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A COMPARETIVE STUDY OF AGRICULTURAL DEVELOPMENT IN MAHARASHTRA: A STATISTICAL ANALYSIS (2001 - 2011)

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INTRODUCTION

Maharashtra is the second largest state in India both in term of population and geographical area 3.08 lakh Sq. Km. The state has a population of around 11 crore (Census 2011), which is 09.3 Per Cent of the total population of India.

Present paper attempt to the agricultural development in Maharashtra as per the 2001 and 2011 census data. The state has a long tradition of having statutory bodies for planning at the district. For local level self-government in rural areas, there are 33 Zilla Parishada's, 351 Panchayat's Semite and 27,906 Grampanchayt's. The state has 226.1 lakh Hectares of land under cultivation and area under forest is 52.1 lakh hectares. Numbers of irrigation projects are being implemented to improve irrigation. In the present study, an attempt has been made to depart from this traditional premise by including indicators relating to the existing economic infrastructure and the institutional frame. Yield per acre, Net cropped area per agricultural worker, Percentage of area under commercial crops to gross cropped area, Percentage of gross to the net cultivated area, Gross irrigated area as a percentage of gross cultivated area, Number of tractors Per ten thousand hectares of net cropped area, Percentage of villages electrified, percentage of household having 0 to 5 acres of land to the cultivating households, Agricultural labors as a percentage of cultivators and percentage of net cultivated area to the total geographical area, These are the ten indicators pertaining to various aspects of agricultural development have been including in the study. Statistical methods have applied to analyze of indicators for the composite index and Normalization. In the present analysis, however, the yield per acre of net sown area would duplication the effect of the factors of modern intensive cultivation since separate indicators relating to all these have been incorporated in the study.

OBJECTIVE:

1. To observe the variation of land use pattern and cropped area.
2. To measure the agricultural development and assessment to Crop pattern.

METHODOLOGY AND DATA COLLECTION:

The present study is mainly based on the secondary data collected from the agricultural census of India, Maharashtra 2001 and 2011, statistical Abstracts of Maharashtra, and India satellite imageries, Economic survey of Maharashtra to measure the levels of agricultural development at districts level in the state of Maharashtra, composite indexes have been computed by considering the agricultural indices by applying prof. Kundu's normalization method for the chosen indicators in the process of development on the bases of their correlations and the nature of their distribution in space. The alternative regional patterns, thus obtained, have been shown by choropleth maps.

STUDY AREA

Geographically, the state of Maharashtra extend from 15 45' North to 22 01' North latitude and 72 45' East to 80 45' East longitude. With an expansion of about 800 km from

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the east to west and 700 km from North to South, it has an area of 307713 sq. km which is about one tenth of that of India. The physical structure of Maharashtra is simply vast plateau sloping eastward and bounded by hills and mountains to the west and north and a narrow coastal lowland to the west physical, the state comprises there natural division the konkon, the Sahyadry's and Deccan plateau. The climate of study area is monsoon type consisting of an average rainfall of 1450 mm per annum and an average temperature 30°C.

Levels of Agricultural Development

Nearly 55% of the state population depends on agricultural for its livelihood. This sector has been the single largest provider of employment to the rural people of the state however the contribution of agriculture sector in the state economy is regarded over the period because of unfavorable agro-climatic situation and faster growth in other sectors especially in services sector. Nearly 1/3 area of the state fall's under rain-shadow region where the rains are scanty and erratic, In these areas only dry land cultivation is undertaken out of total geographical area of the state, the proportion of area under agriculture (56.8% in 2005-06) is much more than that at national level (43.2%). Despite huge spending on the irrigation projects, the proportion of gross area irrigated to gross cropped a tea in the state is around 17% as against about 43% at the national level. The agriculture in Maharashtra is expected to show a decline growth of 2001and 2011 composite score was 09.91 and 09.74 respectively.

Monsoonal Effect on Agricultural Sector

The south-west monsoon arrived in the state right time on 7th June 2001. The main problem of state's rain fall is its Spatio-temporal diversity. Added to this is the large variation in total rainfall in each geographical division from one year to another, causing floods or droughts out of 6 district has above 3000 mm rainfall Viz. Kolhapur, Satara, Ratnagiri, Thane Sindhudurg and Raigarh and 19th district has 1000mm to 3000mm rainfall these are becoming central part of Maharashtra and eight district has a low category of rainfall, these are the abiding droughts.

Similarly, the year of 2011, the South-West monsoon arrived in Vengurla on 3rd June. In remaining parts of konkon region and Kolhapur, Satara, Nashik and Nandurbar districts reach by 5th June it advanced in eastern Vidarbha on 16 June and western Vidarbha and Marathwada on 22nd June. Thus monsoon arrived earlier. The coverage of entire state was delayed by about two weeks. For assessing the variation in the levels of agricultural development in Maharashtra total 10 indicators grouped under broad headings such as yield per acre, Ne, cropped area, gross cropped area, gross irrigated area, number of tractor, Electrification consumption of chemical fertilizers' Agricultural laborers' development are used. The levels of agricultural development have been measured by constructing the composite index considering about 10 indices. The attempt is to identity the most advanced relatively less developed or backward districts and has the developmental process can by accelerated to bring them at per with the developed districts with all people, as far as possible can drive the benefits.

Levels of Development 2001

Table 1 and figure 1, 2 revealed that there were as many as two districts, Viz. Kolhapur and Ahmednager which were identified as the very high developed in terms of 10

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indicators of the agricultural. Out of 15 districts found in developed category 10.01 to 15.00 composite score. The rank of Pune, Satara, Solapur, Jalgaon, Nashik, Sangli, Nagpur, Akola, Amravati, Wardha, Bhandara, Chandrapur, Osmanabad and Nanded respectively. It is found that there were two main crops growing seasons, Kharip and Rabi. The Kharip crops are sown with the onset of monsoon and harvested in September to October. The Rabi crops are sown in October – November and harvested in February-March. There are some cash crops grown in both the seasons. It is also the irrigation scheme developed in these district out of 13 district found in moderately developed category viz. Hingoli, Parbhani, Jalna, Latur, Yavatmal, Washim, Dhule, Aurangabad, Nandurbar, Gondiya, Bid, Gadchiroli and Sindhudurg. These are incorporation to 5.01 to 10 composite score as per the census 2001. There were largest areas are found rain fed crops. This is known as jirayat or unirrigated land. Here, the farmer is entirely dependent on the nature for crop production. Small irrigated patches of land with the well as the nucleus are called 'Mala' though the capacity of a well to Irrigated the land is limited; farmers generally grow cash crops, which fetch good returns.

Maharashtra 2001 to 2011: Agricultural Development Composite Score

2001

Rank	District	Composite Index
1	**Kolhapur**	21.07
2	Ahmednagar	15.06
3	Pune	14.60
4	Satara	14.38
5	Solapur	14.18
6	Jalgaon	13.66
7	Nashik	13.63
8	Sangli	12.98
9	Nagpur	11.72
10	Akola	11.09
11	Amravati	11.02
12	Wardha	10.90
13	Bhandara	10.50
14	Buldana	10.45
15	Chandrapur	10.23
16	Osmanabad	10.17
17	Nanded	10.05
18	Hingoli	9.89
19	Parbhani	9.80
20	Jalna	9.77
21	Latur	9.76
22	Yavatmal	9.71
23	Washim	9.51
24	Dhule	9.39
25	Aurangabad	9.24
26	Nandurbar	9.19

2011

Rank	District	Composite Index
1	**Kolhapur**	18.13
2	Pune	15.88
3	**Amravati**	15.03
4	Solapur	14.60
5	Ahmednagar	14.36
6	Satara	14.08
7	Nashik	13.39
8	Sangli	13.06
9	Jalgaon	13.03
10	Bhandara	11.35
11	Yavatmal	10.41
12	Nagpur	10.36
13	Chandrapur	10.24
14	Akola	10.21
15	Gondiya	10.20
16	Jalna	9.98
17	Aurangabad	9.79
18	Nanded	9.75
19	Wardha	9.41
20	Buldana	9.38
21	Bid	9.23
22	Osmanabad	9.08
23	Washim	9.01
24	Gadchiroli	8.91
25	Nandurbar	8.86
26	Dhule	8.77

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27	Gondiya	9.07		27	Latur	8.56
28	Bid	8.95		28	Hingoli	8.40
29	Gadchiroli	7.01		29	Parbhani	8.39
30	Sindhudurg	5.56		30	Thane	5.51
31	Thane	4.89		31	Sindhudurg	4.88
32	Raigarh	4.31		32	Raigarh	4.47
33	Ratnagiri	3.60		33	Ratnagiri	3.72
34	Mumbai (Sub.)	0.96		34	Mumbai (Sub.)	0.40
35	Mumbai	0.65		35	Mumbai	0.07
Maharashtra		9.91		Maharashtra		9.74

Source: Statistical Abstract of Maharashtra & Maharashtra: Department of Agriculture Website

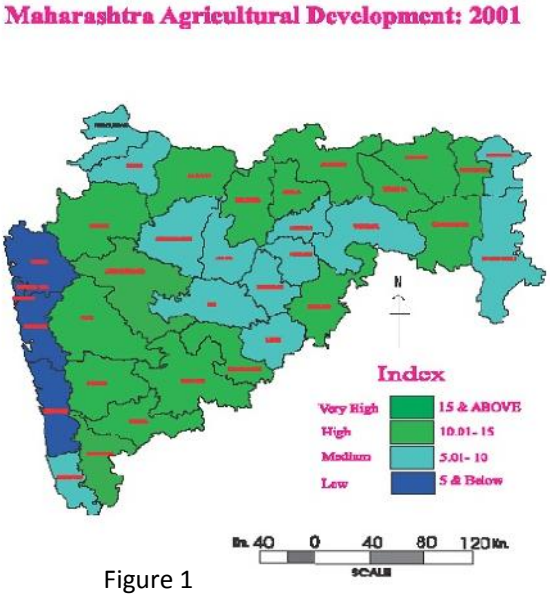

Figure 1

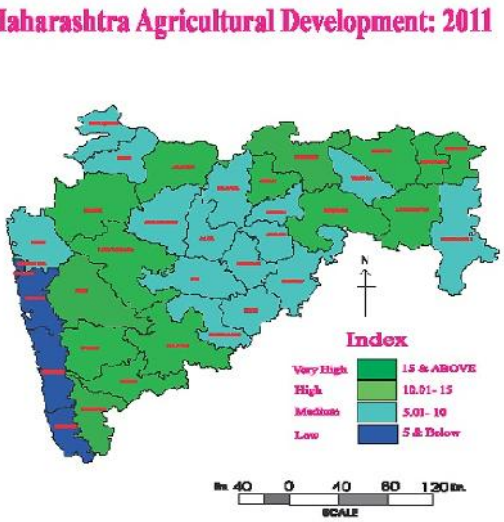

Figure 2

Out of three districts found in low agricultural developed category viz. Thane, Raigarh and Ratnagiri. These are the below 5 composite index score. There were the put to different uses are strongly influence by physiographic especially relief. The konkan, western Ghats, the satpuda ranges, dissected hills and steep slopes, broad valley floors, plains and low plateaus, semi-arid region all exhibit different kinds of land uses.

Levels of development 2011

It is found that the district of Kolhapur, Pune and Amravati very high agricultural development of composite index score as per the agricultural census 2001. The category of above 15 composite score Kolhapur district significantly areal spread, sugarcane, which supports the sugarcane industry of Maharashtra, is an important cash crop in western Maharashtra. Now it has spread to parts of Marathwada also. Out of 12 district found in high agricultural developed category Viz. Solapur, Ahmednagar, Satara, Nashik, Sangli, Jalgaon, Bhandara, Yavatmal, Nagpur, Chandrapur, Akola and Gondiya having 10.01 to 15 composite index score. Accounts of 15 districts have moderately agricultural developed in the state of Maharashtra. Viz. Jalna, Aurangabad, Nanded, Wardha, Buldhana, Bid, Osmanabad,

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Washim, Gadchiroli, Nandurbar, Dhule, Latur, Hingoli, Parbhani and Thane were 5.01 to 10.00 composite index score.

Out of five districts found in tow agricultural development category. These are the Sindhudurg, Raigarh, Ratnagiri, Mumbai and Mumbai suburban. These are incorporate in below 5 composite index score.

AGRICULTURE REGIONS

Taking into account the distribution of major crops and crop associations, Maharashtra can be divided into five major regions as per crop produced e.g. Rice oil seeds, bajra, jowar and cotton. These are the five agricultural regions in Maharashtra. The major regions are delimited on the basis of the first rank crop in the district.

A) Rice Region

Rice is the dominant crop. It covers the Konkon Coastal strip in the west and Bhandara and Gadchiroli districts in the east. In the konkan region areas rice is growth in the valleys while other cereals, millets pulses are grown on the hilly slopes, similarly, coconut, areca nut, cashew nut, mango etc. commercial crops wheal in Bhandara and jawar is grown in Gadchiroli districts.

B) Oilseeds Region

Oilseed appear as the first ranking crop in Kolhapur district in the west and Nagpur, Wardha and Chandrapur districts in the east e.g. groundnut and soybean and rice is more or less the same sugarcane, the important commercial crop in the irrigated area of western Maharashtra occupies a considerable area in the district. Thus, Chandrapur represents a transition between rice and cotton regions. In Wardha, oilseeds and cotton while in Nagpur area under oilseeds and pulses crops. Besides the oilseed, cotton, rice, pulses, jowar and wheat are grown.

C) Bajra Region

Dhule and Nashik districts comprise the bajra region. Though, pulses occupy second rank in both these districts, in the Nashik area pulses, cereals, wheat, oilseeds and jowar grown. In Dhule district pulses, jowar, cotton oilseeds and cereals are grown.

D) Jowar Region

The jowar region covers Ahmednagar, Pune, Satara, Sangli and Solapur districts of western Maharashtra and Aurangabad, Jalna, Beed, Osmanabad and Latur districts of Maharashtra. Bajra the next important crop in Ahmednager, Pune and Satara and other crops grown there are pulses, oilseeds, wheat and rice. Bajra in second rank in Sangli and Solhapur districts. Jowar, bajra, pulses cotton and oilseeds is associated in Bid district. Jowar in Osmanabad and followed by other crops, though pulses occupy first rank in Latur district, jowar covers almost equal area followed by oilseeds. In Aurangabad and Jalna districts jowar in the principal crop but cotton is important commercial crop appears as a second rank crop Bajra, pulses, oilseeds, ouher cereals and wheat are also grown.

E) Cotton Region

Cotton appears in various combinations in Jalgaon district, parts of Marathwada and western Vidarbha. In Jalgaon, Parbhani and Nanded districts jowar is the second rank crop followed by pulses while in Amravati, Akola, Buldhana and Yavatmal districts pulses occupy second rank followed by jowar and oilseeds.

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CONCLUSION

It is conclude that the district of Kolhapur constancy of ranking first in development in agricultural followed by Pune and Amravati in year of 2001 and 2011. It is found that Ahmednagar district was fall down of rank two to five in decade of 2001 and 2011. It is found that the district of Amravati, Yavatmal, Aurangabad, Gondiya, Bid and Gadchiroli jumped rank from 11 to 3, 22nd to 11th ,25th to 17th , 27th to15th ,28th to 21st and 29th to 24th respectively because of the in this district provided to overall facilities similarly the rainfall circumstance has good in decade of 2001 and 2011. But the some districts rank fall down there is Wardha, Buldhana, Osmanabad, Hingoli, and Parbhani from 12th to 19th, 14th to 20th, 16th to 22nd, 18th to 28th and 19th to 29th respectively; it is drastic change of the development of agricultural in state of Maharashtra. There were low rainfall and droughtly circumstance in decade of 2001 and 2011.

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