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Economical Analysis of the Cereals Cropping Pattern in Dhule District (M.S)

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ABSTRACT: Agriculture is not only an occupation but also a way of life. India has rich agricultural resource therefore, different crops are produced. However, farmers cultivating traditional crops are incapable to harvest even adequate food and grains. Such situation is not ideal and sustainable Crop production. New cropping patterns have been accepted by the farmers of the study region, due to climate change, uneven rainfall and economical factor. Natural and economical factors have boosted the cultivation and production of cereals crop. The Dhule district is drought prone district, so it is select for present study. Agriculture is the main occupation in the district. Annual rainfall is unsatisfied and uneven for agriculture. Therefore, the study of spatial distribution and temporal variability were vital in characterizing the economic factor and nature of cereals crop cultivation. Therefore it is important to study the cropping pattern in this district. The aim of present paper is to examine the temporal changes and relation between rainfall and cropping pattern. Present study is based on secondary source of data year 2004 and 2013. Simple statistical technique is used to analyze the changing trend of cropping pattern. The data is representing with graph and map using MS Excel is applies to analyze. In Dhule district area under cereals crops are changes in various tehsil. Cereals crops cultivation has occupied area 247051 Ha. (60.26% of NSA) in the year 2004 and occupied area decrease up to 145056 Ha. (37.16 % of NSA) in the year 2013 due to the flexibility of the rainfall.

KEYWORDS: Cropping pattern, uneven rain fall, drought prone, plantation, agriculture etc.

I.INTRODUCTION

India has a great diverse agricultural systems as well as it posses' rich agricultural resources, different economical factors had resulted into agricultural typologies. Among the primary activity agriculture is most important as majority of population is depends on agriculture for their livelihood (Singh and Dhillon, 1984) Agricultural land use and productivity are important aspect of agricultural geography. Agricultural productivity in dry farming areas is as low as one tenth of that irrigated area. (Datya, 1983). Therefore important agricultural facility is usefulprogramme to improved productivity and thereby achieving rural development. They may beachieved by technological intervention and by adopting strategic cropping pattern. This would reduce the water requirement of agricultural without comprising agricultural output.Maharashtra is leading state in area and production of cereals crops in the country. According to some expert and farmers there is a shift from cereals crops to other because of water requirement, low input and high profitability over these crops. Drought is a major problem in Dhule district. They are natural hazards and are related with rainfall. Drought may be best benefited as persistent and abnormal moisture deficiency that has an adverse impact on agriculture. All the talukas except Shirpur in Dhule district are affected by drought. Near about 60 percent area of the district is drought prone. The maximum area of Dhule and Shindhkhedha comes under the drought prone part. In the western part of Sakritaluka the percentage of rainfall is high. The area is of relief and hilly with slopes. The successes of cereals cropping in drought prone area such as study region solely depend on availability of rain water. There are some economical exhibiting facility of such cropping water.This types of agricultural model can be more suitable if it includes a financial component. With this view in my mind the study observed that there seven cereals crops to be considered. The transformation

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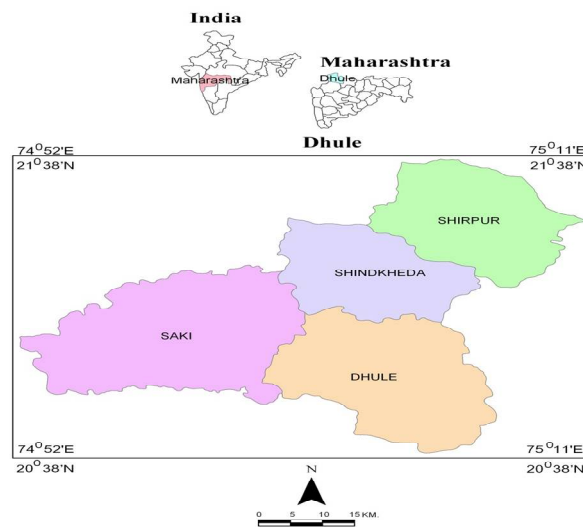
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of cropping pattern is related to the used of land in Dhule district at a given period of time. Agriculture in this district is mostly of intensive subsistence type. There are two main crop growing seasons, its Kharif and Rabbi. Jawar crop is grown in both seasons.

Study area: The shape of the study area is triangular. It is located in the northern part of the Maharashtra State. It has occupied over an area of 8063.11 sq.km. It is extended from 20°38' N to 21°39' N latitudes and from 73°50' E to 75°13' E longitudes (Fig. No.1). The study area is bordered by the districts, Jalgaon to the east, Nasik to the south, Gujarat State and Nandurbar district to west. Satpura ranges presented to the north of the study area. Because of the 'Satpura' ranges Dhule district is separated from Madhya Pradesh State, while 'Satmala' ranges separate the district from western Maharashtra. Dhule district contributes 2.62 percent total geographical area of the Maharashtra State. As per the 2011 Census, the population of Dhule district is 2,048, 781. The density of population is 285 persons per sq. km.

LOCATION MAP



Objectives:

- To study the temporal changing cereals cropping pattern in Dhule district.
- To study the relation between rainfall and cropping pattern in Dhule district.

Hypothesis:

Cereals cropping pattern depend on rainy days and annual rainfall

II.DATABASE AND METHODOLOGY

In this study secondary data have been collected from various socio-economical reports of Dhule districts. Analysis the 2004 and 2013 is cropping pattern. Simple statistical techniques are used to analyze the changing trend in cropping pattern, for calculating transformation the data 2004 and 2013 are compared. The data have been summarized processed and represented with graph and map using GIS software, MS Excel was applied to process and analysis the data. In the present paper out of all crops only cereal cropping pattern has been studied. Cereal crops like Bajara, Rice, Wheat, Maize, Jower, Nachani and Pulses are studied.

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III. RESULTS AND DISCUSSION

Dhule district comes under drought prone area. Cereal crop is a major crop in this district. Tahsilwise rainfall is varied; hence cereals crop cultivation is also uneven. Annual rain fall is highest in Shirpurtahsil (above 700mm). Shirpurtahsildose not come under drought area. Therefore amount of cereal crop is 43% of NSA in 2004 and 15% of NSA in 2013. ShindkhedDhule and eastern part of Sakritahsilcome under drought prone area. Hence near about 70% of NSA fall under cultivation area of cereal crops. In 2013 due to rainfall is increase cereal crop cultivation area has been declined from 60% of NSA (2004) to 37% of NSA (2013). Sakritahsil stood first in cereal crop cultivation in Dhule district (70% of NSA 2004 and 51% of NSA in 2013)

Bajara crop cultivated all over the district, area under Bajara crop in 2004 was 60.26% of NSA and in 2013 it was 37.16v. In 2013 due to increase in rainfall (Annual average rainfall 673mm) instead of cereal cropping pattern other cash crop cultivated area has been increased.

The net sown area in the Dhue district was 409900ha. and390458ha. year2004 and 2013 respectively. This year cereals have occupied 247051ha. (60.26% of NSA) and 145096ha.(37.16% of NSA) area in2004 and 2013 respectively. The main cereals crops have been Bajara, Jawar and Wheat are the important food grain crop in the district. Maize is mostly grown in the irrigated areas. High proportion of cereals indicated that the tahasils has very low level of commercialization of agriculture. The field observation revealed that the tahsils dominated by cereals with slightly more than half the cultivated areas.

Bajara :

Bajara is the important food crop cultivated in the district. It is generally taken in kharif season and hence it must have replaced hybrid that was grown in the same season. It is usually grown on the light to medium soil. It requires dry climate and less rainfall bajara is grown everywhere in the district. The use of high yielding varieties of seeds is increased in the district. The farmer mostly areas this crop when the amount of rainfall is less. Through bajara is the important kharif crop it is also grown in rabbi season Dhule and Shindkhedatahasils. Rabbi bajara is grown in the summer season in the villages having the irrigation facilities.Climate of the district is suitable for Bajara crop. This crop can be taken low amount of rainfall. Sakritahsil stood first in the cultivation area of bajara33.51 % of NSA, it is follow by Dhule (30.59% of NSA), Shindkheda (24.46% of NSA) and lowest area under cultivation is Shirpurtahsil which is 15.22% of NSA in 2004. In 2013, due to increase in rainfall, inspite of bajara, maize and other cash crops have been cultivated.

Jowar:

Jowar is also important food grain crop in the district. It is cultivated in kharif and rabbi crop season. The jowar cultivation is basically related to firstly low rainfall and secondly soil in the district. It is traditionally cultivated as a rain feed crop in the both seasons.Jowar is cultivated all over the district. Highest area under cultivation of jower is in dhuletahsil (19.68% of NSA), which is followed by Shindkheda (15.12% of NSA), Shirpur (10.55% of NSA)and lowest area under jower cultivation is in Sakritahsil(1.26% of NSA)in 2004. But in 2013, due to increase in average rainfall, area under this crop has been declined.

Rice:

Rice crop is cultivated only in western part of Sakritahsil and Shirpurtahsil in Dhule district. The average annual rainfall in this area is 650 to 750mm, which is higher and suitable for rice crop. The area under cultivation is increased Sakritahsil 3.72% of NSA in 2004 to 10.54% of NSA in 2013. Dhuletahsil this crop is rarely cultivation and in Shindkhedatahsil rice crop is not cultivated.

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Table No. : Tahsilwise Cereals Crop Cultivation Area in Dhule district (2004 and 2013)								
Tehsil	Sr. No.	Crops	2004			2013		
			Area in Ha.	% of NSA	% of Cereals	Area in Ha.	% of NSA	% of Cereals
Shirpur	1	Bajara	9242	15.22	21.598	3404	5.35	16.52
	2	Jawar	6408	10.55	14.975	2181	3.43	10.59
	3	Rice	20	0.03	0.047	0	0	0
	4	Wheat	653	1.08	1.526	1456	2.29	7.07
	5	Maize	0	0.00	0.000	118	0.19	0.57
	6	Nachni	0	0.00	0.000	0	0.00	0.00
	8	Pulses	10165	16.74	23.755	6286	9.89	30.51
	Total			26488	43.61	61.901	13445	21.15
Shindkheda	1	Bajara	26038	24.46	25.63	19283	20.07	28.82
	2	Jawar	16094	15.12	15.84	6058	6.30	9.06
	3	Rice	0	0.00	0.00	0	0.00	0
	4	Wheat	810	0.76	0.80	1370	1.43	2.05
	5	Maize	277	0.26	0.27	523	0.54	0.78
	6	Nachni	0	0.00	0.00	0	0.00	0.00
	8	Pulses	15145	14.23	14.91	13431	13.98	20.08
	Total			58364	54.83	57.45	40665	42.32
Sakri	1	Bajara	48662	35.51	27.28	1942	1.65	1.09
	2	Jawar	1731	1.26	0.97	4	0.00	0.00
	3	Rice	5103	3.72	2.86	12422	10.54	11.65
	4	Wheat	3425	2.50	1.92	6164	5.23	3.46
	5	Maize	13463	9.82	7.55	22369	18.99	12.54
	6	Nachni	4399	3.21	2.47	921	0.78	0.52
	8	Pulses	19007	13.87	10.66	17049	14.47	9.56
	Total			95790	69.89	53.71	60871	51.67
Dhule	1	Bajara	32318	30.59	25.99	3112	2.76	5.07
	2	Jawar	20796	19.68	16.72	12926	11.44	21.06
	3	Rice	2	0.00	0.00	14	0.01	0.02

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	4	Wheat	2052	1.94	1.65	2332	2.06	3.80
	5	Maize	2770	2.62	2.23	3201	2.83	5.21
	6	Nachni	0	0.00	0.00	0	0.00	0.00
	8	Pulses	8471	8.02	6.81	8530	7.55	13.90
	Total		66409	62.85	53.41	30115	26.66	49.06
Total			247051	60.26		145096	37.16	
Source: Dhule district Socio-Economic Report, 2004&2006								

Table NO : Tehsil wise Annual rainfall, Raini days and Drought prone Villages in Dhule district. (2004 and 2009)									
Sr. No.	Tehsils	Annual Rainfall in mm				Total Villages	Droughtprone Villages	NSA in Ha.	
		2004	Raini days	2009	Raini days			2004	2009
1	Shirpur	603	47	687	23	152	0	60732	63569
2	Shindkheda	388	41	584	26	143	143	106446	96100
3	Sakri	687	44	774	32	212	110	137056	117804
4	Dhule	318	40	623	28	166	166	105666	112985
Average/Total		499	172	667	109	673	419	409900	390458
Rainfall in %		92		110					
Source: Agriculture Commissioner Office, Pune									

Wheat:

Wheat is the third important food grain in the district. This crop is grown in the medium and black soil. It is cultivated in dry and cool month of rabbi season. The farmer has grown the crop on a very small scale in the district. The crop is taken as an irrigated crop. The agricultural land is prepared after the harvested season of bajara. Sowing is done in the month of Oct. / Nov. The crop date takes 110 to 140 days to mature from the date of sowing. Now, improved varieties of seed are sown in the district. Wheat cultivation area increased the mainly because of increase in area under irrigation by Panzar, Kan and Kabryakhadak medium projects. This crop is cultivated very less (1 to 3.8% of NSA) Dhule district in 2013. Climate of the District is not suitable for this crop. Therefore, the average production of this crop is very less.

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Maize:

Maize is important crop which is mostly used as a fodder in the Sakri, Dhule and Shindakhedatahsils. The area under maize has increased for the year 2004 (4.23% of NSA) to the year 2009 (5.63% of NSA). Maize crop gives a higher production and income of the farmer in Dhule district. The area under cultivation of this crop is increasing day by day. The climate of this District except Shirpurtahsil, is favorable for this crop. In 2004 highest area under cultivation of the crop is Sakri (9.82% of NSA) and it followed by Dhule (2.62% of NSA), Shindkheda (0.26% of NSA). The crop requires water in large amount. It needs irrigation facility. In SakritahsilPanzara, Kan, Kamkheli and Kabryakhadak irrigation medium water tank. Whereas, in 2013, the area under cultivation of the crop is increased double higher due to hybrid seed and irrigation facilities.

Nachni:

Nachni is important kharif crop in only Sakritahsil in Dhule district. The area under Nachani in year 2004 was 3.21% of NSA and year 2013 was 0.75% of NSA in Sakritahsil. The Nachani is grown on the light soil and heavy rainfall area. In high rainfall area, this crop is cultivation. In Dhule district, only in western part of SakritahsilNachani crop is cultivated, which is due to the high rainfall in hilly area of Sayadri. The crop is cultivated in (3.21% of NSA) area as per 2004.

Pulses:

Pulses grown in all tahsils in Dhule district. It is dominant crop in shirpurtahsil. It is account 13.21% of NSA in year 2004 and 11.47% of NSA in year 2013. In the tahsil a variety of pulses area grown like Gram, Tur, Green gram, Mug, Chavali, Wal, Green peas etc. Almost all the pulses except Gram and Tur are cultivated in kharif season. Mostly varieties of pulses are cultivated in all tahsils in dhule district. The pulses are grown on light soil in the district. This crop can be cultivated in both less and high rainfall area. This crop is economically beneficial. The crop is cultivated in all tahsils of the district. In 2013 in Sakritahsil, the crop is cultivated in 14.17% of NSA.

Generally, cereal crop is cultivated all over the district. If rainfall is increased, other crops like cotton, Sugarcane Vegetable can be cultivated in large amount. Dhule district is drought prone area, hence cereals cropping pattern analysis is essential. Economical and technological factors affect on the cereals cropping pattern.

Suggestions:

1. For cereals crop, instead of traditional cropping pattern, new technological cropping needs to be accepted for better results.
2. Newly developed hybrid seeds of cereals crop need to be used.
3. Where there is less rainfall, irrigation system based on new technology is to be used.
4. In less rainfall and less area, higher productivity cropping pattern to be accepted.
5. Fruit crop cultivated in less water area like Pomegranate, Crusted Apple, Ber etc. are to be cultivated
6. Cereal crops should be taken for commercial purposes instead of traditional cropping pattern.

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