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Average Agricultural Production of Selected Crops in 1990 to 2015 of Ahmednagar District of Maharashtra State

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ABSTRACT

The present research paper studies and analyze the agricultural productivity at the macro level in the Ahmednagar district. This study is based on secondary data collected from revenue records and district gazetteer offices. Agricultural production was depending on market, demand, physical, climate, socio-cultural, economic, technological and organizational factors. Endeavour is made to study landuse patterns in Ahmednagar district of Maharashtra State for the year 1990-91, this is the normal year for an agricultural phenomenon. The study region covers 1704800 hectares of land the percentage of the state is 5.6% area and has a population of 4543159 in 14 tahsils as per the 2011 Census. Ahmednagar District is located in the western part of Maharashtra State. Physiography, rainfall, soil, temperature, and drainage influence agricultural productivity and land use pattern in this district. Rainfall varies between 200 to 382 mms. The present study represents a real situation of cropping pattern in Ahmednagar district and helps planners and agricultural scientists for agricultural planning at the tahsil level.

KEY WORDS : *Agriculture landuse, Agricultural productivity, Yield of Crop.*

INTRODUCTION

"Agricultural Productivity is the measurement of output and the inputs required to produce that output." In other terms, it is a ratio of input to output. In traditional agricultural productivity measurement, geographers and economists considered inputs such as labour and capital to be costs incurred in the production of agricultural produce. The traditional technique to measuring agricultural productivity, on the other hand, ignores the social and environmental costs associated with food production and livestock keeping.

In today's agricultural productivity measurement, the issue of soil sustainability, ecosystem health, and social acceptability is becoming increasingly significant. Agricultural productivity is determined by the interaction of physical and cultural elements, and it presents itself in terms of per hectare productivity and total production. Where agricultural productivity measurement can assist in determining which areas are working less efficiently than others.

Agricultural plans can be developed to eliminate and minimise regional inequities by delineating zones of low, medium, and high productivity. It also provides an opportunity to establish the ground

reality, the true cause of an area's or region's agricultural backwardness. Agriculture productivity is the most essential indicator for demonstrating the geographical pattern of agricultural development in the research region.

Researchers, geographers, and economists have created tools and techniques to determine agricultural production in the last decade. The following are some approaches developed and used for measuring agricultural production and agricultural efficiency per unit area. such as output per unit area, production per unit of farm labour, to assess agricultural production as grain equivalents, input-output ratio and ranking coefficient method (Kendall, 1939; Stamp, 1960 and Shafi, 1990).

STUDY AREA

Ahmednagar district is situated partly in the upper Godavari Basin. It lies between $18^0$2' North latitude to 19^0 9' North latitude and $73^0$9' East longitudes to 75^0 5' East longitudes. It is surrounded by Nashik district in the North, Beed and Aurangabad districts in the East, Pune district in the South, Thane and Raigad districts in the North-West. Ahmednagar district has an area of 17410 square km and a population is 4543159 (2011 Census). It ranks first in terms of area and sixth in terms of population among the district of the state. The mainstream of hills in the Sahyadri runs north-south in the western proportion of the district. From the main Sahyadrian range, two prominent spurs Stretch out of the east. Baleshwar and Harishchandra range which runs right across the district. It acts as a watershed between the Pravara and its tributaries which drain towards the Godavari. Some of the ranges are flat-topped and regular in height and slope, while others are conical and irregular. The district is broadly divided into three major geographical regions: I) Pravara Basin, II) Dhora Basin and III) The Kukadi Basin. The district is drained by two main rivers, viz. Pravara and the Kukadi and their tributaries. The climate of the district is generally dry except during the South-West monsoon season. The average annual rainfall for the district as a whole is 488.4 mm. Within the district, there are considerable variations in rainfall. The rainfall generally decreases as one proceeds from West to East. The temperature begins to increase rapidly from the latter half of February. May is the hottest month and December is the coldest month with the Maximum temperature at 36.38°C and minimum temperature at 19.92 °C at Ahmednagar. The soil of the district is essentially derived from the Deccan Trap which is the predominant rock formation of the district. The soil formation is mainly affected by the climatic condition and topography of the district. The soil in the Pravara and Mula valleys is quite deep and fertile. The relief in the rest of the district is undulating and susceptible to erosion. The light shallow soil is found on hillslopes and very coarse soils at a higher elevation.

OBJECTIVES

1. Know the availability of land in Ahmednagar District and its different uses.
2. To study the agricultural productivity in Ahmednagar District from 1990-91 to 2015-16.

DATABASE AND METHODOLOGY

The area and agricultural productivity of covered each crop had converted into a percentage of the total geographical area. Secondary data has been used from Socio-Economic Reviews and District Statistical Abstracts of Ahmednagar District in 1990-91 and 2015-16. The description of each land classification has been supplemented by numerous spot inquiries, besides information embodied by using the Ahmednagar District Census Handbook, District Gazetteer and District Socio-Economic Review of Ahmednagar District.

TRENDS OF AVERAGE YIELD OF SELECTED AGRICULTURALCROP PRODUCTION

Agriculture productivity fluctuations in the percentage share of total crop output allocated to tehsils and districts in the Ahmednagar district. To study the changes in the output of productivity of certain crops in the Ahmednagar district between 1990-1991 and 2015-16. In these two terms years of data, average changes in the production of selected crops are discovered throughout the entire study area. The overall production of chosen crops is shown, with the value increasing and decreasing over the research period. Table No. 1 illustrates the production of wheat, jawar, bajra, pulses, cotton, oilseeds, rice, vegetables, fodder crops, sugarcane, fruits, maize and other crops as well as the variations in the production of wheat, jawar, bajra, pulses, cotton, oilseeds, fodder crops, sugarcane, fruits, maize and other crops. Other products, such as rice, vegetables, sugarcane and maize, are dropping in value by less than 5.0% due to production changes in the Ahmednagar district area.

Table No. 1 indicates the increased value of selected crops, which is extremely high in wheat, jawar, bajra, cotton, oilseeds, fodder crops, fruits, maize and other crops but very low in rice, pulses, sugarcane, vegetables, and total food crops accordingly. All of the information in the preceding table no. 1 and trends of production of the average yield of selected crops are the same.

A) Bajra Production

During the study period of 1990-91 to 2015-16, bajra was also an important crop in the study region. The maximum value of bajra production was found in 700 kg. to 950 kg. per hectare during the study periods totals production in metric tons are 443240 this value is high in 2015-16 years 507091 metric tons are highest production in Ahmednagar district Every farmer and every rural and urban person in the study region uses bajra for domestic food. The average production in metric tons was observed at 58.33% in 1990-91 and 79.17% in 2015-16. The changes in production are positive and this is recorded at 22.32% during study periods.

B) Jawar Production

Jawar is another important crop grown in the study area. These crops are typically planted by every farmer in the Ahmednagar district. Where are the most prevalent foods used in Ahmednagar district throughout the period and under observation? Every village farmer has harvested these crops throughout the Kharif and Rabbi seasons each year. The variances of these selected crops increased the most during the study period. During the study period, the volume change is 7.90 %, and the overall production of Jawar is close to 65%. Farmers in the Ahmednagar district take the most Jawar production. From 1990-91 to 2015-16, total hectare s of Jawar production were 43260 and 85566 metric tons, respectively. The average production in metric tons was observed at 46.67% in 1990-91 and 65.00% in 2015-16. The changes in production are positive and this is recorded at 14.79% during study periods.

C) Wheat Production

Wheat is the most significant crop in the Ahmednagar district; the area from 1990-91 was recorded at 48523 hectares, while the area under wheat recorded in 2015-16 is 68513 hectares over the study period. The research regions with the largest production and volume of change are investigated from 1990 to 2015. The percentage of production was observed at 25484 tons in 1990-91 and 72260.80 tons in 2015-16. It increased to 46726 metric tons during the study period. The average production in metric tons was observed at 66.67 % in 1990-91 and 126.67 % in 2015-16. The changes in production are positive and this is recorded at 16.23 % during study periods.

D) Oilseeds Production

Oilseed concentrate output in the Ahmednagar district includes (Ground nut, Kardai, Soya bean, Sunflower, and Sesamum). The highest hectare s under the oilseeds production are found in 1990-91, which is 61960 hectare s in agriculture land area, while the lowest production in the study region is found in 2015-16 years, which is 60672 hectare s. During the study region, there is a high volume of negative change in total production and a negative change in total output in metric tons. Farmers have increased their production of ground nuts, kardai, and sesamum to extract useful oil and edible oil for all of us. The production of oilseeds was observed at 2883.2 tons in 1990-91 and 17412.5 tons in 2015-16. It is decreased during study periods. The average production in metric tons was observed at 13.33 % in 1990-91 and 29.17 % in 2015-16. The changes in production are negative and this is recorded at -5.08 % during study periods. As a result, oilseeds are important among all crops investigated during the research region.

Table No. 1. Average trends rate of production of selected crops 1990-91 to 2015-16 in Ahmednagar district

Sr. No	SelectedCrops	Average production in MetricTones 1990- 91	Average production in MetricTones 2015- 16	Changes in Production between 1990-91 to 2015-16	%
1	Bajara	58.33	79.17	20.83	8.97
2	Jawar	46.67	65.00	18.33	7.90
3	Wheat	66.67	126.67	60.00	25.84
4	Oil Seeds	13.33	29.17	15.83	6.82
5	Pulses	15.00	21.67	6.67	2.87
6	Vegetables	70.83	102.50	31.67	13.64
7	Fodder Crops	46.67	62.50	15.83	6.82
8	Sugarcane	2.17	3.50	1.33	0.57
9	Fruits	52.50	71.67	19.17	8.26
10	Maize	29.17	46.67	17.50	7.54

Source: Computed by the Researcher

E) Pulses Production quotation

In Kharif and Rabbi, the most common food consumed by farmers is pulses. Pulses increased due to changes in agricultural activities between 1990-91 and 2015-16. During the study periods, the average production of pulses is recorded in 1990-91 is 180 tons per hectare while in 2015-16 observed at 260 tons per hectare. Total pulse production in metric tons was higher in 2015-16 than in 1990-91. In the study region, the percentage of pulse crop production is 5.08%, which is higher than the total production per hectare, which is 6.82%. The production of oilseeds was observed at 10346.4 tons in 1990-91 and 8317.4 tons in 2015-16. It decreased by -0.71 % production per hectare during study periods.

F) Vegetable Production

During the study period, vegetable was the cash crop of every farmer in the Ahmednagar district. Vegetables are one of the most important cash crops and valued commodities for farmers in the agricultural sector. This harvest has provided financial support to the farmer; therefore farmers are delighted and satisfied to take this product with their hard work in agriculture. Vegetable crops in Ahmednagar district very high irrigated tehsil produce a very high quantity of vegetables such tehsil as, Sangamner, Rahata and Shrirampur. The area and productivity observed in 1990-91 are 12648 metric tons and 1783.50 metric tons in 2015-16 respectively. The area and production of vegetables decreased

during the study periods.

Table No.2. Average Yield Per Hectare of SelectedCrops in Ahmednagar District 1990-95 to 2005-10

Sr. No.	Crops	Yield per Hectare inKg.		Production in '000'tones		Volume of Change in %
		1990-91	2015-16	1990-91	2015-16	1990-91 to 2015-16
1	Bajara	700	950	443240	507091	22.32
2	Jawar	560	780	43260	85566	14.79
3	Wheat	800	1520	25848	72260.8	16.23
4	Oil Seeds	160	350	2883.2	17412.5	5.08
5	Pulses	180	260	10346.4	8317.4	-0.71
6	Vegetables	850	1230	12648	1783.5	-3.80
7	Fodder Crops	560	750	54812.8	77685	8.00
8	Sugarcane	26	42	1623.44	1617.42	0.00
9	Fruits	630	860	2866.5	79825.2	26.90
10	Maize	350	560	1417.5	17908.8	5.77

Source: Socio-Economic Abstract of Ahmednagar District (1990-91 to 2015-16)

G) Fodder Crop Production

Farmers raise cattle in addition to growing fodder crops. Crops farmed primarily for animal consumption are referred to as fodder crops. Some fodder crops include hay, grain, and maize. Animal feed is also made from the leftovers from sugar beet processing. The fodder crop production recorded 560 tons per hectare s in 1990-91 while it increased to 750 tons per hectare s in 2015-16. The total production of the fodder corps is 54812.80 metric tons in 1990-91 and 77685 metric tons in 2015-16. The area and production of fodder crops are observed to increase by more than 8.00% during study periods. During the investigation period, the volume of area changes, both positive 6.82 % was recorded.

H) Sugarcane Production

Sugarcane production is primarily for the manufacturing of sugar and 'Gul.' It is a popular crop grown in the study area during observation and field activities. Sugarcane increased by 32117 hectares between 1990 and 2015. The main explanation for this is that these crops have a government value, and the government has given farmers cheap prices, making them unhappy, and production has decreased during the research period. The total production of sugarcane is 1623.44 thousand metric tons in 1990-91

and 1617.42 thousand metric tons in 2015-16. The area and production of sugarcane are observed to increase by more than 0.57% during study periods.

I) Fruits Production

Fruits concentrate output in Ahmednagar district includes (Mango, Pomegranate, Bananas, Grapes, Custard Apple, Lemon, Orange, Papaya, Watermelon, etc.). The area under the production of the fruit are found 4840 hectare s in 1990-91, which is 18236 hectare s in 2015-16, while the production in the study region is found 2866.50 tons in 1990-91, which is 79825.20 tons recorded in 2015-16. During the study region, there is a high volume of positive change in total production in total output in metric tons. Farmers have increased their production of Pomegranates and grapes. The area and production of sugarcane are observed to increase by more than 26.90% during the study periods.

J) Maize Production

Ahmednagar is well-known for its maize production. In the research area, there are a lot of products under the maize crops. Maize is increasing to the maximum area of hectare s in the district where maize output has been consistent over the last decades, which is 16491.30 metric tons from 1990-91 to 2015-16. This valuable product is always expanding and being distributed to farmers in the research area. Production has increased over the last 25 years, and many farmers are combining these crops with fruit crop production. 5.77% of total maize production was increased found during the study periods.

Development of Average Ariculture Production:

During the study period of Ahmednagar district from 1990-91 to 2015-16, the regional imbalance in agriculture productivity of selected crops was examined. While using this procedure, the following crops were cultivated in the district and were chosen. Jawar, Bajra, Wheat, oilseeds, Pulses, vegetables, Fodder crops, Sugarcane, Fruits and Maize are examples of crops.

According to the table no. 2 the changes of production is calculated and divided into three categories such as;

I. High Productivity
II. Moderate Productivity
III. Low Productivity

I. High Productivity (above 500)

During the investigation periods of 1990-1991 and 2015-16, the selected major crop productivity was observed in this category, which includes the tehsils of Sangamner, Kopargaon, Newasa and Shrirampur which are located in the north Ahmednagar district of the study region. Because of the favorable climatic conditions, heavy rainfall, ideal soil for crop production, and well-built irrigation facilities (wells, tube wells, and canals), and sources to maximize crop production in this region. During

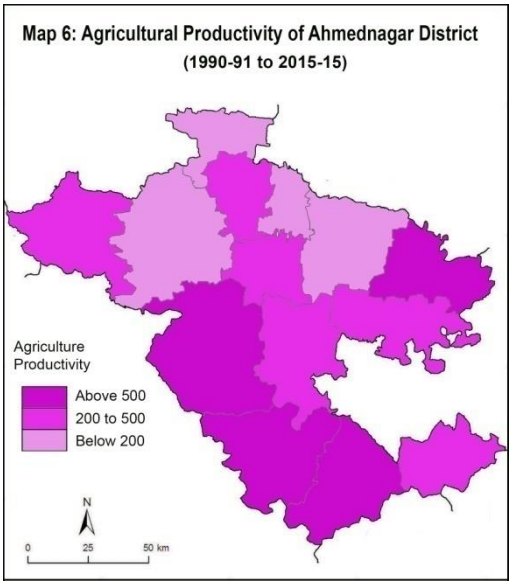
the examination period of 1990-91 to 2015-16, a high productivity area displayed above the agricultural efficiency index is 500 in the region of the Ahmednagar district (Map 6).

II. Moderate Productivity (200 to 500)

During the investigation period, this category of moderate productivity was mostly recorded in the center and southern parts of the Ahmednagar district. Akole, Rahata, Pathardi, Nagar, Rahuri and Jamkhed tehsils had moderate productivity levels of 200 to 500. Because rainfall is minimal in this region, crop yield in this region is determined by soil factors and farmer economic conditions (Map 6).

III. Low Productivity (below 200)

During the study period, Parner, Shrigonda, Shevgaon and Karjat tehsils of Ahmednagar district were included in this group. The irrigation facility in Parner and Karjat tehsil was not developed and was not in excellent working order (Map 6).



Agricultural implements, on the other hand, are ancient and in bad condition due to traditional practices. Rainfall and climatic conditions are also to blame for the combined effect of all these factors, which resulted in low agricultural production (less than 200) in this region from 1990-91 to 2015-16.

CONCLUSION

- The major food crop production is Bajra, Jawar and Wheat. The average productivity of Bajra was recorded at 79.17% during the study periods.
- The highest productivity of food crops recorded is Wheat (126.67%) in 2015-16. The change in production is positive it is observed at 60.00% during study periods while the lowest productivity recorded in the crops was Sugarcane.
- In 1990-91 the largest area and productivity was recorded Vegetables and the lowest was Sugarcane as well as in 2015-16.
- The Percentage of area and productivity is high of Wheat crops and the lowest is Sugarcane observed

during the study periods.

- In 1990-91, the average productivity is highest recorded for vegetables (850 Kg. per hectare s) as well as the food crops is Wheat crop while the lowest productivity is recorded for Sugarcane (26 metric tons per hectare).
- In 2015-16, the average productivity is highest recorded for Wheat (1520 Kg. per hectare s), as well as cash crops, a Vegetable crop while the lowest productivity is recorded for Sugarcane (42 metric ton hectares).
- The highest positive changes observed in Bajra crops as food crops and fruits are cash crops during the study period.
- The areas of high productivity are recorded in Sangamner, Kopargaon, Newasa and Shrirampur tehsil during study periods.
- The areas of moderate productivity are recorded in Akole, Rahata, Pathardi, Nagar, Rahuri and Jamkhed tehsil during study periods.
- The areas of low productivity are recorded in Parner, Shrigonda, Shevgaon and Karjat tehsil during study periods.
- In the Ahmednagar district northern side of the district are very much developed in irrigation facilities, market, transportation and fertilizers while the southern part of the tehsil observed less irrigation facilities, drought-prone area, and less favorable environmental condition for agricultural development.

REFERENCES

1) Bhatia, S.S. (1967), Spatial Variation, Changes and Trends in Agriculture Efficiency in U.P. 1953-1964. India Journal of Agricultural Economics.
2) Bhatia, S.S. (1965), Patterns of Crops Concentration and Diversification in India, Economic Geography.
3) Bhatia, S.S. (1965), Patterns of Crops Concentration and Diversification in India, Economic Geography.
4) Coppock, J.T. (1968), Changes in Land use in Great Britain, Land use and Resources Studies in Applied Geography, London. Institute of British Geographers of Special Publication, Vol. 1.
5) Chauhan, T.S. (1987), Agricultural Geography, A Case Study of Rajasthan State, Academic Publication, Jaipur.
6) Chisholm, (1962), Rural Settlement and Land use, An Essay on Location: (United Forum Agricultural Geography by W. M. Morgon and Muton,London Methuen and Co. 1962.
7) Deshpande, V.D. (1964), Inter District Variations in Agricultural Efficiency in Maharashtra State,

Indian Journal of Agriculture Economics,Vol. 19, No. 1.

8) Husain, M. (1976), A New Approach to the Agricultural Productivity Regions of the Sutlej -Ganga Plains of India, Geographical Review ofIndia, Vol. 36.
9) Husain, M. (1996), Systematic Agricultural Geography, Reprinted in 2004, Rawat Publication, Jaipur, Rajasthan State.
10) Jasbir, Singh. And Dhillon, S.S. (1984), Agricultural Geography, Tata Mc. Grow Hill Publishing Co. Ltd. New Delhi.
11) Kendall, M.G. (1939), The Geographical Distribution of Crop Productivity in England, Spatial Geography. Ed. Barry and Marbel.
12) Mali, N.G. (2004), A Critical Study of Agricultural Productivity in Parbhani District, Maharashtra State, and Thesis Submitted to S.R.T.M.U. Nanded.
13) Mohammad, Ali. (1978), Studies in Agricultural Geography, RajeshPublication, New Delhi.
14) Noor, M. and Singh, R. (1981), Measurement of Crop Productivity, Perspectives in Agriculture Geography, Vol. 4, Concept PublishingCompany, PP. 159-180
15) Patil, A.A. (2002), Changes in Agricultural Productivity in Upper Bhima an Upper Krishna Basin in Maharashtra State, A Geographical Analysis, And Unpublished Thesis Submitted to Shivaji University, Kolhapur,Maharashtra, PP. 94-102
16) Shafi, M. (1960), Measurement of Agricultural Efficiency in U.P., Economics Geography, Vol. 36, PP. 296-305
17) Singh, J. (1975), An Agricultural Atlas of India: A Geographical Analysis, Kurukshetra, Vishal Publication India, PP. 263-298
18) Singh, G. B. (1979), Transformation of Agriculture, KurukshetraVishal Publication, PP. 29-50
19) Shinde, S.D. (1980), Agriculture in an Under Developed region, A Geographical Survey, Himalaya Publishing House, Bombay, PP. 53-60
20) Socio-Economic Abstract of Ahmednagar District, 1991-95, 2001-05, 2010- 11
21) Vaidya, V. (1985), Agricultural Productivity of Maharashtra. A Spatio- Temporal Analysis, Dissertation for M. Phil. (Unpublished Thesis, Department of Geography, University of Pune).
22) Weaver, J.C. (1974), Crop Combination Regions in the Middle West, The Geographical Review 44, PP. 175-200