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## CHANGING PATTERN OF AGRICULTURAL LAND UNDER SELECTED CROPS IN NANDED DISTRICT

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**Abstract:** The present study has aimed to explain the changing area under Jowar, Wheat, and Rice crops of Nanded district during 1984-85 to 2009-10. Agriculture is one of the most important occupations of the study area. Nearly 78.13% of working population is directly engaged in agricultural activities. The Economy of the study region mainly depends on agriculture. The modern agricultural implements is improved or hybrids seeds use of different pesticides, insecticides. Weedicides, fungicides and irrigation facilities have increase agricultural production of the study region. Agriculture is more prosperous in the areas of various river basin i.e. Godavari, Manjara, Manyad, Penganga, Asana, Sita, and lendi etc.

Nanded district “kharip” and “Rabbi” both crops are taken in Kharip season hybrid Jowar, Bajari, and Cotton as well as Ground nut crops are mainly taken. During the year 1998-99, studding the cultivated land it was come forward that the percent of area under cultivation of Jowar was 30.15%, Wheat was 2.01%, Rice was 4.75% and Bajara was 0.08% out of the total cultivated land where the area under cereals is 37.09%.

**Keywords:** Agricultural, occupations, hybrids seeds, pesticides, insecticides, irrigation, production.

### INTRODUCTION :-

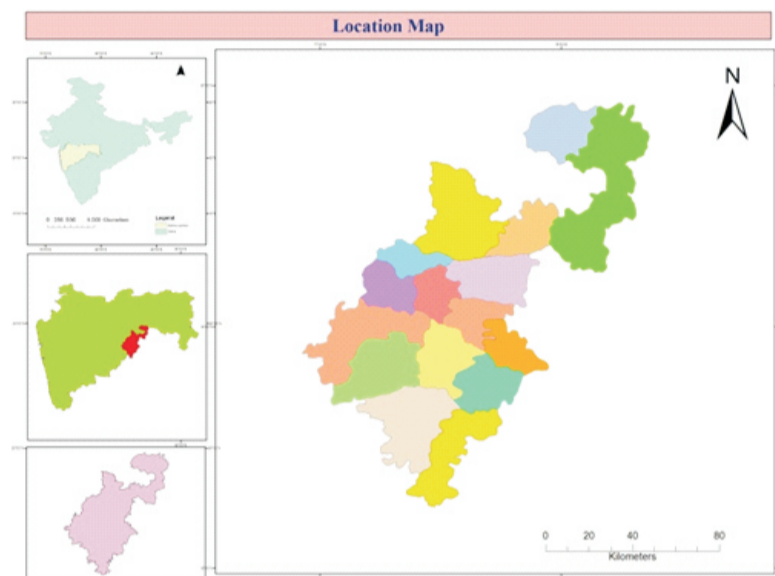
Agriculture is also major occupation employing 70 percent of total population in rural areas and is still continue as main source of livelihood of human being. Agriculture is an outcome of the combination of both physical and socio-economic factors. Agriculture geography can be considered as a science in the view of its techniques of analysis, methods of interpretation and its approaches to the investigating agricultural aspects. Cropping pattern means the proportion of area under various crops at a point of time. The rational use of land and increasing the productivity per unit of time by changing the cropping pattern is necessary to solve the food problems. Nanded district is mainly depended on agriculture. It is the basic occupation of the population of Nanded district. In agriculture, Food grains like Rice, Wheat and Jowar are the important crops. These food grains are important in the district. Jowar is the basic food of Nanded district. Therefore, Jowar occupies more area. And then wheat and rice followed according to its area. Rice, wheat and Jowar cropping pattern in as follows.

### OBJECTIVES:

- 1) To study of changing pattern of agricultural land under Jowar, Wheat and Rice.
- 2) To calculate the change over time period 1984-85 to 2009-10.
- 3) To study the causes of changes occurred during 1984-85 to 2009-10.

### STUDY AREA:

Nanded district is part of Marathwada Region in Maharashtra. For the present study in and around area of Nanded district is selected. Nanded district is situated on the bank of Godavari River. Nanded district has a Geographical area of 10,5,28 Sq. Km. which forms 3.41% of the total Geographical area of Maharashtra State. The district is situated in the Deccan Plateau. The district of Nanded has between 18°.15' and 19°.55' North latitude and 77°.7' to 78°.15' East longitudes. The total population of the districts was 33, 56,566 persons according to 2011 census.



**DATABASE AND METHODOLOGY:**

The present study is based on secondary data collected from census Reports of Government of India. Agriculture Departments of Zillah Perished, Agriculture office of Nanded district. The District Gazetteer of Nanded, 1971. Socio-Economic Review and District Statistical Abstracts of Nanded district 1985, 1999, 2001, 2006, 2010. Various Agricultural bulletins, periodicals, Newspaper, Journals. The extensive fieldwork was under taken for investigation of changing pattern of land under Jowar, wheat, and rice crops of Nanded district

For detailed study of changing land under some selected crops in Nanded District. The collected data has been processed and analysed by using different quantitative, statistical technique. The tabulated data has been presented by Maps using Arc GIS. Following statistical formula used for change detection in different elements of our study

$$\text{Change} = \frac{\text{Current Year} - \text{Base Year}}{\text{Base Year}} \times 100$$

**CHANGING AREA UNDER SOME SELECTED CROPS:**

**1) JOWAR:**

**Table 1: Area under Jowar Crop Cultivation of Nanded District**

| Sr. No.      | Taluka         | Area in Hector 1984-85 | Percent    | Area in Hector 2009-10 | Percent    | Change        | Change in %  |
|--------------|----------------|------------------------|------------|------------------------|------------|---------------|--------------|
| 1            | <b>Nanded</b>  | 22913                  | 7.7        | 26291                  | 12.19      | 0.1474        | 14.74        |
| 2            | Ardhapur       |                        |            |                        |            |               |              |
| 3            | Mudkhed        |                        |            |                        |            |               |              |
| 4            | <b>Hadgao</b>  | 43235                  | 14.53      | 29765                  | 13.8       | -0.3115       | -31.15       |
| 5            | Himaytnagar    |                        |            |                        |            |               |              |
| 6            | <b>Kinwat</b>  | 32995                  | 11.09      | 25772                  | 11.95      | -0.2189       | -21.89       |
| 7            | Mahur          |                        |            |                        |            |               |              |
| 8            | <b>Bhokar</b>  | 42561                  | 14.31      | 15328                  | 7.11       | -0.6398       | -63.98       |
| 9            | Umri           |                        |            |                        |            |               |              |
| 10           | <b>Biloli,</b> | 40587                  | 13.64      | 24064                  | 11.16      | -0.4071       | -40.71       |
| 11           | Naigaon        |                        |            |                        |            |               |              |
| 12           | Dharmabad      |                        |            |                        |            |               |              |
| 13           | <b>Kandhar</b> | 56234                  | 18.9       | 52095                  | 24.16      | -0.0736       | -7.36        |
| 14           | Loha           |                        |            |                        |            |               |              |
| 15           | <b>Mukhed</b>  | 34729                  | 11.68      | 22339                  | 10.36      | -0.3567       | -35.67       |
| 16           | <b>Degloor</b> | 24205                  | 8.14       | 19990                  | 9.27       | -0.1741       | -17.41       |
| <b>Total</b> |                | <b>297459</b>          | <b>100</b> | <b>215644</b>          | <b>100</b> | <b>-0.275</b> | <b>-27.5</b> |

Source: Socio-Economic abstract 1985 and 2010

Jowar is the crop produced in both Kharip and Rabi season shown in Table 1. In Nanded district the Jowar crop cultivation is 297459 hecter during the year 1984-85 but in the year 2009-10 it is decreases i.e. 215644 hecter. So, overall Jowar crop cultivation is in decreases in nature.

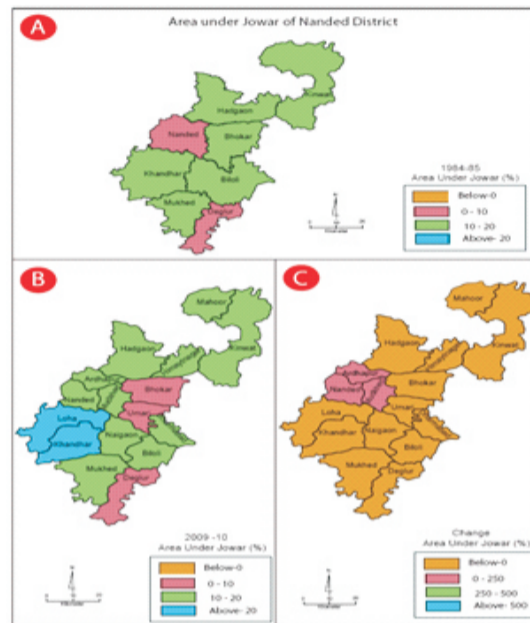
The highest area under Jowar crop cultivation in Hadgao taluka was 43235 hecter (14.53%) during the year of 1984-85, and lowest Jowar cultivation was Nanded taluka i.e. 22913 hecter (7.7%). An 2009-10 was lowest Jowar cultivation Bhokar taluka i.e. 15328 hecter (7.11%), and Highest was Kandhar taluka i.e. 52095 hecter (24.16%).

#### CHANGES IN JOWAR CROP CULTIVATION:

The positive change shows by only Nanded taluka i.e. 14.74 percent due to source of irrigation facilities area under Jowar crop increased. Introduction on of high yielding Varieties irrigation facilities and attentive provides seem to have encouraged Jowar cultivation. Attraction to the farmers and it has made rapid strides particularly in the irrigated tracts of the Godavari valley in recent year. Positive changes found above taluka due to availability of irrigation facilities and special efforts of Govt. to bring more land under irrigation through various irrigation schemes. Increase in Jowar production is proportionate to increase in irrigated area. This is the area where irrigation facilities are comparatively more developed.

The Negative change in area under Jowar crop shows in Hadgaon taluka (-31.15%), Bhokar taluka (-63.98%), Kandhar taluka (-7.36%), Mukhed taluka (-35.67%). It may be due to changes in formers attitude. They are performing other cash crops like fruit garden, other crops and somewhere land become saline and Alkaline due to over irrigation and some people selling upper layer of soil for brick making. The moderate area is under developed. The moderate area under this crop observed in Kinwat, Kandhar, Mukhed and Degloor taluka due to rugged topography and mountainous region with low rainfall and less irrigation facilities.

Fig. 1: Area under Jowar Crop Cultivation of Nanded District (A-1984-85, B- 2009-10, C- Change)



2)WHEAT:

Table 2: Area under Wheat Crop Cultivation of Nanded District

| Sr. No.      | Taluka         | Area in Hector 1984-85 | Percent    | Area in Hector 2009-10 | Percent    | Change        | Change in %   |
|--------------|----------------|------------------------|------------|------------------------|------------|---------------|---------------|
| 1            | <b>Nanded</b>  | 4029                   | 23.03      | 10069                  | 21.84      | 1.4991        | 149.91        |
| 2            | Ardhapur       |                        |            |                        |            |               |               |
| 3            | Mudkhed        |                        |            |                        |            |               |               |
| 4            | <b>Hadgao</b>  | 3970                   | 22.69      | 8612                   | 18.68      | 1.1692        | 116.92        |
| 5            | Himaytnagar    |                        |            |                        |            |               |               |
| 6            | <b>Kinwat</b>  | 559                    | 3.2        | 2466                   | 5.35       | 3.4025        | 340.25        |
| 7            | Mahur          |                        |            |                        |            |               |               |
| 8            | <b>Bhokar</b>  | 516                    | 2.95       | 4182                   | 9.07       | 7.1046        | 710.46        |
| 9            | Umri           |                        |            |                        |            |               |               |
| 10           | <b>Biloli,</b> | 411                    | 2.35       | 10125                  | 21.96      | 23.635        | 2363.5        |
| 11           | Naigaon        |                        |            |                        |            |               |               |
| 12           | Dharmabad      |                        |            |                        |            |               |               |
| 13           | <b>Kandhar</b> | 342                    | 1.95       | 6218                   | 13.49      | 17.1812       | 1718.12       |
| 14           | Loha           |                        |            |                        |            |               |               |
| 15           | <b>Mukhed</b>  | 4379                   | 25.03      | 2385                   | 5.17       | -0.4553       | -45.53        |
| 16           | <b>Degloor</b> | 3288                   | 18.8       | 2050                   | 4.45       | -0.3765       | -37.65        |
| <b>Total</b> |                | <b>17494</b>           | <b>100</b> | <b>46107</b>           | <b>100</b> | <b>1.6355</b> | <b>163.55</b> |

Source: Socio-Economic abstract 1985 and 2010

Wheat is the most significant crop grown during the winter season. It requires a cool climate with moderate rainfall less than 50 cm and irrigation. As such in the study region the post monsoon rainfall is not sufficient for optimum production

**Changing Pattern Of Aricultural Land Under Selected Crops In Nanded District**

during 1984-85. In Nanded district the Wheat crop cultivation is 17494 hector during the year 1984-85 but in the year 2009-10 it is increases i.e. 46107 hector.

The highest area under Wheat crop cultivation in Mukhed taluka was 4379 hector (25.03%) during the year of 1984-85, and lowest Wheat cultivation was Kandhar taluka i.e. 342 hector (1.95%). A 2009-10 was lowest Wheat cultivation Degloor taluka i.e. 2050 hector (4.45%), and Highest was Biloli taluka i.e. 10125 hector (21.96%).

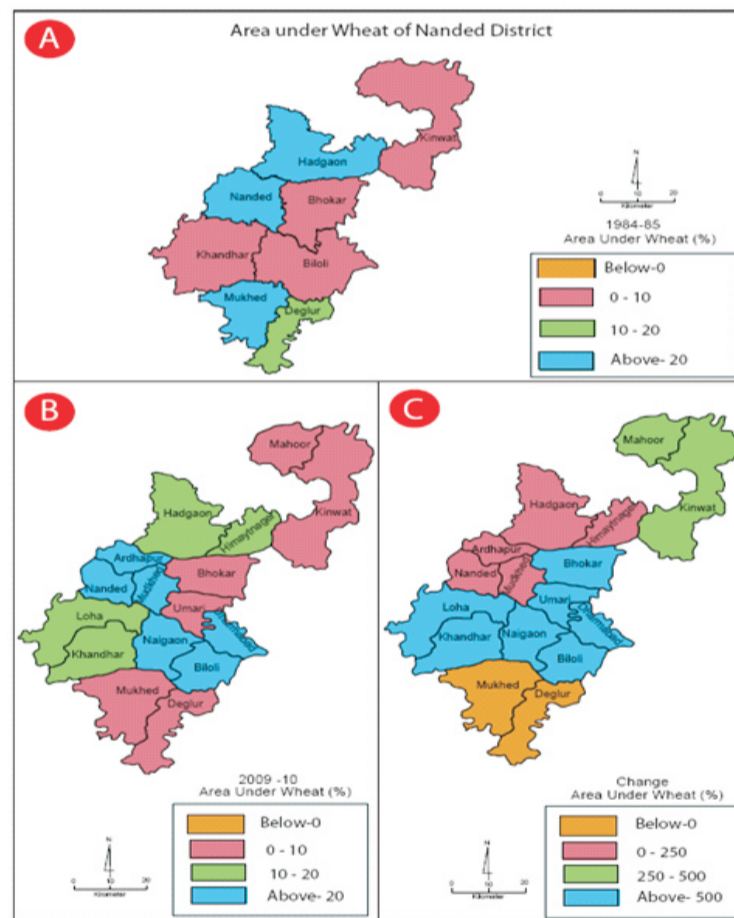
**CHANGES IN WHEAT CROPCULTIVATION:**

The positive change in area under Wheat crop shows in Nanded taluka (149.91%), Bhokar taluka (710.46%), Biloli taluka (2363.50%) and Kandhar taluka (17.18%) due to source of irrigation facilities area under Wheat crop increased. Introduction on of high yielding Varieties irrigation facilities and attentive provides seem to have encouraged Wheat cultivation. Attraction to the farmers and it has made rapid strides particularly in the irrigated tracts of the Godavari valley in recent year.

The Significance positive changes observed in above taluka, Godavari River it possible to increase in land under irrigation with irrigation facilities and special efforts made by co-operative societies. Increase in Wheat production is proportionate to increase in irrigated area. This is the area where irrigation facilities are comparatively more developed.

The negative change in area under Wheat crop shows only Mukhed taluka (-35.67%) and Degloor taluka (-17.41%). It may be due to changes in formers attitude. The moderate area is under developed. The moderate area under this crop observed in Mukhed and Degloor taluka.

**Fig 2: Area under Wheat Crop Cultivation of Nanded District (A-1984-85, B- 2009-10, C- Change)**



**3)RICE:**

**Table 3: Area under Rice Crop Cultivation of Nanded District**

| Sr. No.      | Taluka         | Area in Hector 1984-85 | Percent    | Area in Hector 2009-10 | Percent    | Change        | Change in % |
|--------------|----------------|------------------------|------------|------------------------|------------|---------------|-------------|
| 1            | <b>Nanded</b>  | 4548                   | 15.46      | 3609                   | 12.25      | -0.2064       | -20.64      |
| 2            | Ardhapur       |                        |            |                        |            |               |             |
| 3            | Mudkhed        |                        |            |                        |            |               |             |
| 4            | <b>Hadgao</b>  | 4640                   | 15.78      | 5038                   | 17.11      | 0.0857        | 8.57        |
| 5            | Himaytnagar    |                        |            |                        |            |               |             |
| 6            | <b>Kinwat</b>  | 5805                   | 19.74      | 3989                   | 13.54      | -0.3128       | -31.28      |
| 7            | Mahur          |                        |            |                        |            |               |             |
| 8            | <b>Bhokar</b>  | 4927                   | 16.75      | 2675                   | 9.08       | -0.457        | -45.7       |
| 9            | Umri           |                        |            |                        |            |               |             |
| 10           | <b>Biloli,</b> | 207                    | 0.7        | 6179                   | 20.98      | 28.8502       | 2885.02     |
| 11           | Nai gaon       |                        |            |                        |            |               |             |
| 12           | Dharmabad      |                        |            |                        |            |               |             |
| 13           | <b>Kandhar</b> | 5022                   | 17.08      | 3687                   | 12.52      | -0.2658       | -26.58      |
| 14           | Loha           |                        |            |                        |            |               |             |
| 15           | <b>Mukhed</b>  | 2441                   | 8.3        | 1790                   | 6.08       | -0.2666       | -26.66      |
| 16           | <b>Degloor</b> | 1820                   | 6.19       | 2484                   | 8.43       | 0.3648        | 36.48       |
| <b>Total</b> |                | <b>29410</b>           | <b>100</b> | <b>29451</b>           | <b>100</b> | <b>0.0014</b> | <b>0.14</b> |

Source: Socio-Economic abstract 1985 and 2010

Among the cereals rice crop is more important requiring high temperature and rainfall. The area under Rice crop cultivation is in Table 3 As such in the study region the post monsoon rainfall is sufficient for optimum production. In Nanded district the Rice crop cultivation is 29410 hector during the year 1984-85 but in the year 2009-10 it is increases i.e. 29451 hector.

The highest area under Rice crop cultivation in Kinwat taluka was 5805 hector (19.74%) during the year of 1984-85, and lowest Rice cultivation was Biloli taluka i.e. 207 hector (0.70%). A 2009-10 was lowest Rice cultivation Mukhed taluka i.e. 1790 hector (6.08%), and Highest was Biloli taluka i.e. 6179 hector (20.98%).

#### CHANGES IN RICE CROP CULTIVATION:

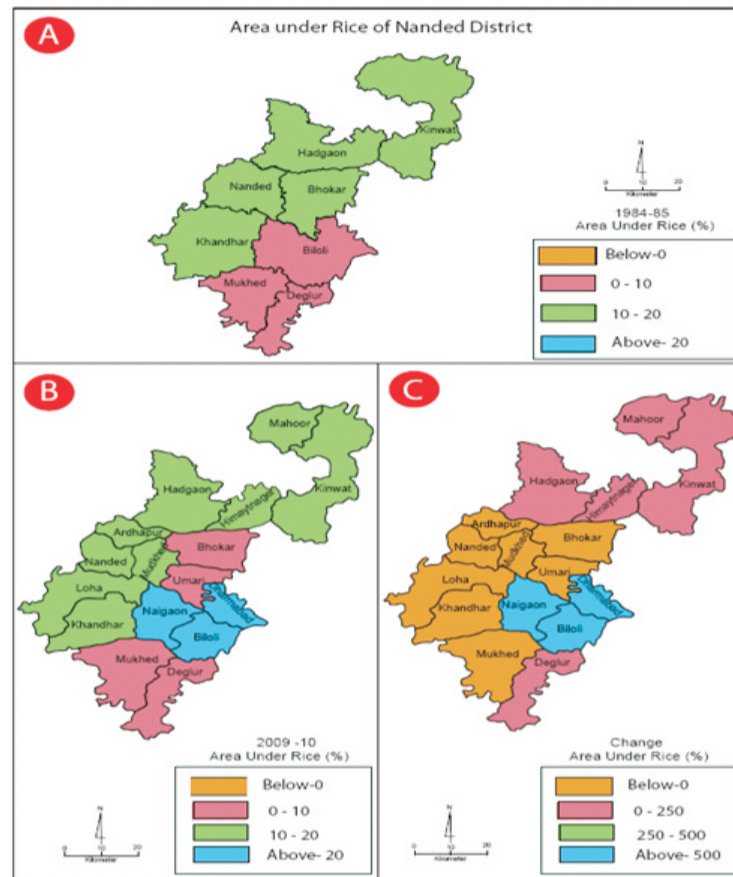
In the Nanded district Nanded, Bhokar, Kandhar and Mukhed taluka shows negative change and other all taluka shows positive change in area under Rice crop cultivation. The area under Rice cultivation positive change is drastically observed in Biloli taluka during the year 1984-85 to 2009-10.

The positive change in area under Rice crop shows in Hadgaon taluka (8.57%), Kinwat taluka (31.28%), Biloli taluka (2885.02%) and Degloor taluka (36.48%) due to source of irrigation facilities area under Rice crop increased. The Significance positive changes observed in this taluka, Godavari River it possible to increase in land under irrigation with irrigation facilities and special efforts made by co-operative societies. Increase in Rice production is proportionate to increase in irrigated area. This is the area where irrigation facilities are comparatively more developed.

The negative change in area under Rice crop shows by Nanded taluka (-20.64%), Bhokar taluka (-45.70%), Kandhar taluka (-26.58%) and Mukhed taluka (-26.66%). It may be due to changes in formers attitude. The moderate area is under developed. The moderate area under this crop observed in Kandhar and Mukhed taluka due to rugged topography and mountainous region with low rainfall and less irrigation facilities.



Fig. 3: Area under Rice Crop Cultivation of Nanded District (A-1984-85, B- 2009-10, C- Change)



REFERENCES:

1. Ali, M, (1978), 'Studies in an agricultural geography', Rajesh Publication, New Delhi.
2. Bhatia, S.S., (1967), 'A New Measurement of Agricultural efficiency in Uttar Pradesh (India)'. Economic geography, Vol. 43, No. 3, P.P. 244-266.
3. Bhatia, S.S., (1967), 'Spatial Variations – Changes and Trends in Agricultural Efficiency in Uttar pardesh 1953-63', Indian Journal of Agricultural Economic, Vol. 22, No. 1, page 66- 80.
4. Coppock, J. T., (1971), 'Agricultural Geography in Great Britain', G. Bell and Co. London.
5. Census of India, District Census hand book, Nanded, 2001 and 2011.
6. Maharashtra State Gazetteer, Nanded District, 2001.
7. Reddy, K.V., Reddy, K.S., (1976), 'Agricultural Efficiency In Andha Pradesh', The Decan Geographer, Vol. XVI, 2, Page 157-162.
8. Socio Economic Review and District Statistical Abstract of Nanded District, (1985 and 2010).
9. Suryakant S. Pawar (2010), Food Grain Cropping pattern in Latur district, Internal Referred Research Journal, ISSN 0974-2832, Vol. II, Issue 15 April 2010.



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