



“A Geographical study of cereal crop production in Maharashtra”

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Abstract:

The study in the present research essay is from the state of Maharashtra and the major occupation of the state of Maharashtra is agriculture. About 60/70% direct - indirect people are involved in this business and this study is limited to area under cereal crop, production, production per hectare in Maharashtra. The period from 2000-2001 to 2021-2022 has been selected. A study of selected major four crops in the cereal crop of Maharashtra including rice, wheat, sorghum and millet In 2000-2001, the total area under cereal crop was 9824 thousand hectares and it became 7052 thousand hectares in 2021-2022, showing a dramatic increase in the area under cereal crop cultivation. The production of cereal crop is also seen to be 8497 MT in 2000-2001 and 12062 MT in 2021-2022. It means that there is a positive increase in the production of cereal crop. Production per hectare of cereal crop was 4739 MT in 2000-2001 and 7556 MT in 2021-2022. This also shows a positive growth. There has been a negative increase in the area under cereal crops in Maharashtra, while there has also been a positive increase in production and production per hectare.

Key Words- Cereal Crop Area, Production, Per Hectare Production Agricultural Land use.

Introduction

Agriculture is considered to be the primary and very ancient occupation of man. Agriculture dominates the economy of Maharashtra, with 70% of Maharashtra's population engaged in this occupation and is undergoing uniform changes due to the precarious nature of agriculture due to uneven rainfall distribution. Traditional agriculture was practiced in Maharashtra till date but in the recent times there is a drastic change in agriculture. Irrigation, improved seeds, fertilizer management, improved farming methods, pest control, are increasing the development of agriculture. Due to this facility, there is an increase in the area of cash crops, but there is a significant decrease in the area of jowar and millet. Maharashtra is the number one state in India under sorghum cultivation and sorghum production. Even today, there is a huge decline in sorghum production and cultivation. Because Increasing urbanization, changing lifestyles, changing food habits, increasing trend towards eating out, irrigation, modern technology, improved seeds of cash crops, costs from sowing to harvesting of sorghum and millet, shortage of labor, complicated process of harvesting, and inadequate supply of all these factors have been seen to affect the area of sorghum and millet cultivation.

Due to the importance of sorghum and bajri crops for human health and seeing the decrease in the cultivated area at the global level, it has also been noted at the global level to prove the importance of this crop in human health and to increase the cultivated area. The year 2023 was declared as the International Year of Pride. Government of Maharashtra implemented “Maharashtra Millet Mission”, “Nutritious Cereals Special Month” (Millet of the Month) to increase production of cereal crops. Maharashtra government is leading in implementing innovative concepts like cereal crops in agriculture.

Objective -

- The following objectives have been set for the present research essay.
- To study the changes in area under cultivation, yield and yield per hectare of cereal crop in Maharashtra.

Study Area-

The state of Maharashtra has been selected for the present research essay. Maharashtra is a very important state economically, historically and geographically. The axial extension of Maharashtra is 15 degrees 44 minutes north to 22 degrees 6 minutes north latitude while the longitudinal extension is between 72 degrees 36 minutes east and 80 degrees 54 minutes east latitude. Geographical area of Maharashtra is 308 Sq. km and the east-west length is about 800 km and the south-north length is 720 km. The climate of Maharashtra is varied, Kokan region has an average daily temperature between 31 degrees to 33 degrees, Nagpur and Amravati regions have an average temperature of around 43 degrees. Vidarbha and Khandesh recorded the highest temperature of 47-48 degrees in Maharashtra. Average rainfall in Maharashtra is 143 cm. I. is Out of this, 85% of the rainfall comes from the south monsoon.

The rest of the rain falls from the return monsoons, cyclones. There is also variation by regional division. 300 to 500 cm in the Kokan section. May Rain falls which is highest in Maharashtra. 50 to 70 cm in Solapur, Pune, Sangli, Ahmednagar, Nashik districts. I. It is raining. While in Khandesh, Jalgaon, Dhule, Nandurbar, Amravati, Akolya in some parts of 90 to 100 cm. I. It is raining. In Vidarbha, Nagpur, Yavatmal, Buldhana, Wardha, Nanded, Hingoli, Parbhani, 90 to 176 cm. It is raining.

Research Methodology-

The present research essay shows the area wise production of cereal crops, yield per hectare in Maharashtra for the period 2000-2001 to 2021-2022. While studying the present research essay, all the information available from the secondary sources such as Finance and Statistics Directorate Maharashtra Government published Economic Survey of Maharashtra, Department of Agriculture Pune, articles, magazines, published-unpublished have been used for statistical analysis. Tables and graphs have been used for the statistical information obtained and conclusions have been drawn based on the available information.

The following formula has been used in the present research paper.

1.
$$A.A. = \frac{Oa}{Ca} \times 100$$

A.A. = Average Area
Oa = Total area under One cereal crop
Ca = Total area under all cereal crop
2.
$$A.P. = \frac{Sp}{Cp} \times 100$$

A.P. = Average Production
Sp = Total Production of One Cereal Crop
Cp = Total Product all Cereal Crop
3.
$$H.P. = \frac{Cp}{Ca} \times 100$$

H.P. = Yield Per Hectare
Cp = Total Product all Cereal Crop
Ca = Total area under all cereal crop
4.
$$\text{Land use efficiency} = \frac{\text{Gross cropped area}}{\text{Net sown area}} \times 100$$

Subject Analysis -

Four major crops of Maharashtra namely wheat, rice, sorghum and bajri have been studied. Although diversity is seen in the soil, rainfall, and climate of Maharashtra, the area under the above crops seems to be in good condition, the reason being that in terms of human square diet, important nutrients such as proteins, vitamins, iron, fibrous materials, lipids, are available in abundance. Looking at the cultivation and production under cereal crops, in 2000-2001, the total area under cultivation in the state was 17844 thousand hectares, of which 9824 hectares were under cereals, while in 2021- 2022, the total area under cultivation in the state was 16590 thousand hectares, and the area under cultivation was 7052 thousand hectares. That’s how many hectares. That is, the area under cereal crops is decreasing day by day.

Looking at the distribution of cereal crops in Maharashtra, rice is cultivated mostly in the districts of Sindhudurg, Ratnagiri, Raigad, Bhandara, Chandrapur, while wheat is cultivated in Nashik, Nagpur and the entire Maharashtra to a lesser extent. Sorghum is cultivated on a large scale in entire Maharashtra except Konkan region, Solapur district is known as the granary of sorghum in Maharashtra. So in many districts like Ahmednagar, Parbhani, Dharashiv, Pune, Kolhapur, sorghum is cultivated in large quantities. Bajri is a crop grown in Pune, Ahmednagar and most of the district.

General Land Use

General land use depends upon physical factors, like topography, climate, soils, human activities and technological inputs. Whereas the level topography, fertile soils and weight of population have brought major portion of the land area under cultivation. The general land use pattern of Maharashtra state based on the data abstracted from the Economic Survey of Maharashtra 2000-2001 to 2021-2022. Shows the area under different categories of land use as percentage to total reported area in the table.

Area	2000-2001	2010-2011	2021-2022
Area Under Forest	5150	5216	5209
%	16.74%	16.95%	16.93%
Net Sown Area	17844	17406	16590
%	58%	56.59%	53.93%
Area Not Available For Cultivable Land	2908	3180	3719
%	9.45%	10.33%	12.09%
Other Uncultivable Land	2454	2411	2581
%	7.97%	7.83%	8.39%
Follow Land	2402	2542	2658
%	7.8%	8.26%	8.64%
Total Geographical Area	30758	30758	30758

In the present paper, the following factors have been studied: area under cultivation of cereal crop, production of cereal crop and production per hectare of cereal crop in Maharashtra.

Agricultural Land Use

According to the land use statistics of the year 2000-2001. Out of the total geographical area of 30758 Lakh hectares of the state, the gross area under crops is 21619 lakh hectare while the net sown area was 17844 lakh hectares (About 82.54%), out of which the area under cereal was 9824 lakh hectares (About 45.44%) In the year 2010-2011 the gross area under the crop was 23175 lakh hectares, while the net sown area was 17406 lakh hectares (About 75.10%) of which the area under cereal was 8985 lakh hectares (About 38.77%) of the net sown area. In the year 2021-2022 the gross area under

total crop was 24149 lakh hectares, while the net sown area was 16590 lakh hectares (About 68.70%) of which the area under cereal was 7052 lakh hectares (About 29.20%).

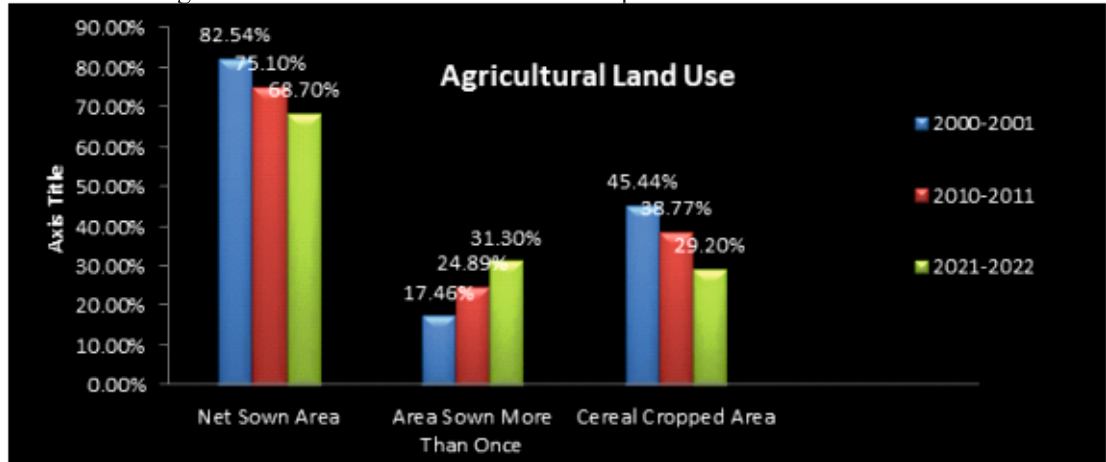
Cereal Crop Area In Total Gross Cropped Area

Table-02

(Area "0000" hectare)

Sr. No.	Area	2000-2001	2010-2011	2021-2022
1.	Net Sown Area	17844	17406	16590
2.	%	82.54%	75.10%	68.70%
3	Area Sown More Than Once	3775	5769	7558
4	%	17.46%	24.89%	31.30%
5	Cereal cropped area	9824	8985	7052
6	%	45.44%	38.77%	29.20%
7	Total Gross Cropped Area	21619	23175	24149

According to the above information, it can be seen that out of the total geographical area of the state, there is decrease in gross area under crops and net sown area. While out of the total net sown area, there is also a huge decrease in the sown area of cereal crops.



Graph-01

The area under cultivation of cereal crop during the period 2000-2001 to 2021-2022 in the state of Maharashtra can be seen from Table No. 01.

Table No. 03

(Area "0000" Hectare)

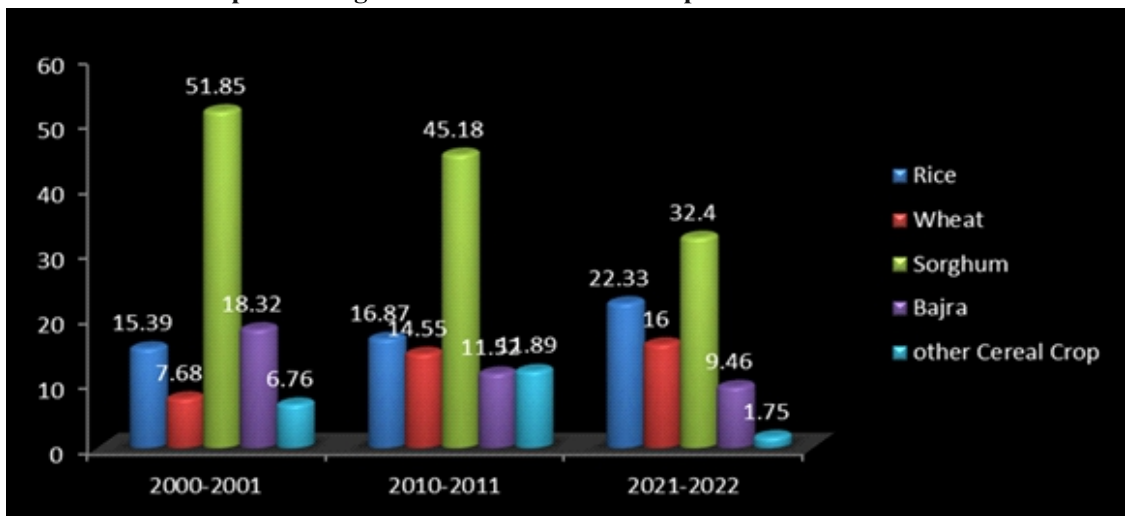
Sr. No.	Crop	2000-2001	2010-2011	2021-2022
1	Rice	1512	1516	1575
	%	15.39	16.87	22.33
2	Wheat	754	1307	1132
	%	7.68	14.55	16
3	Sorghum	5094	4060	2285
	%	51.85	45.18	32.40
4	Bajara	1800	1035	667
	%	18.32	11.52	9.46
5	Other Cereal Crop	664	1068	1393
	%	6.76	11.89	19.75
6	Total	9824	8985	7052

It can be seen from the above table that in 2000-2001, the area under cereal crop in Maharashtra was 9824 thousand hectares, while in 2021-2022 it became 7052 lakh hectares. The area under cereal crop cultivation has always been increasing.

In 2000-2001, the area under rice was 1512 lakh hectares which was 15.39% of the total area under cereal crops where as in 2021-2022 the area under rice crop was 1575 lakh hectares which was 22.33% of the total area under cereal crop. In 2000-2001, the area under cereal crop was more than sorghum which was 5094 lakh hectares which was 51.85% of the total area under cereal crop. Below that was the area of millet crops and then rice.

In 2021-2022, the area under cereal crop was the highest under sorghum and it was 2285 thousand hectares which was 32.40% of the total area under cereal crop, followed by rice, the area under rice crop was 1575 lakh hectares in 2021-2022. And the total cereal crop is 22.33% of the area under cultivation.

Graph showing the area under cereals crop in Maharashtra



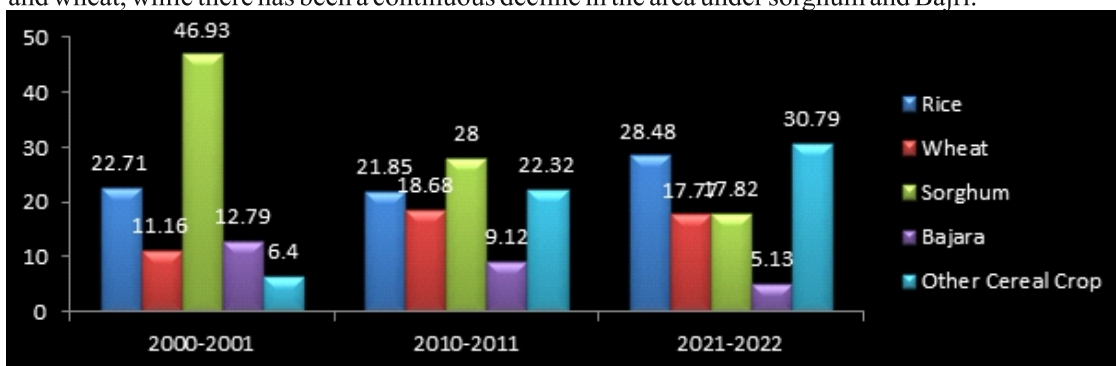
Graph No. 02
Cereal crop production in Maharashtra
Table No. 04. (Production“0000”MT)

Sr. No.	Crop	2000-2001	2010-2011	2021-2022
1	Rice	1930	2691	3435
	%	22.71	21.85	28.48
2	Wheat	948	2301	2144
	%	11.16	18.68	17.77
3	Sorghum	3988	3452	2150
	%	46.93	28	17.82
4	Bajara	1087	1123	619
	%	12.79	9.12	5.13
5	Other Cereal Crop	544	2749	3714
	%	6.40	22.32	30.79
6	Total	8497	12317	12062

Economic Survey of Maharashtra 2022 - 2023

According to the above chart, it can be said that the area under cultivation of all the cereal crops is continuously showing more or less change. There has been an increase in the area under rice

and wheat, while there has been a continuous decline in the area under sorghum and Bajri.



Graph No.3

It can be seen from the above table and graph that there has been an increase in the production of cereal crop. In 2000-2001 the total production was 8497 thousand metric tons to 12062 lakh metric tons in 2021-2022 but there is a decrease in production in the period 2010-2011, after which continues increase in production is seen.

During the period 2000-2001, the production of sorghum was the highest at 3988 lakh metric tons, accounting for 46.93% of the total cereal crop production, while the lowest production was from other cereal crops at 544 thousand metric tons, accounting for 6.40% of the total cereal crop production. During the period 2021-2022 the production of other cereal crops was the highest at 3714 lakh metric tons, accounting for 30.19% of the total crop production, followed by rice, accounting for 28.48% of the total production, the lowest production was from millet which was 619 thousand MT which was 5.13% of the total cereal crop production. Sorghum and millet show continues decrease in production, while rice and wheat show continues increase in their production.

Production per hectare of cereal crops in Maharashtra

Table No. 05 (Production“0000”MT)

Sr. No.	Crop	2000-2001	2010-2011	2021-2022
1	Rice	1277	1775	2181
2	Wheat	1256	1761	1894
3	Sorghum	783	850	786
4	Bajri	604	1086	28
5	Other Cereal Crop	819	2573	2667

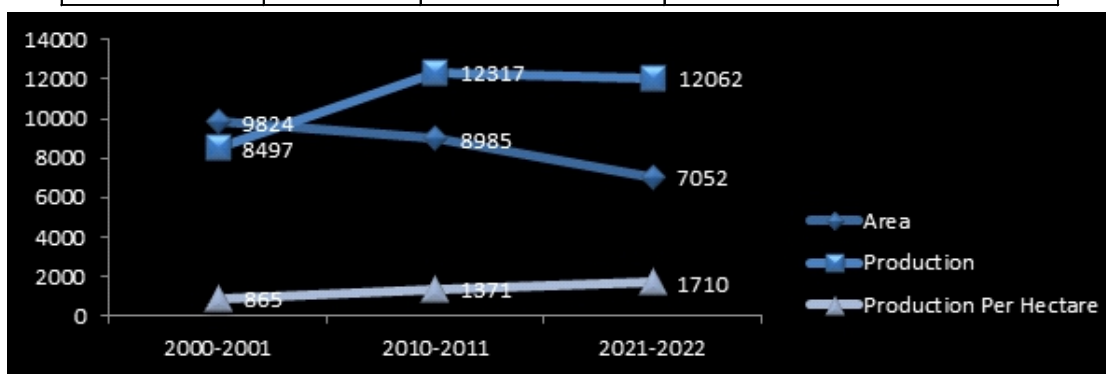


Graph No. 04

According to the above table and graph, it can be seen that in 2000-2001 sorghum yield per hectare was highest, followed by rice and bajri crops, in 2021-2022 the production of other cereal crops is highest followed by rice, while bajri has the lowest production per hectare. In the area under cereal crops in the state from 2000-2001 to 2021-2022, there has been an increase in the area under rice and wheat crops, while there has been a continuous decrease in the area under sorghum and bajri crops. Day by day increase in area under other cereal crops is observed except 2000-2001. However, there was continues increase in the production of cereal crops and also continues increase in per hectare production. The production from 865k.g. per hectare in 2000-2001 has increased to 1710kg. per hectare in 2021-2022.ss

Table showing total production and production per hectare of cereal crops in Maharashtra.
Table No. 06 (Production“0000”MT)

Year	Area	Production	Production Per Hectare
2000-2001	9824	8497	865
2010-2011	8985	12317	1371
2021-2022	7052	12062	1710



Graph No. 4

Conclusions And Recommendation

The following conclusions have been obtained from the study of the present research paper and recommendations have been made accordingly.

1. The area under cereals in Maharashtra shows a decline in the period from 2000-2001.
2. Although the total cereal crop cultivation in Maharashtra has decreased in the following areas, there has been an increase in the cultivated area of rice and wheat.
3. In the cultivation of cereal crops in Maharashtra, the area under sorghum and bajri crops has drastically decreased.
4. In 2000-2001 the area under sorghum crop was more while in 2021-2022 the area under wheat is more.
5. The area under both rice and wheat is increasing steadily and the area under rice is increasing more than wheat.
6. The production of cereal crop in Maharashtra is constantly fluctuating.
7. In 2000-2001, the production of sorghum is high while in 2021-2022, the production of other cereal crops is high.
8. The production of rice, wheat and other cereal crops shows continues increase, in which the production growth rate of other cereal crops is higher than that of both rice and wheat, while the production of bajri and sorghum crops is very low.
9. In 2000-2001 the yield per hectare of rice was higher while in 2021-2022 the yield per hectare

of other cereal crops was higher.

10. The area under cereal crops in Maharashtra has decreased, but the total production and production per hectare has increased.

Considering the health importance of cereal crops in human life, it is necessary to increase the area under cereal crops and the production. To increase the utility of cereal crops, it is necessary to establish industries that process cereal crops. It is necessary to increase the area under cereal crops because it is time to remember that the “Cereal crop is considered to be power house of nutrition” so information about the various schemes implemented by the Government of India must be communicated to the farmers.

For example- To solve the problem caused by irregular and erratic rains in areas where water conservation is used at the source, micro element spray pump, IPM (Integrated pest management) management of fertilizers and availability of newly improved seeds, if the benefits to the farmers through various government schemes are properly conveyed to the farmers under the cereal crop The production of cereal crops will definitely increase by increasing the area.

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