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TRENDS IN FOODGRAIN PRODUCTION IN MAHARASHTRA

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ABSTRACT

Foodgrains constitute the backbone of India's agricultural economy and play a crucial role in ensuring food security, nutritional sustainability, and rural livelihoods. As one of India's largest agrarian states, Maharashtra occupies a significant position in the production of cereals and pulses, including rice, wheat, jowar (sorghum), bajra (pearl millet), maize, gram, tur (pigeon pea), and other pulse crops. The state's diverse agro-climatic conditions, ranging from the humid Konkan region to the semi-arid zones of Marathwada and Vidarbha, have resulted in considerable spatial and temporal variations in foodgrain production.

KEYWORDS: *ensuring food security, nutritional sustainability, rural livelihoods.*

INTRODUCTION

Over the past several decades, Maharashtra's foodgrain sector has undergone substantial structural changes. While total foodgrain production has generally exhibited an upward trend, the growth has not been uniformed across crops and regions. Technological advancements, expansion of irrigation facilities, improved seed varieties, government support policies, and market incentives have contributed to increases in productivity. Simultaneously, changes in cropping patterns have been observed, with a gradual decline in the area under coarse cereals and a relative increase in pulses and commercial crops. Studies indicate that the share of pulses in the state's foodgrain area and production has increased considerably, whereas the contribution of traditional coarse cereals has declined over time.

The growth trajectory of foodgrain production in Maharashtra has also been influenced by climatic variability. The predominance of rainfed agriculture makes the state's foodgrain economy highly vulnerable to fluctuations in monsoon rainfall. Periods of drought, erratic precipitation, and extreme weather events have frequently affected crop yields and overall production levels. For instance, recent assessments reported significant declines in kharif foodgrain output due to inadequate and unseasonal rainfall, demonstrating the sensitivity of agricultural production to climatic conditions. Conversely, favorable monsoon conditions have led to substantial increases in foodgrain production in certain years.

Despite these challenges, Maharashtra has maintained an important position in India's foodgrain economy. Long-term production data reveal a considerable increase in total foodgrain output since the 1980s, reflecting improvements in agricultural practices and productivity enhancement measures. However, concerns regarding declining landholdings, resource degradation, changing crop preferences, and climate change continue to pose challenges for sustainable foodgrain production.

Understanding the trends in foodgrain production is therefore essential for evaluating the performance of the agricultural sector and formulating effective policy interventions. An analysis of area, production, and productivity trends can provide insights into the changing dynamics of Maharashtra's agricultural economy and help identify opportunities for enhancing food security and farmer welfare. Against this backdrop, the present study examines the trends and patterns of foodgrain production in Maharashtra, with particular emphasis on changes in cultivated area, output, and productivity over time. The findings are expected to contribute to the formulation of evidence-based agricultural policies aimed at promoting sustainable and resilient foodgrain production in the state.

OBJECTIVES OF THE STUDY

1. To examine the trends in area, production, and productivity of foodgrains in Maharashtra.
2. To estimate the growth rates of major foodgrain crops over the study period.
3. To analyze changes in cropping patterns and their implications for foodgrain production.
4. To assess the factors influencing foodgrain production trends in Maharashtra.
5. To suggest policy measures for sustainable growth in the foodgrain sector.

REVIEW OF LITERATURE

Numerous studies have examined the trends and performance of foodgrain production in Maharashtra from the perspectives of growth, productivity, instability, and cropping pattern changes.

Kalamkar (2013) analyzed agricultural growth and instability in Maharashtra and observed that although the state's agricultural sector experienced significant growth during the post-independence period, the progress was highly fluctuating. The study identified low irrigation coverage and rainfall variability as the major factors responsible for low productivity and instability in agricultural production. The author emphasized the need for technological innovations and irrigation expansion to achieve sustainable agricultural growth.

Daundkar and Pokharkar (2020) studied the trends in area, production, and productivity of major foodgrain crops in Western Maharashtra. Using exponential growth models, the study found considerable variations among foodgrain crops. While productivity exhibited a positive trend due to technological improvements, changes in cultivated area significantly influenced production levels. The study highlighted the importance of crop-specific strategies to sustain growth in foodgrain production.

Gajbhiye et al. (2019) examined growth and instability in agro-commodity production in Maharashtra for the period 1990–91 to 2012–13. Their findings revealed significant increases in the area, production, and productivity of wheat, pigeon pea (tur), and gram. The study further observed that production variability declined during the later period, indicating improvements in agricultural management and technology adoption.

Salunkhe et al. (2021) analyzed the growth and instability of chickpea cultivation in Maharashtra. The study reported positive annual growth rates in area, production, and productivity. However, significant instability persisted due to climatic uncertainties and dependence on rainfall. The authors suggested strengthening irrigation facilities and promoting improved varieties to enhance stability in chickpea production.

Gadakh et al. (2023) investigated district-wise growth trends in maize cultivation in Maharashtra over four decades. The study revealed substantial increases in maize area and production, reflecting the growing importance of maize in the state's foodgrain economy. Productivity improvements were attributed to better seed technology and improved crop management practices.

Recent studies by **Rahane et al. (2025)** examined the growth performance of cereals and pulses across different agro-climatic regions of Maharashtra. The findings indicated considerable regional disparities in area, production, and productivity growth. Vidarbha and Marathwada displayed higher growth in pulse cultivation, while Western Maharashtra demonstrated relatively stable productivity due to better irrigation infrastructure.

Studies conducted at district and regional levels have also highlighted the role of changing cropping patterns in shaping foodgrain production trends. The gradual shift from traditional cereals

toward pulses, oilseeds, and commercial crops has altered the composition of agricultural output in Maharashtra. These structural changes have significant implications for food security, farm income, and resource utilization.

Overall, the literature suggests that foodgrain production in Maharashtra has experienced positive growth over time; however, the growth process has been uneven across crops and regions. Climatic variability, irrigation availability, technological adoption, and changes in cropping patterns continue to influence the performance of the foodgrain sector.

RESEARCH METHODOLOGY

The present study is based entirely on secondary data collected from published sources. Data relating to area, production, and productivity of foodgrain crops in Maharashtra is obtained from:

1. Directorate of Economics and Statistics (DES), Government of Maharashtra.
2. Season and Crop Reports, Government of Maharashtra.
3. Statistical Abstract of Maharashtra State.
4. Socio-Economic Review of Maharashtra.
5. Directorate of Economics and Statistics, Government of India.
6. Ministry of Agriculture and Farmers Welfare, Government of India.
7. Relevant research articles, reports, and publications.

The study may cover the period from 2020–21 to 2024–25. To estimate growth in area, production, and productivity, the percentage change function will be used to analyze changes in foodgrain area, production, and productivity over time. Also, for descriptive statistical analysis percentage function will be used.

1) Trends in Area under Foodgrains in Maharashtra

The area under foodgrains in Maharashtra reflects important structural changes in the state's agricultural economy over time. It is influenced by rainfall variability, irrigation expansion, and cropping pattern shifts toward cash crops. Despite fluctuations, foodgrains remain a key component of the state's food security system. The following table no.1 shows the trend in area under foodgrain crop in Maharashtra during a period of 2020-21 to 2024-25.

Table no: 1 : Trends in Area under foodgrains in Maharashtra

(Area in '000' hect.)

Year	Cereals	% Change	pulses	% Change	foodgrains	% Change
2020-21	7,079	-	4,595	-	11,674	-
% to Foodgrains	60.63		39.36		100	
2021-22	7,052	-0.38	4,821	4.91	11,873	1.7
% to Foodgrains	59.39		40.60		100	
2022-23	6,384	-9.47	5,023	4.19	11,407	-3.92
% to Foodgrains	55.96		44.03		100	
2023-24	6,338	-0.72	4,450	-11.4	10,787	-5.43
% to Foodgrains	58.75		41.25		100	
2024-25	6,750	6.5	4,987	12.06	11,736	8.79
% to Foodgrains	57.51		42.49		100	

Source: Maharashtra Economic Survey Report of the 2023-24 and 2025-26

The above table presents the trends in area under cereals, pulses, and total foodgrains in Maharashtra during the period 2020–21 to 2024–25. The data reveal notable fluctuations in cropping patterns and the relative importance of cereals and pulses within the state's foodgrain sector.

The total area under foodgrains increased marginally from 11,674 thousand hectares in 2020–21 to 11,873 thousand hectares in 2021–22, registering a growth of 1.70 percent. However, the area declined to 11,407 thousand hectares in 2022–23 (-3.92%) and further to 10,787 thousand hectares in 2023–24 (-5.43%). A significant recovery was observed in 2024–25 when the area expanded to 11,736 thousand hectares, recording a growth of 8.79 percent over the previous year. This pattern indicates that climatic variability, rainfall fluctuations, and market conditions may have influenced farmers' cropping decisions. The sharp recovery in 2024–25 suggests improved agricultural conditions and renewed emphasis on foodgrain cultivation.

The area under cereals declined from 7,079 thousand hectares in 2020–21 to 6,338 thousand hectares in 2023–24. The highest decline was observed in 2022–23, when cereal acreage contracted by 9.47 percent. Although cereals recovered to 6,750 thousand hectares in 2024–25, the area remained below the 2020–21 level. The declining trend in cereal cultivation may be attributed to shift towards high-value crops and pulses, changing rainfall patterns, increasing production costs, better profitability from alternative crops etc. factors. Despite the decline, cereals continued to occupy the largest share of foodgrain area throughout the period of 2020-21 to 2024-05.

The area under pulses showed relatively better performance. It increased from 4,595 thousand hectares in 2020–21 to 5,023 thousand hectares in 2022–23. Although the area declined sharply by 11.40 percent in 2023–24, it rebounded strongly in 2024–25 with a growth of 12.06 percent, reaching 4,987 thousand hectares. The growth in pulse cultivation reflects due to rising domestic demand for protein-rich food, government support through Minimum Support Prices (MSP), lower water requirements compared to cereals, greater suitability under rainfed conditions prevalent in Maharashtra etc. factors.

The share of cereals in total foodgrain area declined from 60.63 percent in 2020–21 to 57.51 percent in 2024–25. Conversely, the share of pulses increased from 39.36 percent to 42.49 percent during the same period. This shift suggests gradual diversification within the foodgrain sector, with farmers allocating more land to pulses due to their economic and agronomic advantages. In short we observed that, total foodgrain area exhibited fluctuations but recovered strongly in 2024–25. Cereals remained dominant but experienced a long-term decline in area. Pulses demonstrated greater resilience and an increasing share in foodgrain cultivation. The cereal share declined by about 3.12 percentage points, while the pulse share increased by approximately 3.13 percentage points during the study period. Maharashtra's foodgrain sector appears to be gradually shifting towards pulse cultivation, reflecting changing market demand and climatic considerations.

2) Trends in Production of Foodgrains in Maharashtra

The production of foodgrains in Maharashtra is an important indicator of the state’s agricultural performance and food security. It is shaped by factors such as monsoon behavior, irrigation facilities, input use, and technological adoption. The following table no. 2 shows the trend in production of foodgrain crop in Maharashtra during a period of 2020-21 to 2024-25.

Table no. 2: Trends in Production of Foodgrains in Maharashtra

(Production in '000' MT)

Year	cereals	% Change	pulses	% Change	Foodgrains	% Change
2020-21	12,201	-	4,444	-	16,645	-
% to Foodgrains	73.30		26.69		100	
2021-22	12,062	-1.13	4,887	9.96	16,949	1.82
% to Foodgrains	71.16		28.83		100	
2022-23	12,421	2.97	4,398	-10	16,818	-0.77
% to Foodgrains	73.85		26.15		100	
2023-24	10,629	-14.42	4,123	-6.25	14,752	-12.28
% to Foodgrains	72.05		27.94		100	
2024-25	13,468	26.7	5,274	27.91	18,742	27.05
% to Foodgrains	71.85		28.14		100	

Source: Maharashtra Economic Survey Report of the 2023-24 and 2025-26

The table no 2 presents the trends in production of cereals, pulses, and total foodgrains in Maharashtra during the period 2020–21 to 2024–25. The data indicate significant fluctuations in foodgrain output, reflecting the influence of climatic conditions, productivity changes, and cropping patterns.

The total production of foodgrains increased from 16,645 thousand metric tonnes (MT) in 2020–21 to 16,949 thousand MT in 2021–22, registering a growth of 1.82 percent. Production remained relatively stable in 2022–23 at 16,818 thousand MT, showing a marginal decline of 0.77 percent. However, a substantial decline occurred in 2023–24 when production fell to 14,752 thousand MT, representing a decrease of 12.28 percent. In 2024–25, foodgrain production recovered dramatically to 18,742 thousand MT, recording a growth of 27.05 percent, the highest increase during the study period. The sharp fluctuations suggest that Maharashtra's foodgrain production remains highly sensitive to monsoon performance and weather-related factors.

Cereal production accounted for the largest share of foodgrain output throughout the study period. Production declined marginally from 12,201 thousand MT in 2020–21 to 12,062 thousand MT in 2021–22 (-1.13%). It increased to 12,421 thousand MT in 2022–23 (2.97%) before declining sharply to 10,629 thousand MT in 2023–24 (-14.42%). A strong recovery occurred in 2024–25, with production rising to 13,468 thousand MT, registering a remarkable growth of 26.70 percent. The decline in 2023–24 may be attributed to adverse weather conditions, while the substantial increase in 2024–25 indicates improved rainfall and favorable cultivation conditions.

Pulse production exhibited greater variability than cereals during the study period. Production increased significantly from 4,444 thousand MT in 2020–21 to 4,887 thousand MT in 2021–22, recording a growth of 9.96 percent. However, it declined to 4,398 thousand MT in 2022–23 (-10.00%) and further to 4,123 thousand MT in 2023–24 (-6.25%). In 2024–25, pulse production recovered strongly to 5,274 thousand MT, showing a growth of 27.91 percent. The strong growth in pulse production during 2024–25 highlights the increasing importance of pulses in Maharashtra's agricultural economy and reflects improvements in both area and productivity.

Cereals consistently contributed more than 70 percent of total foodgrain production, while pulses accounted for around 26–29 percent. The share of cereals declined slightly from 73.30 percent in 2020–21 to 71.85 percent in 2024–25. Conversely, the share of pulses increased from 26.69 percent to 28.14 percent during the same period. This trend indicates a gradual strengthening of pulses within the state's foodgrain production structure.

When compared with the area statistics presented in Table 1, the increase in production during 2024–25 (27.05 percent) was substantially higher than the increase in area under foodgrains (8.79 percent). This suggests a significant improvement in crop productivity, likely due to favorable weather conditions, improved seed varieties, better farm management practices, and enhanced technological adoption. In short we observed that, foodgrain production in Maharashtra showed considerable year-to-year fluctuations. The most significant decline occurred in 2023–24, when total production fell by 12.28 percent. A strong recovery was observed in 2024–25, with total foodgrain production increasing by 27.05 percent. Cereals remained the dominant contributor, accounting for over 70 percent of total foodgrain production. Pulses demonstrated increasing importance, with their share rising from 26.69 percent to 28.14 percent. Production growth in 2024–25 exceeded area growth, indicating improved agricultural productivity.

3) Trends in Yield/Productivity if Foodgrains in Maharashtra

The yield or productivity of foodgrains in Maharashtra is a key measure of agricultural efficiency and technological progress in the state. It reflects the combined impact of improved seed varieties, irrigation expansion, fertilizer use, and farm mechanization. The following table no. 3 shows the trend in yield or productivity of foodgrain crop in Maharashtra during a period of 2020-21 to 2024-25

Table no.3: Trends in Yield/Productivity of Foodgrains in Maharashtra

(Yield in kg per hect.)

Year	Cereals	% Change	pulses	% Change	foodgrains	% Change
2020-21	1,724	-	967	-	1,426	-
% to Foodgrains	120.89		67.81			
2021-22	1,710	-0.81	1,014	4.86	1,427	0.07
% to Foodgrains	119.83		71.05			
2022-23	1,945	13.74	876	-13.6	1,474	3.29
% to Foodgrains	131.95		59.43			
2023-24	1,677	-13.77	927	5.82	1,368	-7.19
% to Foodgrains	122.58		67.76			
2024-25	1,995	18.96	1,058	14.13	1,597	16.73
% to Foodgrains	124.92		66.24			

Source: Maharashtra Economic Survey Report of the 2023-24 and 2025-26

The table no 3 presents the trends in productivity (yield) of cereals, pulses, and total foodgrains in Maharashtra during the period 2020–21 to 2024–25. Productivity is measured in kilograms per hectare (kg/ha) and serves as an important indicator of agricultural efficiency. The data reveal considerable fluctuations in productivity across different years, reflecting the influence of weather conditions, technological adoption, irrigation facilities, and crop management practices.

The productivity of foodgrains increased marginally from 1,426 kg/ha in 2020–21 to 1,427 kg/ha in 2021–22, recording a growth of only 0.07 percent. It further increased to 1,474 kg/ha in 2022–

23, registering a growth of 3.29 percent. However, productivity declined significantly to 1,368 kg/ha in 2023–24, reflecting a decrease of 7.19 percent. A strong recovery was observed in 2024–25 when foodgrain productivity reached 1,597 kg/ha, recording a substantial growth of 16.73 percent over the previous year.

Overall, foodgrain productivity increased by approximately 12 percent between 2020–21 and 2024–25, indicating long-term improvement in agricultural efficiency despite short-term fluctuations.

Cereal productivity remained consistently higher than the overall foodgrain average throughout the study period. The yield of cereals declined marginally from 1,724 kg/ha in 2020–21 to 1,710 kg/ha in 2021–22 (-0.81%). A remarkable increase occurred in 2022–23 when productivity reached 1,945 kg/ha, representing a growth of 13.74 percent. However, it declined sharply to 1,677 kg/ha in 2023–24 (-13.77%). In 2024–25, cereal productivity recovered strongly to 1,995 kg/ha, recording a growth of 18.96 percent, the highest productivity level during the study period. The increase in cereal productivity suggests improvements in crop management practices, better seed varieties, and favorable climatic conditions during certain years.

Pulse productivity exhibited greater instability compared to cereals. Yield increased from 967 kg/ha in 2020–21 to 1,014 kg/ha in 2021–22, registering a growth of 4.86 percent. However, it declined sharply to 876 kg/ha in 2022–23 (-13.60%), indicating adverse production conditions. Productivity improved slightly to 927 kg/ha in 2023–24 (5.82%) and increased substantially to 1,058 kg/ha in 2024–25, recording a growth of 14.13 percent. Despite the improvement in recent years, pulse productivity remained considerably lower than cereal productivity, highlighting the need for technological interventions and improved cultivation practices in pulse crops.

Throughout the study period, cereal productivity remained significantly higher than pulse productivity. In 2024–25, cereal productivity stood at 1,995 kg/ha, while pulse productivity was only 1,058 kg/ha, indicating that cereals yielded nearly 1.9 times more output per hectare than pulses.
This difference can be attributed to greater irrigation coverage in cereal cultivation, wider adoption of high-yielding varieties, better technological support and higher investment in cereal production compared to pulses etc. factors

When Tables 1 and 2 are considered together, it becomes evident that the substantial increase in foodgrain production during 2024–25 was driven not only by expansion in cultivated area but also by significant improvements in productivity. While foodgrain area increased by 8.79 percent, production increased by 27.05 percent, and productivity increased by 16.73 percent. This indicates that productivity enhancement played a major role in boosting foodgrain output during the year. In short, we observed that, the Foodgrain productivity increased from 1,426 kg/ha in 2020–21 to 1,597 kg/ha in 2024–25. The highest decline in overall productivity occurred in 2023–24 (-7.19%). Cereals consistently recorded higher productivity than pulses. Cereal productivity reached its highest level (1,995 kg/ha) in 2024–25. Pulse productivity improved to 1,058 kg/ha in 2024–25 but remained substantially lower than cereals. The strong growth in foodgrain production during 2024–25 was largely supported by improvements in productivity.

CONCLUSION

The analysis indicates a structural change in Maharashtra's foodgrain cultivation pattern. While cereals continue to occupy the major share of cultivated area, their dominance has gradually weakened. Pulses have emerged as a more attractive option for farmers due to better profitability, lower water requirements, and supportive government policies. The strong recovery in foodgrain area during 2024–25 highlights the sector's resilience and potential for sustainable growth. Policymakers should continue promoting pulse cultivation alongside productivity enhancement measures in cereals to ensure food security and agricultural sustainability in Maharashtra.

The analysis reveals that foodgrain production in Maharashtra experienced significant fluctuations during 2020–21 to 2024–25, largely influenced by climatic conditions and productivity changes. While cereals continued to dominate the production structure, pulses gradually strengthened their contribution. The remarkable recovery in 2024–25 demonstrates the resilience of Maharashtra's

agricultural sector and highlights the importance of favorable weather, technological advancements, and supportive agricultural policies. Sustained efforts to improve productivity, irrigation facilities, and climate-resilient farming practices will be essential for ensuring long-term food security and agricultural growth in the state.

The analysis indicates that productivity has been a crucial determinant of foodgrain production in Maharashtra. Although productivity levels fluctuated due to climatic and environmental factors, the overall trend shows gradual improvement. Cereals continued to exhibit superior productivity performance, while pulses showed slower but positive progress. The remarkable increase in productivity during 2024–25 underscores the importance of favorable weather conditions, improved agricultural technologies, and effective crop management practices. Future agricultural policies should focus on narrowing the productivity gap between cereals and pulses through research, extension services, irrigation development, and the dissemination of improved crop varieties.

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