondents (N=210)	Percentage
1	Farming	169	80.47%
2	Farming and poultry	25	11.90%
3	Farming and dairy	10	4.76%
4	Farming and vegetable shop	06	2.85%
		210	100.0%

It is found from the above table that majority of the respondents having farming as their main occupation. Few farm women 11.90% having farming and poultry business as their supplementary business. 4.76% of the farm women were having farming and dairy work. Negligible percentage i.e. 2.85% of the respondents were having farming and vegetable shops to supplement their income which will help to their family.



Conclusion

In most societies, women are responsible for most of the household and child-rearing activities as well rearing of small livestock, although norms differ by culture and over time. This additional work burden is unpaid and limits women's capacity to engage in income-earning activities, which often require a minimum fixed time before being profitable. Furthermore, the nature of tasks, such as caring for children and elderly household members, requires women to stay near the home, thus limiting options to work for a wage. Still farm women took much efforts and run her home by adding supplementary work to increase income for the family. They can easily raise their standard of living and have a satisfied life.

References

1. https://www.fao.org/3/am307e/am307e00.pdf
2. https://www.lawinsider.com/dictionary/agricultural-activities
3. https://www.tandfonline.com/doi/abs/10.1080/09737189.2013.11885390
4. https://www.sciencedirect.com/science/article/abs/pii/S1447677019301755
5. https://www.fao.org/3/am307e/am307e00.pdf

India: Issues and Priorities for Agriculture

Dr. Shivaji Baburao Patil[1] Mr. Raju Dilip Shinge[2]

[1]Associate Professor, Dept. of Economics, S.T. Arts & Science College Parbhani

Email- shivajibpate@gmail.com

[2]Research Scholar, S.K. Patil College, Kurundwad

Email Id- rdshinge @gmail.com

Abstract

Agriculture in India is livelihood for a majority of the population and can never be underestimated. Although its contribution in the gross domestic product (GDP) has reduced to less than 20 per cent and contribution of other sectors increased at a faster rate, agricultural production has grown. This has made us self-sufficient and taken us from being a begging bowl for food after independence to a net exporter of agriculture and allied products. Total food grain production in the country is estimated to be a record 291.95 million tonnes, according to the second advance estimates for 2019-20. This is news to be happy about but as per the estimates of Indian Council for Agricultural Research (ICAR), demand for food grain would increase to 345 million tonnes by 2030. Increasing population, increasing average income and globalization effects in India will increase demand for quantity, quality and nutritious food, and variety of food. Therefore, pressure on decreasing available cultivable land to produce more quantity, variety and quality of food will keep on increasing. India is blessed with large arable land with 15 agro-climatic zones as defined by ICAR, having almost all types of weather conditions, soil types and capable of growing a variety of crops. India is the top producer of milk, spices, pulses, tea, cashew and jute, and the second-largest producer of rice, wheat, oilseeds, fruits and vegetables, sugarcane and cotton. In spite of all these facts, the average productivity of many crops in India is quite low. Farmers are still not able to earn respectable earnings.

Key Words: contribution, conditions, Productivity, Respectable etc.

Introduction

Presently one of the major issues facing in agriculture is losing land due to increasing population. Agriculture land converted into the industries areas which create major problems to the society. **Agriculture Sector of Indian Economy** is one of the most significant part of India. Agriculture is the only means of living for almost two-thirds of the employed class in India. As being stated by the economic data of financial year 2006-07, agriculture has acquired 18 percent of India's GDP. The agriculture sector of India has occupied almost 43 percent of India's geographical area. Agriculture is still the only largest contributor to India's GDP even after a decline in the same in the agriculture share of India. Agriculture also plays a significant role in the growth of socio-economic sector in India. In the earlier times, India was largely dependent upon food imports but the successive stories of the agriculture sector of Indian economy has made it self- sufficing in grain production. The country also has substantial reserves for the same. India depends heavily on the agriculture sector, especially on the food production unit after the 1960 crisis in food sector. Since then, India has put a lot of effort to be self-sufficient in the food production and this endeavor of India has led to the Green Revolution. The Green Revolution came into existence with the aim to improve the agriculture in India.

Objectives of the study

1. To study the present future of Indian Agriculture.
2. To study the emerging role of women in Agriculture in India.
3. To Study the government schemes for Agriculture in India.

Future of Indian Agriculture

Future of agriculture is a very important question for the planners and all other stakeholders. Government and other organizations are trying to address the key challenges of agriculture in India, including small holdings of farmers, primary and secondary processing, supply chain, infrastructure supporting the efficient use of resources and marketing, reducing intermediaries in the market. There is a need for work on cost-effective technologies with environmental protection and on conserving our natural resources. The reforms towards privatization, liberalization and globalization affected inputs market at a faster pace. Agricultural marketing reforms after 2003 made changes in marketing of agricultural outputs by permitting private investment in developing markets, contract farming and futures trading, etc. These amendments in marketing acts have brought about some changes but the rate is less. Along with this, the information technology revolution in India, new technologies in agriculture, private investments especially on research and development, government efforts to rejuvenate the cooperative movement to address the problems of small holdings and small produce etc are changing

face of agriculture in India. Many startups in agriculture by highly educated young ones show that they are able to understand the high potential of putting money and efforts in this
sector. Cumulative effects of technology over the next decade will change the face of agriculture. All the constraints in agriculture make the productivity and returns complex but still a high untapped potential is there in India's agriculture sector. Advantageous weather and soil conditions, high demand for food, untapped opportunities, various fiscal incentives given by the government for inputs, production infrastructure, availability of cheap credit facilities and for marketing and export promotion are attracting many individuals, big companies, startups and entrepreneurial ventures to do a lot of investments on innovations, inventions, research and development and on other aspects of business.

Emerging Role of Women Farmers in India

The Government of India in its Economic Survey in 2018 noted that the agricultural sector is undergoing feminization, a term used to indicate how increasingly a large number of women are taking up roles as entrepreneurs, cultivators and labourers. Presently, the agriculture sector employs 80% of all economically active women in India, which includes 48% of the self-employed farmers and 33% of the agriculture labour force. In the past decade, many global economies have also acknowledged the decisive role women play in ensuring food security and preserving local agro-biodiversity. While conditions have improved in the recent years, there are still several areas where women in this sector require support to succeed. Given below are some of the key aspects to focus on to empower women in agriculture in 2021.

In the recent years, the Government of India has launched initiatives such as Mahila Kisan Sashaktikaran Pariyojana (MKSP) and Deendayal Antyodaya Yojana-National Rural Livelihood Mission aimed at bringing women together to receive training on various aspects of agriculture, business, entrepreneurship and skills development. Players such as Samunnati have also introduced favorable policies to lend to the segment, as well as introduced targeted training initiatives for women on topics such as leadership, institutional structures & governance, business management, marketing, etc. While these initiatives have helped the women in the agriculture sector, India has a long way to go in improving access to capital, technology and infrastructure to help the segment become self-sufficient. Further interventions are also required to bring more women into decision making processes.

Government Schemes in Agriculturesector

i. E-NAM

National Agriculture Market (e-NAM) is a pan-India electronic trading portal which networks the existing APMC mandis to create a unified national market for agricultural commodities. Small Farmers Agribusiness Consortium (SFAC) is the lead agency for implementing eNAM under the aegis of Ministry of Agriculture and Farmers' Welfare, Government of India.

ii. National Mission for Sustainable Agriculture (NMSA)

National Mission for Sustainable Agriculture (NMSA) has been formulated for enhancing agricultural productivity especially in rainfed areas focusing on integrated farming, water use efficiency, soil health management and synergizing resource conservation. NMSA will cater to key dimensions of 'Water use efficiency', 'Nutrient Management' and 'Livelihood diversification' through adoption of sustainable development pathway by progressively shifting to environmental friendly technologies, adoption of energy efficient equipments, conservation of natural resources, integrated farming, etc.

iii. Pradhan Mantri Krishi Sinchai Yojana (PMKSY)

Har Khet ko Pani "Prime Minister Krishi Sinchayee Yojana" Government of India is committed to accord high priority to water conservation and its management. To this effect Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) has been formulated with the vision of extending the coverage of irrigation 'Har Khet ko pani' and improving water use efficiency 'More crop per drop' in a focused manner with end to end solution on source creation, distribution, management, field application and extension activities.

iv. Paramparagat Krishi Vikas Yojana (PKVY)

The Paramparagat Krishi Vikas Yojana (PKVY), an initiative to promote organic farming in the country, was launched by the NDA government in 2015. According to the scheme, farmers will be encouraged to form groups or clusters and take to organic farming methods over large areas in the country.

v. Pradhan Mantri Fasal Bima Yojana (PMFBY)

Pradhan Mantri Fasal Bima Yojana (PMFBY) is the government sponsored crop insurance scheme that integrates multiple stakeholders on a single platform.

vi. Livestock insurance Scheme

This scheme aims to provide protection mechanism to the farmers and cattle rearers against any eventual loss of their animals due to death and to demonstrate the benefit of the insurance of livestock to the people and popularize it with the ultimate goal of attaining qualitative improvement in livestock and their products.

vii. Micro Irrigation Fund (MIF)

The government approved a dedicated Rs5,000 crore fund to bring more land area under micro-irrigation as part of its objective to boost agriculture production and farmers income.

The fund has been set up under NABARD, which will provide this amount to states on concessional rate of interest to promote micro-irrigation, which currently has coverage of only 10 million hectares as against the potential of 70 million hectares.

viii. Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)

Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) is a new Central Sector Scheme to provide income support to all landholding farmers' families in the country to supplement their financial needs for procuring various inputs related to agriculture and allied activities as well as domestic needs.

Conclusion

Agriculture is the primary source of livelihood for about 58% of India's population. Gross Value Added by agriculture, forestry, and fishing was estimated at Rs. 19.48 lakh crore (US$ 276.37 billion) in FY20. Share of agriculture and allied sectors in gross value added (GVA) of India at current prices stood at 17.8 % in FY20. Consumer spending in India will return to growth in 2021 post the pandemic-led contraction, expanding by as much as 6.6%. India is expected to achieve the ambitious goal of doubling farm income by 2022. The agriculture sector in India is expected to generate better momentum in the next few years due to increased investment in agricultural infrastructure such as irrigation facilities, warehousing and cold storage. Furthermore, the growing use of genetically modified crops will likely improve the yield for Indian farmers. India is expected to be self-sufficient in pulses in the coming few years due to concerted effort of scientists to get early maturing varieties of pulses and the increase in minimum support price.

References

1. https://vikaspedia.in/schemesall/schemes-for-farmers/pradhan-mantri-kisan-samman-nidhi
2. https://www.ibef.org/industry/agriculture-india.aspx
3. Sunil Kumar, Pratibha B.Thombare & Pandurang Kale; Impact of CoronaVirus on Indian Economy: Agriculture Food e-newsletter; ISSN: 2581-8317.
4. Dr.G.Nedumaran, M.Mahida, E- Agriculture &Rural Development in India, JAC:A Journal Of
5. Composition Theory, Volume 13 Issue I January 2020, ISSN; 0731-6755, Page No. 105-114

A Study On Consumer Awareness In Solar Energy Products With Special Reference In Tamilnadu Distirct

Dr. N. Lakshmi priya[1], Dr. K. Prince Paul Antony[2]

[1]Assistant Professor, Department of Commerce with Professional Accounting and Accounting & Finance, Hindusthan College of Arts and Science(Autonomous) ,Coimbatore,priyaparthi.n@gmail.com

[2]Professor & Head, Department of Professional Accounting, Sri Ramakrishna College of Arts and Science formerly SNR Sons Nava India, Coimbatore, kprince@rediff.com

Introduction:

Solar energy is the largest usable renewable resource as it is directly get from Sunlight than all. Today, domestication of solar energy is more visible as it used as a source of energy for the functioning of solar energy domestic lighting/ heating/cooking, street light, electricity/power generation, water pumping, powering of remote telecommunication etc. Solar products are available in the market are used both domestic households and by industries as solar energy is more affordable. As India is demand for energy continue to grow, and the government is increasingly promoting clean energy solutions to meet the growing energy demand. Rising demand for energy influences the renewable energy generators to think and introduce user friendly products, which can be effectively operated with the support of solar energy or any other renewable energy. The innovative solar energy products introduced in the market encourage the consumer to buy/utilize these products. With the understanding drawn this study aims to analyse consumers' preferences and satisfaction towards solar energy products. This micro level study is focused on the solar energy consumers living in Coimbatore city.

Objective:

1. To measure the households consumers level of awareness towards solar energy products.

Measure Of Dispersion

Association Between Demographic And Socio-Economic Status Of Consumers And Their Level Of Awareness Towards Solar Energy Products

Demographic& Socio-Economic Status	Level of Awareness									
	Very High		High		Moderate		Low		Very Low	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Gender	**1.500**	0.535	1.438	0.499	1.450	0.499	1.483	0.504	1.486	0.502
Age	**2.125**	0.835	2.083	0.763	2.107	0.777	2.121	0.774	2.112	0.781
Education Qualification	**1.375**	0.518	1.302	0.462	1.321	0.469	1.345	0.479	1.355	0.481
Marital Status	2.500	1.414	2.177	1.306	2.252	1.321	**2.259**	1.332	2.280	1.337
Nature Of Family	**1.500**	0.535	1.479	0.502	1.481	0.502	1.483	0.504	1.486	0.502
Family Size	**3.000**	0.756	2.719	0.926	2.771	0.933	2.793	0.932	2.776	0.935
Housing Tenure	2.500	0.926	2.500	0.871	2.489	0.854	2.517	0.843	**2.505**	0.862
Occupation	2.625	1.506	2.448	1.272	2.473	1.315	2.535	1.354	**2.533**	1.362
Monthly Income	**2.250**	0.707	2.167	0.627	2.183	0.630	2.190	0.634	2.206	0.655

Source: Primary Data

From the measure of dispersion, it has been inferred that the consumers' level of awareness towards solar energy products varies across their demographic and socio-economic status. It infers that demographic and socio-economic status more significantly influences their level of awareness about solar energy product.

Result Of Anova

Association Between Demographic And Socio-Economic Status Of Consumers And Their Level Of Awareness Towards Solar Energy Products

Variables	Source	Sum of Square	DF	Mean Square	F	Sig
Sex	Between Groups	5.554	4	1.388	6.991	**.000**
	Within Groups	78.446	395	.199		
	Total	84.000	399	-		
Age	Between Groups	59.507	4	14.877	24.499	**.000**
	Within Groups	239.853	395	.607		
	Total	299.360	399	-		
Education Qualification	Between Groups	76.116	4	19.029	12.155	**.000**

Variables	Source	Sum of Square	DF	Mean Square	F	Sig
	Within Groups	618.381	395	1.566		
	Total	694.498	399	-		
Marital Status	Between Groups	8.595	4	2.149	40.719	**.000**
	Within Groups	20.845	395	.053		
	Total	29.440	399	-		
Nature of Family	Between Groups	4.961	4	1.240	5.161	**.000**
	Within Groups	94.917	395	.240		
	Total	99.878	399	-		
Family Size	Between Groups	48.643	4	12.161	16.409	**.000**
	Within Groups	292.734	395	.741		
	Total	341.378	399	-		
Housing Tenure	Between Groups	14.624	4	3.656	2.262	.062
	Within Groups	638.336	395	1.616		
	Total	652.960	399	-		
Occupation	Between Groups	95.122	4	23.780	17.027	**.000**
	Within Groups	551.668	395	1.397		
	Total	646.790	399	-		
Monthly Income	Between Groups	10.418	4	2.604	9.613	**.000**
	Within Groups	107.020	395	.271		
	Total	117.438	399	-		

The above table narrates that measured one-way ANOVA test results: 6.991, 24.499, 12.155, 40.719, 5.161, 16.409, 17.027 and 9.613 were found to be within the significance at five per cent level. Henceforth, the hypothesis framed stands accepted and it has been confirmed that customer level of awareness towards solar energy products is significantly influenced by their demographic and socio-economic status. Except in case of their housing tenure. The empirical findings made in this section of the study is duly correlates with the conclusion declared by Qader (2008), Tan (2011) and Lee (2011) these authors claim that primary determinants such as: environmental concern, product knowledge (awareness) and experience, attitudes, social influence, product cost and maintenance, government legislation and demographics are proven to influence consumers' choice in making purchase decisions of green products.

Findings:

1. The measure of dispersion, it has been inferred that the consumers' level of awareness towards solar energy products varies across their demographic and socio-economic status. It infers that demographic and socio-economic status more significantly influences their level of awareness about solar energy product.

2. The Anova table narrates that measured one-way ANOVA test results: 6.991, 24.499, 12.155, 40.719, 5.161, 16.409, 17.027 and 9.613 were found to be within the significance at five per cent level. Henceforth, the hypothesis framed stands accepted and it has been confirmed that customer level of awareness towards solar energy products is significantly influenced by their demographic and socio-economic status. Except in case of their housing tenure. The empirical findings made in this section of the study is duly correlates with the conclusion declared by Qader (2008), Tan (2011) and Lee (2011) these authors claim that primary determinants such as: environmental concern, product knowledge (awareness) and experience, attitudes, social influence, product cost and maintenance, government legislation and demographics are proven to influence consumers' choice in making purchase decisions of green products.

Suggestions:

1. One of the hypothesis test results notified that consumer' levels of awareness towards solar energy products are influenced by the print media or commercial medium of promotions. The study suggested that awareness among consumers can be created for solar energy product, by promoting the products through commercial media publicity i.e., ads in televisions or in radios or in print media, which is not much explored for these products.
2. One of the best ways to promote solar products are, increasing its sales through trade fairs, exhibitions and road shows, where a salespersons can directly contact the customers and can explain the importance of these products, economic usage, value for money concept, environmental protections and the benefits of using alternative energy etc.

Conclusion:

Solar power is an immense source of directly useable energy and ultimately creates other energy resources: biomass, wind, and hydropower and wave energy. Most of the Earth's surface receives sufficient solar energy to permit low-grade heating of water and buildings, although there are large variations with latitude and season. At low latitudes, simple mirror devices can concentrate solar energy sufficiently for cooking and even for driving steam turbines. The energy of light shifts electrons in some semiconducting materials. This photovoltaic effect is capable of large-scale electricity generation. However, the present low efficiency of solar PV cells demands very large areas to supply electricity demands. Direct use of solar energy is the only renewable means capable of ultimately supplanting current global energy supply from non-renewable sources, but at the expense of a land area of at least half a million km.

References:

1. https://www.open.edu/openlearn/nature-environment/environmental-studies/energy-resources-solar-energy/content-section-6
2. https://www.seia.org/initiatives/about-solar-energy#:~:text=Solar%20power%20is%20energy%20from,into%20thermal%20or%20electrical%20energy.&text=Solar%20technologies%20can%20harness%20this,%2C%20commercial%2C%20or%20industrial%20use.

Development Of Pomegranate Peel Based Instant Tea Bags

D Devishri
Assistant Professor, Department of Homescience and Research Centre, Food Processing and Management Thassim Beevi Abdul Kader College for Women, Kilakarai

Abstract

Pomegranate (*punica granatum*. *L)* is an ancient favourite table fruit of the tropical and sub-tropical regions of the world, belonging to the family punicaceae. Fruit and vegetable processing in India generate substantial quantities of waste and these wastes of fruit contain abundant source of antioxidants, bio active compounds (tannins, flavonoids and other phenolic compounds), minerals, fibres for a wide range of dietary requirements. Now a day's people aremore health conscious and they are in search of organic based and health-based food products. The present study is undertaken to incorporate the pomegranate peel powder in tea powder andmake RTC (Ready to cook) product. The pomegranate peel powder, tea powder and ginger powder were taken in a required proportion and packed in different packaging materials like aluminium packaging, LDPE pouch and Tea bags. And their shelf life was observed. The chemical properties and functional properties of the product was observed. Sensory evaluationwas done for consumer acceptance.

Keywords – Pomegranate peel powder, shelf life, RTC product.

Introduction

Fruits and vegetables are the most utilized commodities among all horticultural crops. The fruits and vegetables are packed with essential minerals, vitamins, fibre and plant elements. The pomegranate, botanical name *Punica granatum*, is a fruit-bearing deciduous shrub also called 'anar' in India. India is the world's largest producer of pomegranates, followed by Iran. Pomegranate trees need plenty of heat to grow and ripen fruit. The processing operations of fruits and vegetables produce significant wastes of by-products, which constitute about 25% to 30% of a whole commodity group. The waste is composed mainly of seed, skin, rind, and pomace, containing good sources of potentially valuable bioactive compounds, such as carotenoids, polyphenols, dietary fibres, vitamins, enzymes, and oils, among others. These phytochemicals can be utilized in different industries including the food industry

Rationale of the study

The use of waste for the production ofvarious crucial bioactive components is an important step toward sustainable development. Keeping this in mind, the pomegranate fruit peels were taken and incorporated in tea powder to enrich the tea powder with additional nutrients. In reality, pomegranate peel has got more anti-oxidants compared to arils. Pomegranate peels also provide anti-bacterial activity. The higher phenolic content of the peel yields extracts for used in dietary supplements and food preservatives. Peels of the pomegranate covers around 60% of the fruit and they hold various types of ingredients including flavonoids, ellagitannins and proanthocyanins compounds and minerals such as calcium, magnesium, phosphorus, potassium and sodium.

Objectives

1. To develop a fruit peel incorporated product and analysis of nutritional value of theproduct.
2. Shelf life estimation of the product by placing in different packaging materials.

Methodology

Pomegranate peel powder making

Pomegranate fruit ⟶ Separation of peel ⟶ drying of peel ⟶ Grinding ⟶ Pomegranate peel powder

Methodology of preparing Pomegranate Peel tea bags

- The ingredients selected were Tea powder, Ginger powder and pomegranate peelpowder.
- The ingredients were measured.
- The measured ingredients were mixed together.
- They are packed in tea bags.

Methodology of preparing pomegranate peel tea

- Water was boiled in a pan.
- The tea bags were added in hot water.

- The palm sugar or honey was added for the better taste.
- The tea is served hot.

Incorporation of tea powder in tea bags

All measured ingredients for Tea bag

Shelf life Estimation

The shelf life of the product was evaluated based on the three sensory attributes by storing in different packaging materials like aluminium, low density polyethylene and tea bags made of natural fibre (unbleached hemp) at room temperature. The sensory evaluation like aroma, taste, texture was analysed day by day. The sample in aluminium packaging and tea bags wereremained good till the date. The sample in low density polyethylene shows some variation in aroma, taste and texture.

Sensory Evaluation

Sensory evaluation is a part of food science called sensory science. Which is dedicated forfinding ways to use humans accurately describe the flavours and other sensory properties of food. It has been defined as a scientific discipline used to evoke measure and analyze the interpret. Sensory attributes are helpful to develop a product with the data of consumer point of view and their akin character towards the product. The product pomegranate peel powder- based tea bags are subjected to sensory evaluation. The samples are given with three differentratios and the sensory evaluation of the product is carried by the 9-point hedonic scale method.

Results

- p^H of pomegranate peel powder-based tea – 5.23
- Caffeine content in pomegranate peel powder- based tea – 0.03g
- Water holding capacity of pomegranate peel powder based-tea – 0.66g
- Oil holding capacity of pomegranate peel powder based-tea – 0.45g
- Ash content of pomegranate peel powder-based tea – 5.5%
- Moisture Content of the pomegranate peel powder tea – 12.12%

Discussion

Pomegranate peel powder was taken for study as it has rich source of antioxidants such as polyphenols. Now a day's people are focusing mainly on health-conscious based products and organic rich product, so to overcome this thirst the pomegranate peel powder-based RTC product was made. The product is made naturally without any preservatives. The product was developed after a serious preliminary analysis and the proportion werestandardized. The main ingredients are tea powder and pomegranate peel powder. The selected ingredients were measured in the selected ratio and they were mixed. Thenthe product was packed in different packaging materials like aluminium packaging, LDPE and tea bags. The shelf life of the product was estimated and the aluminium foil package was good till 20 days at room temperature. Whereas the LDPE pouch sample was good till 7 days. Whereas the shelf life of tea bags was good till 40 days at room temperature. From the results, it is known that the P^H of the product meet outs the correct rate as per the guidelines of tea. The amount of caffeine is very less when it is compared with coffee. Thecaffeine content in pomegranate peel powder-based tea is very less. The ash content determinesthe mineral content in the product, where the ash content is 5.5% in 2g of sample. The moisturecontent of tea was observed and noted. The product has meet out all the requirements needed for the tea.

Conclusion

The product made of antioxidant rich is very, easy for digestion. Theproduct sample were made in three different ratios, the sample 2 were accepted by most of the consumer. The cost product is less with no added preservatives of class two made this product unique and stands along from the crews of product in market. Sensitivity threshold test was conducted to select panel members, then followed by 9-pointhedonic scale to find consumer acceptable product. It was found that the sample 2 (1.0g) had agood consumer acceptance when compared with other sample proportions. Pomegranate peel powder-based tea was prepared with added ginger for nutritional and medicinal properties. Sensory evaluation, chemical properties, functional properties and shelflife study was made and found similar result as found for tea.

References

1. Effect of pomegranate peel and honey fortification on physicochemical, physical, microbiological and antioxidant properties of yoghurt powder. Abderrezak Kennas, Hayat Amellal- chibane, Fetta Kessal and Fatima Halladj. (2020).
2. Potential antioxidant activity of pomegranate peel and seed extracts and synergism with phenolic antioxidants in a liposome system: A preliminary study. A. Altunkaya (2014).
3. Physio-chemical and functional properties of pomegranate peel and seed powder: Heena Jalal *et al.*,(2018).

Geographical Audit of Surface Water Resources

Dr. R.B. Kotalwar[1] Dr. P. V. Poul [2]

[1]Head Dept of Geography, Shankarrao Chavan Mahavidyalaya Ardhapur, Dist. Nanded
[2]Shankarrao Chavan Mahavidyalaya Ardhapur, Dist. Nanded

Abstract

A water resource is one of the most important substances on the Earth. As per research study today's fresh water is a scarce resource. India being poor in water resource management, the scarcity of water is a well-known fact in India. Most of the rain falling on the surface tends to flow away rapidly, leaving very little for there charge of groundwater. As a result, in the most parts of India experience lack of water. Ahmadpur is one of tahsil in Latur district experiencing same water scarcity due to lack of water resource management. Water resource management is must for sustanable development and to overcome water scarcity of Ahmadpur. It is known that water resource mangment reqiure appropriate water resource information. In this study surface water resources analysis have been done to genrate water resource information for water resource management. New data format, techniques such as Geogrpahical information system (GIS), Remote Sensing (RS) and methods aer used to extract information. Study area most of the area surface runoff coeffience is below 0.38 and surface water collection capacity is below 278 liter per Sq. meter because Ahmadpur thasil majority land comes under gentele slope and agriculture use. Ahmadpur tahsil surface water potential is appraised it is about 215.34 MCM (Million Cubic meter) and inflow water is about 87 MCM. All over Ahmadpur tahsil 255.49 MCM water is collected in various water storage structures out of 303.28 MCM. Overall 84.24 % surface water resource development found in Ahmadpur tahsil.

Introduction:

A water resource is one of the most essential substances on the Earth. All plants and animals must have water to survive. Apart from drinking it to survive, people have many other uses for water. These include agricultural, industrial, household, recreational and environmental activities.Water is one of part of our life but today knowingly unknowingly we ignore its important. As per research study today's fresh water is a scarce resource. The reality of global water crisis cannot be ignored and India being poor in water resources management. Most of the rain falling on the surface tends to flow away rapidly, leaving very little for there charge of groundwater. As a result, in the most parts of India experience lack of water. Majority of Indian tahsil demand of water is already outstripping the supply. Ahmadpur is one of tahsil in Latur district experiencing same water scarcity due to lack of water management. Water resource management is must for sustanable development and to overcome water scarcity of Ahmadpur. It is know that water mangment reqiure proper water resource information. Persent study surface water resources georapical analysis has been done to genrate water resouce information using GIS and Remote Sensing tecnology.

Study Area: Ahmadpur tahsil is selected as a study area, which is one of the tahisls of Latur District in eastern Maharashtra. Its latitude and longitude extends is about 18° 30' 28" to 18° 50' 20" North latitude and 76° 40' 34" to 77° 10' 20" East longitude covering an area of 811 sq. km. It is situated on 450m to 600m above mean sea level. This region is of basalts rock and black soil. The major perennial rivers systems are Manar and Waki which passes through the Ahmadpur tahsil.

Data and Methodology : Persent study five (56 B/10, B/13, B/14 and 56 F/1, F/2) SOI toposheets on 1:50000 scale are used to define study area and there drainage system. Soil and surface water resource inofrmation of study area has been colected from water resources information systm of India (India-WRIS) and Google Eath to make soil and water resource distribution map. NRSC, ISRO, Thematic Services, Bhuvan's 1:50000 scale land use land cover map is used to understand there landutlization. Rainfall tempral data of 25 years has been collected from Latur NIC department and rianfall spation data from Hydrology Project Water Resources Dep. Gov. of Maharashtra (India). Aditional information of water resourses has been collected from irrgation department , Agriculture department, Socio- economic review and district statistical abstract of Latur district and field work.

Persent study Ahmadpur tahsil area is divided in to 16 watershaed using Arc gis's software Arc hydrology tool for geographical analyses of water resource. All watershed AH-1 to AH- 16 code is give for study convenence. Digitization work has been carried out for entire geographical analysis of watershed using GIS software (ArcGIS ver: 9.2). The order was given to each stream by following Strahler (1964) stream ordering technique. The attributes were assigned to create the digital data base for watershed layer.

Runoff co-efficent is calculated based on field site observation. Field observation has been done in land use , soil and slope categorey. Soil depth, land use class and Slope percentage these three paramenter layers are cterated in GIS softwater and using waitage overlay anlysis. All layer avearge values

are used to define runoff co-efficent.

Runoff co-efficent (k) : Runoff co-efficent (k) is calculated using following equation.

$$\textbf{Runoff co-efficent (k)} = \frac{\text{Soil depth layer (k)} + \text{land use layer (k)} + \text{Slope percentage layer (k)}}{3}$$

Source: Compiled by Author

Where :

K = Runoff co-efficent (k)

Soil depth layer (k) = Soil's depth-wise runoff co-efficent value.

land use layer (k)= land's use-wise runoff co-efficent value.

Slope percentage layer (k) =Slope's percentage-wise runoff co-efficent value.

Table 1.1 Soil's depth-wise runoff co-efficent (k) value

Soil Depth	Shallow to deep (50cm)	Very Shallow (10 to 25 cm)	Extremely Shallow (< 10cm)
Runoff co-efficient (k)	0.3	0.33	0.38

Table 12 Slope's percentage-wise runoff co-efficent (k) value

Slope	0-2%	2-6%	6-12%	12-24%	> 24%
Runoff co-efficient (k)	0.3	0.33	0.38	0.36	0.47

Table 1.3 Land use-wise runoff co-efficent (k) value

Land use class	Agriculture	Agriculture Fallow	Barren	River	Water Body	Settlement	Barren Scrub
Runoff co-efficient (k)	0.31	0.42	0.46	0.8	0.9	0.6	0.42

Runoff co-efficient (k) value is an average value of study area practice value

Source: Compiled by Author

Runoff : Runoff is claculated using following formula.

Runoff = Runoff co-efficent (k) * Rainfall (in m)

Source: Compiled by Author

Surface water potetial: Surface water potetial is claculated using following equation.

Surface water potetial in cubic meter = Area (in Sq.m) * Runoff (in m)

Source: Compiled by Author

Surface water resource development: Surface water resource development is claculated usiing following procedure

$$\textbf{Surface water resources development \%} = \frac{\text{Surface Water Potetial (in cubic meter)}}{\text{Surface watre resourses structure storage capacity (in cubic meter)}}$$

Result & Discussion :

In order to utilize surface water, it is necessary to first understand from where surface water comes. This surface water is collected precipitation water in reservoir, river, lake etc. Collection of precipitation water associates with surface water potential and water resources development. To define surface water potential two things are important area precipitation and runoff. Present study Ahmadpur tahsil surface water resource potential has been calculated using surface runoff coefficient and precipitation parameter. Ahmadpur tahsil annual surface water resource potential is 303.29 (Million Cubic Meter) MCM. Overall Ahmadpur surface water resource potential is not unique. Runoff coefficient and precipitation vary region to region in Ahmadpur. Runoff coefficient, surface water resource potential , surface water resource development and future surface water resources view these things have been discussed bellow.

Surface runoff coefficient:

Surface runoff coefficient is runoff controlling parameter. Ahmadpur classified in five classes for study the surface runoff coefficient. At Ahmadpur very high surface runoff coefficient found at water body area. There runoff coefficient is more than 0.49. Watershed-wise very high runoff coefficient patches are found in center region of AH-1, AH-4, AH-8, AH-13, AH-14 and AH-12; South region of AH-16, AH-11 and AH-14 watershed. High surface runoff coefficient found at water body surrounding and edges area. There runoff coefficient lies between 0.44 to 0.49. This category area is very less in Ahmadpur tahsil. Watershed-wise high runoff coefficient patches are found in center region of AH-2, AH-3, AH-4, AH-8, AH-12, AH-13 and AH-14; South region of AH-10, AH-11 and AH-16 watershed. ; East region of AH-6 watershed.

Moderate surface runoff coefficient found in settlements area, barren land where slope is greater than 2 precent and edges area of river. There runoff coefficient lies between 0.38 to 0.44.Watershed-wise moderate runoff coefficient found in north region of AH-6, AH-11, AH-12, AH-13-, AH-14 and AH-15; center region of AH-2; south region of AH-7 watershed. Low surface runoff coefficient mostly found in barren and agriculture fellow area where slope is lies between 2 to 3 precent. Watershed-wise low runoff coefficient found in north region of AH-6, AH-11, AH-12, AH-13-, AH-14 and AH-15; center region of AH-1, AH-2 and AH-3; south region of AH-11, AH-13, AH-14 AH-16; maximum area of AH-5 watershed. About 20 percent area of Ahmadpur comes in this class. Very low surface runoff coefficient mostly found in agriculture area where slope is less 2 or 2 percent. In all Watershed regions very low runoff coefficient found. About 74 percent area of Ahmadpur comes in this class. See fig. 4.1. All watersheds an average runoff coefficient are given in table 1.4.

Table 1.4 An average Runoff coefficient (K) of Watershed

Runoff coefficient (K) Class	An average Runoff coefficient (K)	Watershed	Count
Low	0.2954 - 0.3073	AH-3,AH-6,AH-7,AH-8 ,AH-10,AH-11 and AH-16.	7
Moderate	0.3073 - 0.3193	AH-1,AH-2, AH-4,AH-9,AH-12, AH-13 and AH-14.	7
High	0.3193 - 0.3312	AH-5 and AH-15.	2

Source: Compiled by Author

surface water collection capacity: Present study surface runoff is considered as a surface water collection capacity. Surface runoff is calculated by using rainfall and runoff coefficient information of study area. Surface runoff means the occurrence of surplus water exceeding the limit or capacity of surface. Other word runoff means surface water flow or collection capacity per unit. For this study per square meter area water collection is shown in liter measurement. On the basis of histogram distribution Surface water collection potential is classified in five classes. Ahmadpur very high surface water collection potential observed at water body area. There water collection capacity is more than 417 liters per sq m. Watershed-wise very high surface water collection potential patches are found in center region of AH-1, AH-4, AH-8, AH-14 and AH-12; South region of AH-16, AH-11, and AH-14 watershed. High surface water collection potential observed at water body surrounding and edges area. There surface water collection potential lies between 370 to 417 liters per sq m. This class area is very less in Ahmadpur tahsil. Watershedwise high surface water collection patches are found in center region of AH-4, AH-5, AH-6, AH-10, AH-13 and AH-12; South region of AH-8, AH-9, AH-11, and AH-16 watershed. Moderate surface water collection

potential observed in settlements area, barren land where slope is greater than 2 precent and edges area of river. There surface water collection potential lies between 324 to 370 liters per sq m. Watershed wise moderate surface water collection potential found in north region of AH-6, AH-12, AH-13-, AH-14 and AH-15; center region of AH-2, AH-2, AH-16, AH-9 and AH-10; south region of AH-7 watershed. Low surface water collection potential mostly found in barren and agriculture fellow area where slope is lies between 2 to 3 precent. There surface water collection potential lies between 278 to 324 liters per sq m.

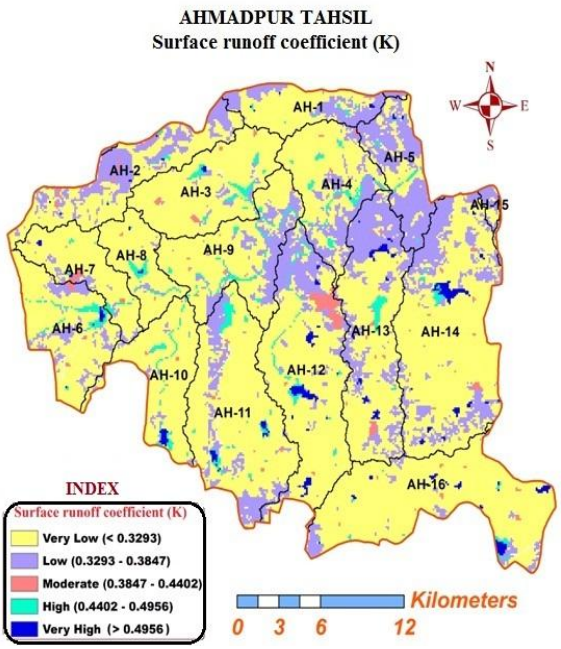


Fig 1

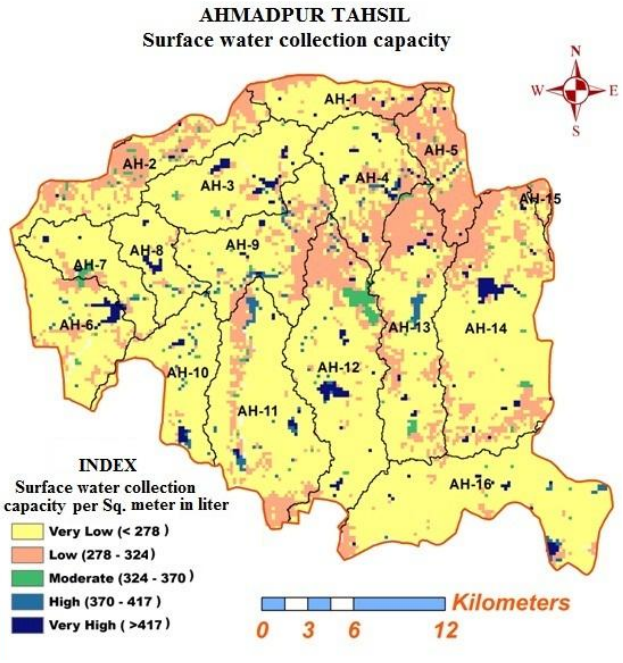


Fig-2

Watershed wise low surface water collection potential observed in north region of AH-6, AH-11, AH-12, AH-13-, AH-14 and AH-15; center region of AH-1, AH-2 and AH-3; south region of AH-7, AH-11, AH-13 and AH-14; maximum area of AH-5 watershed.

Near about 18 to 20 percent area of Ahmadpur comes in this class.Very low surface water collection potential mostly observed in agriculture area where slope is less than 2 or 2 precent. There water collection capacity is less than 278 liters per sq m. In all watershed regions very low runoff coefficient found. About 74 to 76 percent area of Ahmadpur comes in this class.

Table 1.5 An average surface water collection capacity of Watershed

Class	An average surface water collection capacity per Sq. m (in liter)	Watershed	Count
Very Low Runoff	< 239	AH-10 and AH-12	2
Low Runoff	239- 255	AH-16	1
Moderate Runoff	255 - 270	AH-6,AH-7,AH-8 and AH-11	4
High Runoff	270 - 286	AH-1,AH-2,AH-3, AH-9 and AH-14	5
Very High Runoff	> 286	AH-4,AH-5,AH-13 and AH-15	4

Source: Compiled by Author

Surface water resource potential: To develop surface water resource and management strategy in any area first it is need to assessment of there surface water potential. As same present study Ahmadpur tahsil surface water resource potential is appraised; it is about 215.34 MCM and inflow water is about 87 MCM. High surface water resource potential is found in AH-11, AH-12, AH-13, AH-14 and AH-16

watershed.These watershed area surface water resource potential is more than 18 MCM. All five watershed surface water resource potential is about 111.20 MCM and it is 51.6 percent of total Ahmadpur tahsil.Moderate surface water resource potential is found in AH-2, AH-3, AH-4, AH-6, AH-9 and AH-10 watershed. These watershed area surface water resource potential is lies between 9 to 18 MCM. All these six watershed surface water resource potential is about 73.29 MCM and it is 34.06 percent of total Ahmadpur tahsil. Low surface water resource potential is found in AH-1, AH-5, AH-7, AH-8 and AH-15 watershed area. These watershed area surface water resource potential is less than 9 MCM. All these five watershed surface water resource potential is about 30.85 MCM and it is 14.34 percent of total Ahmadpur tahsil.

Table 1.6 An average surface water potential of watershed

Class	Watershed surface water potential	Watershed	Count
High Surface water Potential	> 18 MCM	AH-11 ,AH-12, AH-13,AH-14 and AH-16	5
Moderate Surface water Potential	9 to 18 MCM	AH-2,AH-3,AH-4, AH-6,AH-9 and AH-10	6
Low Surface water Potential	< 9 MCM	AH-1,AH-5,AH-7,AH-8 and AH-15	5

Source: Compiled by Author

Watershed	Surface water resource potential (in MCM)	Surface water	Total surface water resource potential	Surface water resource Storage capacity (in	Surface water resource development in percentage	Surface water's resource balance	Future surface water resource development	Surface water's balance after future surface water resource development
AH-1	7.62	0	7.62	3.3	43.38	4.31	6.29	-1.98
AH-2	12.78	0	12.78	5.9	46.22	6.87	6.27	0.61
AH-3	13.15	0	13.15	9.88	75.14	3.27	1.27	2
AH-4	12.86	0	12.86	9.36	72.76	3.5	5.39	-1.89
AH-5	8.73	0	8.73	108.94	100	-100	5.37	-105.58
AH-6	10.76	51.87	62.62	8.29	13.24	54.33	10.3	44.03
AH-7	7.49	0	7.49	4.24	56.65	3.25	0	3.25
AH-8	6.06	0	6.06	2.78	45.88	3.28	0	3.28
AH-9	14.28	0	14.28	8.94	62.57	5.35	8.35	-3.01
AH-10	9.47	23.91	33.38	8.7	26.06	24.68	2.01	22.67
AH-11	19.98	7.41	27.39	12.62	46.09	14.77	2.32	12.45
AH-12	22.42	4.76	27.18	20.62	75.86	6.56	2.49	4.07
AH-13	19.88	0	19.88	17.39	87.47	2.49	2.28	0.21
AH-14	28.52	0	28.52	19.71	69.1	8.81	9.6	-0.79
AH-15	0.95	0	0.95	0.28	29.07	0.68	0	0.68
AH-16	20.41	0	20.41	14.55	71.31	5.85	3.25	2.61
Total	**215.35**	**87.95**	**303.29**	**255.5**	**84.24**	**47.8**	**65.18**	**-17.38**

Surface water resource development: Surface water is usually the main source of water in this region. There are several difficulties to appraisal of water resource development. First a decision has to be made about the kinds of resources which have to be computed. Present study farm pond, contour bund, percolation tank, cement bandhare, Kholhapuri type bandhare, minor, medium, major irrigation project etc surface water resources are consider for computing surface water resource development. In Ahmadpur tahsil 255.49 MCM water is collected in various water storage structure out of 303.28 MCM surface water resource potential. Ahmadpur tahsil's total surface water potential is about 215.34 MCM and inflow is

about 87.94 MCM. There is overall 84.24 % surface water resource is developed. Detail watershed-wise surface water resource development is discussed here. Very high surface water resource development occurred in AH-5 and AH-13. There surface water resource development is more than 80 percent development. Hagdal- Gugdal, Thodga minor and limboti medium irrigation project constricted in this class that why this area is rich in water resource. High surface water resource development occurred in AH-3, AH-4, AH-9, AH-12, AH-14 and AH-16. There surface water resource development is about 60 to 80 percent. Dhaswadi, Yesttar, Khandali, Mawalgaon, Kalegaon, Ahmadpur, Waki, Kharabwadi, Kaundgaon, Sawargaon-Thot, Hagdal Mogha minor irrigation project constricted in this class. Ahmadpur tahsil maximum area is covered by this class. Moderate surface water resources development take place in AH-1, AH-2, AH-7, AH-8 and AH-11. There surface water resource development is about 40 to 60 percent. Nagzari, Yeldary, Andhori, Molwan, Hangewadi, Sonkhed, TabantSangvi, Ugilewadi, Gotala, Bhtekarwadi, Hagdal Mogha minor irrigation project constricted in this class. Maximum irrigation projects are constricted in this area but this area surface water resources potential is more than it. Low surface water resource development take place in AH-10. There surface water resource development is about 20 to 40 percent. Nagthana and Satala minor irrigation project are constricted in this class. Minimum irrigation projects are constricted in this area compare to this area surface water resource potential. Very low surface water resources development is found in AH-6. There surface water resource development is below 20 percent.

Table 1.7 Surface water resource development

Class	Percentage (%)	Watershed	Count
Very High surface water resource development	> 80	AH-5 & AH-13	2
High surface water resource development	60 To 80	AH-3, AH-4, AH-9 , AH-12, AH-14 & AH-16	6
Moderate surface water resource development	40 To 60	AH-1, AH-2, AH-7 , AH-8 & AH-11	5
Low surface water resource development	20 To 40	AH-10 & AH-15	2
Very low surface water resource development	< 20	AH-6	1

Source: Compiled by Author

Table 1.8 Overview of Ahmadpur Tahsil Surface water resource

Source: Compiled by Author

Kopra-Kingaon minor irrigation project are constricted in this class area. Minimum irrigation projects are constricted in this area compare to this area surface water resource potential.

Ahmadpur tahsil area total surface water resource potention is about 303 MCM out of that 255 MCM water collect in various surface water resources. About 48 MCM water is remain as surface water resource balance which can be utilize. Watershed-wise maximum surface water resources balance found in AH-6, AH-10, AH-14 and AH-8.

Reference:

1. Ministry of the environment operations division (2008) : "Technical guidance document for surface water studies in support of category 3 applications for permit to take water"
2. Nenny Miryani Saptadji and Yudha Artika (2012): "surface water potential analysis and groundwater conservation concept at kamojang geothermal field", Thirty-Seventh Workshop on Geothermal Reservoir Engineering Stanford University, Stanford, California, January 30 - February 1, 2012
3. Omotayo B. Adebo ye and Olarewaju M. Alatise (2008): "Surface Water Potential of the River Osun at Apoje Sub-basin Nigeria", *Soil & Water Res., 3, 2008 (2):pp- 74–79*
4. Strahler,A.N.(1957): "Quantitative analysis of watershed geomorphology", Trans. Amer. Geophys. Union.,38,pp 913920
5. Strahler, A.N. and Strahler, A.H. (2002): "A Text Book of Physical Geography", John Wiley & Sons,New York, 2002.

Address
'Ravichandram' Survey No-101/1, Plot, No-23,
Mundada Nagar, Jalgaon (M.S.) 425102