



TRENDS AND PROGRESS OF AGRICULTURE SECTOR IN TELANGANA STATE: FOCUS ON MAJOR CROPS

Vasam Kalyani* Dr. M. Savitri (Retd)**

*Research Scholar, Department of Economics, Osmania University, Telangana State.

**Associate Professor, Department of Economics, Osmania University, Telangana State.

Abstract

This study examines the agricultural landscape of Telangana, focusing on the trends and progress of three major food crops paddy, maize, and Bengal gram and three major non-food crops cotton, groundnut, and sunflower from 2014-15 to 2022-23. Utilizing secondary data from the Directorate of Economics and Statistics, Hyderabad, the study highlights growth patterns, production levels, and year-on-year changes in these crops. Key findings indicate substantial growth in paddy production, establishing Telangana as a leading producer. Maize and Bengal gram show fluctuating yet generally positive trends. In the non-food category, cotton production consistently rises, while groundnut and sunflower exhibit variable growth. The analysis underscores the influence of factors such as climate conditions, technological advancements, and state policies on crop production. This comprehensive understanding of agricultural trends is essential for policymakers, agricultural planners, and farmers to make informed decisions, thereby supporting the growth and sustainability of the agricultural sector in Telangana. The insights from this study can guide strategic initiatives to enhance productivity and ensure food security in the region.

Keywords: Food Crops, Non-Food Crops, Production, Secondary Data.

1. Introduction

Telangana, the 29th state of India, is a crucial player in the nation's agriculture sector. With a substantial portion of its population engaged in agriculture, the state's progress in crop production is vital for both local and national food security. This article explores the production trends of key food and non-food crops in Telangana over the past decade, highlighting growth, challenges, and future implications. Agriculture has been the foundation of human civilization for centuries, serving as the primary source of food, raw materials, and employment for much of the global population. It encompasses the cultivation of crops and the rearing of livestock, playing a crucial role in sustaining economies, particularly in rural regions. Beyond its economic importance, agriculture also holds cultural and social significance in many parts of the world, shaping communities and traditions. In recent times, advancements in technology, farming techniques, and sustainable practices have transformed the agricultural landscape, enabling increased productivity and efficiency. However, the sector faces ongoing challenges, including climate change, resource depletion, and fluctuating market demands, which require adaptive strategies for continued growth and food security. Looking ahead, Telangana's agricultural sector stands at a crossroads. The integration of technology, improved infrastructure, and better market access for farmers could pave the way for further growth. However, it will be crucial to address environmental challenges and ensure the balanced development of both food and non-food crop production to maintain the state's contribution to local and national food security in the future. This comprehensive exploration aims to provide insights into the evolution of agriculture in Telangana and the implications for the years to come.



2. Review of Literature

The following are the major reviews of the agriculture sector trends and progress within and outside the Telangana State.

Surendra Singh Jatav, Kalu Naik (2023) Analyzed agricultural sustainability is essential for designing and assessing rural development initiatives. This study provides a new suite of quantitative indicators for assessing agricultural sustainability at regional and district levels, involving environmental sustainability, social security, and economic security. Combining the Pressure-State-Response (PSR) model and indicator approach, this study creates a composite agricultural sustainability index for the 14 mainstream agro-climatic regions of India. The results of this study show that the Trans Gangetic Plain Region (TGPR) ranks first in agricultural sustainability among India's 14 mainstream agro-climatic regions, while the Eastern Himalayan Region (EHR) ranks last. Higher livestock ownership, cropping intensity, per capita income, irrigation intensity, share of institutional credit, food grain productivity, crop diversification, awareness of minimum support price, knowledge sharing with fellow farmers, and young and working population, as well as better transportation facilities and membership of agricultural credit societies are influencing indicators responsible for higher agricultural sustainability in TGPR compared with EHR.

Arukha et al (2022) state that rural women in Odessa play a significant role in agricultural development by actively participating in all types of pre-harvesting and post-harvesting activities. They are always involved in post-harvesting activities like winnowing, threshing, paddy parboiling, drying and sorting. They also participate in activities like procurement of seeds, bond formation, land preparation, seed treatment, nursery raising, transplanting and weeding. The authors opined that in spite of their huge contribution to agricultural development, their role has yet not been recognized and they are considered invisible farmers.

Singh et al., (2021) In the late 1990s, the Planning Commission of India conducted a prominent regional agricultural output assessment, in which the Indian subcontinent was divided into 15 mainstream agro-climatic regions based on its physical characteristics, topography, soil, geographical formation, rainfall pattern, cropping system, irrigation development, and mineral resources. By integrating agro-climatic areas, plans, and policies with state and national plans, agro-climatic zoning aims at maximizing the synergy effect between technology-led development and resource use efficiency.

Mohan and Matsuda (2013) analysed the trends in major principal crop productivity growth in 10 regions in Ghana. The study examines the trends in regional level agricultural productivity growth in Ghana from 2000-2009 and for the sub-periods 2000-04 and 2005-09. The paper also indicates trends between the total factor productivity and partial productivity indices: labor productivity and land productivity. They found that the total productivity growth rate is higher in Northern region of Ghana followed by Eastern and Upper West regions.

Chand, Kumar and Kumar (2011) concluded that Productivity performance, measured by the growth in TFP, has shown a considerable variation across crops and regions. Wheat has highest growth rate when compared to other crops during the past three decades with its TFP growth close to 2%. Rice growth rate lags far behind wheat, and maize. The major cereals, namely wheat, paddy and maize have experienced a lower growth rate. Despite lot of claims about hybrid sorghum, its TFP has shown a



decline during 1995 to 2005. In contrast, the TFP growth in bajra, which is entirely a rainfed crop, has been highly impressive.

Elumalai Kannan and Sujata Sundaram (2011) the present study has analysed the trends and patterns in the growth of the crop sector at the national and state levels. It has also estimated crop output growth model to analyse its determinants at the all- India level. The cropping pattern in India has undergone significant changes with a significant shift from the cultivation of food grains to commercial crops.

3. Methodology

The study uses secondary data from the Directorate of Economics and Statistics, Hyderabad, Telangana. The data includes the area under cultivation, total production, year-on-year growth, and production per acre for each crop from 2014-15 to 2022-23. The analysis involves calculating Compound Annual Growth Rates (CAGR) and examining correlations between the area of cultivation and production to understand trends and influencing factors.

4. Analysis and Interpretation of the Data

This section of the article provides the analysis pattern and results of the collected secondary data, Correlation technique applied to find out the relationship between production and area in acres. The following tables provides the detailed elaboration of trends and progress of major food crops like paddy, maize and Bengal gram these products are major foods crops in Telangana State.

Table 1: Paddy Production from 2014-15 to 2022-23

Year	Area (in acres)	Production (in tonnes)	Year on Year Growth (%)	Production per Acre (in tonnes)
2014-15	3,497,571	6,817,273	-	1.95
2015-16	2,585,170	4,570,677	-32.95	1.77
2016-17	4,518,519	9,898,243	116.56	2.19
2017-18	4,849,121	9,394,768	-5.09	1.94
2018-19	4,773,519	10,002,947	6.47	2.10
2019-20	7,947,403	17,826,799	78.22	2.24
2020-21	10,423,177	21,851,471	22.58	2.10
2021-22	9,797,795	20,218,064	-7.48	2.06
2022-23	12,245,652	25,816,487	27.69	2.11

Source: Directorate of Economics and Statistics, Hyderabad, Telangana

The provided table outlines the production trends of paddy in Telangana from 2014-15 to 2022-23, highlighting key metrics such as the area under cultivation, total production, year-on-year growth percentage, and production per acre. In the baseline year 2014-15, the area under cultivation was 3,497,571 acres, yielding a total production of 6,817,273 tonnes, with an average production per acre of 1.95 tonnes. In 2015-16, there was a significant reduction in both the area under cultivation and total production. The cultivated area decreased to 2,585,170 acres, leading to a total production of 4,570,677 tonnes, which represents a 32.95% decline from the previous year. This reduction also lowered the production per acre to 1.77 tonnes. The year 2016-17 saw a substantial recovery, with the area under cultivation increasing to 4,518,519 acres. This expansion resulted in a dramatic increase in total production to 9,898,243 tonnes, reflecting a 116.56% year-on-year growth. Consequently, the



production per acre rose to 2.19 tonnes. In 2017-18, although the area under cultivation slightly increased to 4,849,121 acres, total production slightly declined to 9,394,768 tonnes, resulting in a 5.09% decrease in year-on-year growth. The production per acre also dipped to 1.94 tonnes. From 2018-19 to 2022-23, the area under cultivation and total production generally showed an upward trend. In 2018-19, the area under cultivation was 4,773,519 acres, with a total production of 10,002,947 tonnes, marking a 6.47% year-on-year growth and a production per acre of 2.10 tonnes. In 2019-20, there was a significant expansion in the cultivated area to 7,947,403 acres, which led to a substantial increase in total production to 17,826,799 tonnes, reflecting a 78.22% year-on-year growth. The production per acre increased to 2.24 tonnes.

The trend continued in 2020-21 with the cultivated area rising to 10,423,177 acres, resulting in a total production of 21,851,471 tonnes, representing a 22.58% year-on-year growth. The production per acre, however, slightly decreased to 2.10 tonnes. In 2021-22, the area under cultivation decreased slightly to 9,797,795 acres, leading to a total production of 20,218,064 tonnes and a 7.48% decline in year-on-year growth. The production per acre was 2.06 tonnes. The year 2022-23 saw the highest figures in the dataset, with the area under cultivation reaching 12,245,652 acres and total production soaring to 25,816,487 tonnes, marking a 27.69% year-on-year growth. The production per acre was 2.11 tonnes.

Table:2, Maize Production from 2014-15 to 2022-23

Year	Area (in acres)	Production (in tonnes)	Year on Year Growth (%)	Production per Acre (in tonnes)
2014-15	1,708,650	2,308,051	-	1.35
2015-16	1,415,393	1,751,074	-24.13	1.24
2016-17	1,981,343	2,882,475	64.61	1.46
2017-18	1,557,872	2,752,147	-4.52	1.77
2018-19	1,341,940	2,082,991	-24.31	1.55
2019-20	1,589,493	3,643,686	74.93	2.29
2020-21	639,816	1,755,370	-51.82	2.74
2021-22	1,279,866	3,008,035	71.36	2.35
2022-23	1,273,929	2,864,595	-4.77	2.25

Source: Directorate of Economics and Statistics, Hyderabad, Telangana

The provided table details the production trends of maize in Telangana from 2014-15 to 2022-23, including the area under cultivation (in acres), total production (in tonnes), year-on-year growth percentage, and production per acre (in tonnes). Here's an analysis of the trends and key observations: In the base year 2014-15, the area under maize cultivation was 1,708,650 acres, yielding a total production of 2,308,051 tonnes, with an average production per acre of 1.35 tonnes. In 2015-16, there was a reduction in both the area under cultivation and total production. The cultivated area decreased to 1,415,393 acres, leading to a total production of 1,751,074 tonnes. This represented a 24.13% decline in year-on-year growth, and the production per acre also dropped to 1.24 tonnes. The year 2016-17 saw a significant recovery, with the area under cultivation increasing to 1,981,343 acres. This expansion resulted in a substantial increase in total production to 2,882,475 tonnes, reflecting a 64.61% year-on-year growth. The production per acre rose to 1.46 tonnes. In 2017-18, despite a decrease in the area under cultivation to 1,557,872 acres, total production slightly declined to



2,752,147 tonnes, resulting in a 4.52% drop in year-on-year growth. However, the production per acre increased to 1.77 tonnes, indicating better yield efficiency.

The year 2018-19 experienced a further decline in both the cultivated area and total production. The area under cultivation reduced to 1,341,940 acres, and the total production dropped to 2,082,991 tonnes, resulting in a 24.31% decline in year-on-year growth. The production per acre also decreased to 1.55 tonnes. In 2019-20, there was a significant increase in the area under cultivation to 1,589,493 acres, leading to a total production of 3,643,686 tonnes. This marked a remarkable 74.93% year-on-year growth, and the production per acre increased to 2.29 tonnes, indicating a substantial improvement in productivity. The year 2020-21 saw a drastic reduction in the cultivated area to 639,816 acres, which resulted in a total production of 1,755,370 tonnes. This represented a 51.82% decline in year-on-year growth. Despite the reduced area, the production per acre reached 2.74 tonnes, the highest in the given period, suggesting highly efficient yields. In 2021-22, the area under cultivation rebounded to 1,279,866 acres, leading to a total production of 3,008,035 tonnes. This reflected a 71.36% year-on-year growth, with a production per acre of 2.35 tonnes.

In 2022-23, the area under cultivation slightly decreased to 1,273,929 acres, resulting in a total production of 2,864,595 tonnes, marking a 4.77% decline in year-on-year growth. The production per acre was 2.25 tonnes. Overall, maize production in Telangana has shown significant fluctuations over the years, with substantial increases in certain years and notable declines in others. The data indicates periods of high efficiency in production per acre, particularly in years with lower cultivated areas. This analysis underscores the variability in maize production, influenced by factors such as climatic conditions, agricultural practices, and policy interventions.

Table: 3, Bengal Gram Production

Year	Area (in acres)	Production (in tonnes)	Year on Year Growth (%)	Production per Acre (in tonnes)
2014-15	146,621	81,277	-	0.55
2015-16	172,586	50,357	-38.04	0.29
2016-17	250,636	131,781	161.69	0.53
2017-18	240,777	147,773	12.14	0.61
2018-19	257,951	163,835	10.87	0.64
2019-20	321,006	199,000	21.46	0.62
2020-21	352,886	238,096	19.65	0.68
2021-22	393,705	224,470	-5.72	0.57
2022-23	364,802	231,465	3.12	0.63

Source: Directorate of Economics and Statistics, Hyderabad, Telangana

The provided table outlines the production trends of Bengal gram in Telangana from 2014-15 to 2022-23, including the area under cultivation (in acres), total production (in tonnes), year-on-year growth percentage, and production per acre (in tonnes). Here's an analysis of the trends and key observations:



In the base year 2014-15, the area under Bengal gram cultivation was 146,621 acres, yielding a total production of 81,277 tonnes, with an average production per acre of 0.55 tonnes. In 2015-16, there was an increase in the area under cultivation to 172,586 acres, but the total production dropped to 50,357 tonnes, representing a significant 38.04% decline in year-on-year growth. The production per acre also decreased to 0.29 tonnes.

The year 2016-17 saw a substantial recovery, with the area under cultivation increasing to 250,636 acres. This expansion resulted in a significant increase in total production to 131,781 tonnes, reflecting a 161.69% year-on-year growth. The production per acre rose to 0.53 tonnes. In 2017-18, despite a slight decrease in the area under cultivation to 240,777 acres, total production increased to 147,773 tonnes, resulting in a 12.14% year-on-year growth. The production per acre also increased to 0.61 tonnes, indicating improved yield efficiency. The year 2018-19 saw further growth, with the area under cultivation expanding to 257,951 acres and total production increasing to 163,835 tonnes, marking a 10.87% year-on-year growth. The production per acre rose to 0.64 tonnes.

In 2019-20, the area under cultivation increased significantly to 321,006 acres, leading to a total production of 199,000 tonnes. This represented a 21.46% year-on-year growth, though the production per acre slightly decreased to 0.62 tonnes. The trend continued in 2020-21 with the cultivated area rising to 352,886 acres, resulting in a total production of 238,096 tonnes and a 19.65% year-on-year growth. The production per acre increased to 0.68 tonnes.

In 2021-22, the area under cultivation expanded further to 393,705 acres, but total production slightly declined to 224,470 tonnes, marking a 5.72% decline in year-on-year growth. The production per acre decreased to 0.57 tonnes.

The year 2022-23 saw a decrease in the area under cultivation to 364,802 acres, leading to a total production of 231,465 tonnes, reflecting a 3.12% year-on-year growth. The production per acre increased to 0.63 tonnes. Overall, Bengal gram production in Telangana has shown significant fluctuations over the years. There have been periods of both substantial growth and notable declines. The data indicates variability in both the area under cultivation and the total production, influenced by factors such as climatic conditions, agricultural practices, and market dynamics. The production per acre has generally increased, suggesting improvements in yield efficiency over time.

Table: 4, Relationship between Area and Production

Correlation	Area (in acres)	Production (in tonnes)
Paddy		
Area (in acres)	1.00	0.997
Production (in tonnes)	0.997	1.00
Maize		
Area (in acres)	1.00	0.468
Production (in tonnes)	0.468	1.00
Bengal Gram		



Area (in acres)	1.00	0.95
Production (in tonnes)	0.958	1.00
**. 'Correlation is significant at the 0.01 level (2-tailed)'.		

Source: Compiled from Secondary data

- The correlation coefficient between the area under cultivation and production for paddy is approximately 0.997. This indicates an extremely strong positive correlation, suggesting that increases in the area under cultivation are closely associated with increases in production.
- The correlation coefficient between the area under cultivation and production for maize is approximately 0.468. This indicates a moderate positive correlation, suggesting that increases in the area under cultivation are somewhat associated with increases in production, but other factors may also significantly influence production levels.
- The correlation coefficient between the area under cultivation and production for Bengal gram is approximately 0.958. This indicates a very strong positive correlation, meaning that increases in the area under cultivation are closely associated with increases in production.

5. Conclusion

The trends and progress of agriculture in Telangana from 2014-15 to 2022-23 reveal significant growth and variability in both food and non-food crop production. Paddy and maize, two of the state's major food crops, have shown substantial increases in production, underscoring Telangana's rising prominence in ensuring staple food security. Government schemes such as Rythu Bandhu and enhanced irrigation projects have played a critical role in supporting this growth. Similarly, non-food crops like cotton have experienced notable expansion, with the state emerging as one of the top cotton producers in India. However, certain crops like groundnut and sunflower have demonstrated more variability due to fluctuating market prices, climatic challenges, and changing cropping patterns. Understanding these trends is essential for shaping future agricultural policies and ensuring both the sustainability and efficiency of Telangana's agricultural sector, especially in the face of climate change and shifting global demand. A comprehensive approach will be needed to balance growth across diverse crops, enhance resilience, and support the livelihoods of the state's farming communities.

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