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An analytical study of agricultural productivity in Jharkhand

Dr. Aftab Alam
Assistant Professor, Faculty of Commerce, Karim City College, Jamshedpur, Jharkhand, India
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Abstract
The agricultural sector in Jharkhand is marked by low productivity, leading to a significantly high level of rural poverty. It is regrettable that there has been no meaningful enhancement in the economic conditions of the populace, as well as in rural infrastructure, which includes irrigation, water harvesting, rural connectivity, communication, storage, and marketing, among other elements. Agriculture in Jharkhand relies heavily on the monsoon, and the state has limited irrigation facilities.
In this article, we will provide an overview of the production landscape in Jharkhand, the challenges encountered in agriculture within the state, and suggest production methods aimed at boosting agricultural output. This paper seeks to illustrate that with organized development, agriculture has the capacity to evolve into one of the key profit-generating sectors for Jharkhand.

Keywords: Area, production, yield and growth of agriculture and climate smart agriculture etc

Introduction
Agriculture in India constitutes a crucial sector that underpins the national economy and supports the livelihoods of numerous individuals. This sector not only provides food and fiber but also plays a significant role in employment, cultural practices, and socio-economic development.
Jharkhand is acknowledged as an agrarian state, as a considerable segment of its rural population relies on agriculture for their income and sustenance, with rice, maize, and pulses being the main crops. Jharkhand is distinguished as one of the prominent vegetable producers in India. The most important vegetable crops grown in the state, ranked by the area they cover, include potato, tomato, lady finger, peas, cauliflower, brinjal, and cabbage. However, agricultural productivity often faces challenges due to natural constraints such as uneven terrain, poor soil fertility, and inadequate irrigation systems, with over 90% of the cultivated land depending on rainfall. Agriculture in Jharkhand is predominantly reliant on the monsoon season, and the state's irrigation facilities are notably limited.

Objective of Study
1. To acquire insight into the production landscape in Jharkhand.
2. To investigate the challenges associated with agriculture in Jharkhand.
3. To suggest production techniques designed to improve agricultural productivity.

Literature Review
Kumar, D., (2019) [1], Paddy is an essential staple food grain and represents a profitable opportunity for many farmers in Jharkhand. This crop significantly contributes to improving the economic status of farmers. The success of paddy farming is heavily dependent on soil fertility, climatic conditions, high-yield seed varieties, and irrigation facilities. As a result, rice production varies across different regions and even within districts. The climatic conditions in Jharkhand are favorable for rice cultivation.

Research Methodology
The research is founded on the examination of secondary data. The secondary data has primarily been sourced from the Ministry of Agriculture and Farmers Welfare - Government of India, the state government of Jharkhand, as well as various journals and online databases. We have ensured that the research study is straightforward and accessible.

About Jharkhand
Jharkhand is a state situated in eastern India. It was established from the southern region of Bihar on November 15, 2000. Jharkhand borders the states of Bihar to the north, Uttar Pradesh and Chhattisgarh to the west, Odisha to the south, and West Bengal to the east. The capital city of the state is Ranchi, while Dumka serves as the subcapital, and Jamshedpur is recognized as the largest and most significant industrial city in the state. The state covers an area of approximately 79,000 km^2, making it one of the smaller states in India by area, and is divided into several administrative units.

Brief profile of Agriculture in Jharkhand
Agriculture acts as the main support for 80% of the rural populace in Jharkhand. It is a crucial contributor to employment and serves as the primary means for income-generating activities. Despite a considerable number of farmers depending on traditional food crops for their sustenance, it is important to highlight that 51% of the agricultural Gross State Domestic Product originates from horticulture and livestock products. The total geographical area of the state spans 79.71 lakh hectares. Out of this area, 47.67% is allocated for cultivation, while 29.20% is forested. The average size of landholdings is 1.58 hectares. The state receives an average annual rainfall of 130 cm, which is nearly twice the national average for India. The principal crops grown in Jharkhand include paddy, coarse grains, maize, wheat, pulses, and oilseeds. The state also yields a diverse range of fruits such as mangoes, bananas, guavas, papayas, tomatoes, chilies, and various spices. Furthermore, minor forest products play a role in bolstering

the state's economy. Over the years, the agriculture and allied sectors have experienced a growth rate of around 13%.

Overview of the Production Scenario in Jharkhand

Gross State Value Added (GSVA) serves as an economic metric that measures the value of goods and services produced within a state. It is calculated by subtracting the costs of inputs and raw materials from the total output. Various agricultural changes related to the cultivation of different crops have been recorded numerous times in Jharkhand, making it a common phenomenon in the area. During the 2023-24 period, paddy production has increased to 1342.95 thousand hectares and 3201.05 thousand tonnes, in contrast to 855.08 thousand hectares and 1909.63 thousand tonnes in the 2022-23 period, concerning total cropped area and production. Similarly, wheat production has grown to 227.92 thousand hectares and 480.96 thousand tonnes in 2023-24, rising from 204.4 thousand hectares and 438.54 thousand tonnes in 2022-23, also in terms of total cropped area and production. The Gross State Value Added by Agriculture and Allied Activities at Constant (Base Year 2011-12) and Current Prices is detailed below:

Table 1: Gross State Value Added by Agriculture and Allied Activities at Constant (Base Year 2011-12) and Current Prices

Financial Year	GSVA (At Current Prices)	GSVA (At Constant Price) Base Year 2011-12	Growth Rate	Growth Rate (%)
2019-20	25043	13830	0	0
2020-21	27807	14747	917	6.63
2021-22	32047	15585	838	5.68
2022-23	26185	12860	-2725	-17.48
2023-24	29425	13441	581	4.517

Source: Directorate of Economics and Statistics, Government of Jharkhand

The Gross State Value Added (GSVA) at current prices has shown a more consistent upward trend, although there are some fluctuations. The increasing disparity between the two lines indicates that inflation has significantly contributed to the rise in the nominal value of agricultural output. These patterns are also crucial for effective land use planning. By analyzing the GSVA data and identifying growth trends and challenges in the agricultural sector, it is feasible to make well-informed decisions about land use strategies. As a result, there is an urgent requirement for this industry to investigate ways to improve the profitability and dependability of its operations.

Kharif Crops

Kharif crops are defined as those that are sown at the beginning of the monsoon season (usually June – July) and harvested at the end of the monsoon season (typically September – October). These crops are commonly known as monsoon crops. The main kharif crops consist of Paddy, Jowar, Bajra, Maize, and Ragi. Kharif crops depend on monsoon rainfall and are classified as short-duration crops. Below is a summary of the area, production, and yield of Kharif crops in Jharkhand:

Table 2: Scenario of Kharif Crops in Jharkhand

Year	2023-24			2024-25 (1st AE)			Increased/Decreased		
Crop	Area in 000-hec.	Production - 000 Tonnes	Yield - Kg/hec.	Area in 000-hec.	Production - 000 Tonnes	Yield - Kg/hec.	Area in 000-hec.	Production - 000 Tonnes	Yield - Kg/hec.
Paddy	1342.95	3201.05	2383.6	1548.66	4138.16	2672.12	205.71	937.11	288.52
Jowar	1.05	1.07	1017.67	1.93	3.02	1568.76	0.88	1.95	551.09
Bajra	0.36	0.28	775.3	0.84	0.6	719.72	0.48	0.32	-55.58
Maize	259.5	544.73	2099.15	252.77	542.84	2147.58	-6.73	-1.89	48.43
Ragi	31.51	34.06	1080.92	35.44	38.08	1073.08	3.93	4.02	-7.84

Source: jharkhand-economic-survey-2024-25/

Interpretation

1. The most extensive area cultivated among Kharif crops is paddy, encompassing 1548.66 thousand hectares, yielding 4138.16 thousand tonnes, and achieving a productivity of 2672.12 kg/hectare. This represents an increase of 205.71 thousand hectares, 937.11 thousand tonnes, and 288.52 kg/hectare compared to the previous year's figures of 1342.95 thousand hectares, 3201.05 thousand tonnes, and 2383.60 kg/hectare. In the state of Jharkhand, paddy accounts for over 82% of the total area cultivated under Kharif crops.
2. The second largest area is occupied by maize cultivation, encompassing 252.77 thousand hectares, yielding 542.84 thousand tonnes, and achieving a productivity of 2147.58 kg/hectare. This represents a decrease of -6.73 thousand hectares, -1.89 thousand tonnes, and an increase in yield of 48.43 kg/hectare compared to the previous year's figures of 259.5 thousand hectares, 544.73 thousand tonnes, and 2099.15 kg/hectare. Maize accounts for over 15% of the area dedicated to Kharif crops.
3. Among the various crops cultivated during the Kharif season, Ragi, Bajra, and Jowar stand out as the most significant in terms of area, production, and yield. This is evidenced by an increase of 3.93 thousand hectares, 4.02 thousand tonnes, and a decrease of 7.84 kg/hectare, along with an increase of 0.48 thousand hectares, 0.32 thousand tonnes, and a decline of 55.58 kg/hectare, as well as an increase of 0.88 thousand hectares, 1.95 thousand tonnes, and an increase of 551.09 kg/hectare compared to the previous year.

Ravi Crops

Rabi crops denote a particular category of crops that are sown in the winter season (typically October and November) and harvested in the spring season (generally

March and April). This group encompasses important crops like Wheat, Maize, Pulses, and oilseeds. Presented below is a summary of the area, production, and yield of Rabi crops in Jharkhand:

Table 3: Area, Production and Yield of Rabi Crops in Jharkhand

Year	2022-23			2023-24			Increased/Decreased		
Crop	Area in 000-hec.	Production - 000 Tonnes	Yield - Kg/hec.	Area in 000-hec.	Production - 000 Tones	Yield - Kg/hec.	Area in 000-hec.	Production - 000 Tonnes	Yield - Kg/hec.
Wheat	204.4	438.54	2145.52	227.92	480.96	2110.22	23.52	42.42	-35.3
Pulse	348.86	348.32	998.45	364	385.69	1059.6	15.14	37.37	61.15
Oilseeds	29.55	29.52	998.89	29.28	31.78	1085.41	-0.27	2.26	86.52
Maize	30.83	50	1621.96	9.94	20.55	2067.12	-20.89	-29.45	445.16

Source: jharkhand-economic-survey-2024-25

1. The most extensive area cultivated among Rabi crops is wheat, encompassing 227.92 thousand hectares, yielding 480.96 thousand tonnes, and producing 2110.22 kg/hectare. This represents an increase of 23.52 thousand hectares and 42.42 thousand tonnes, alongside a decrease of (35.30) kg/hectare compared to the previous year's figures of 204.4 thousand hectares, 438.54 thousand tonnes, and 2145.52 kg/hectare. Wheat accounts for over 36% of the total area cultivated for Rabi crops in the state of Jharkhand.
2. The second largest area is occupied by pulse crops, encompassing 364 thousand hectares, yielding 385.69 thousand tonnes, and achieving a productivity of 1059.60 kg/hectare. This represents an increase of 15.14 thousand hectares, 37.37 thousand tonnes, and 61.15 kg/hectare compared to the previous year's figures of 348.86 thousand hectares, 348.32 thousand tonnes, and 998.45 kg/hectare. Pulses account for over 57% of the area cultivated for the Ravi crop.
3. Among the various crops cultivated during the Rabi season, Oilseeds and Maize stand out as the most significant in terms of area, production, and yield. Although the area dedicated to pulses has diminished over the years, both production and yield have seen an increase of 2.26 thousand tonnes and 86.52 Kg/hectare, respectively. Conversely, while the area and production of oilseeds have decreased, the yield has experienced a slight decline.

Conclusion

The evaluation of the performance of the Agricultural sector in Jharkhand indicates that this sector plays a significant role in the advancement of Jharkhand’s economy, being a key factor in macroeconomic indicators. The main obstacles that have impeded the growth of both the agricultural sector and the overall economy in Jharkhand are the ongoing fluctuations among the primary contributors and sub-sectors of agriculture. To improve the sector's performance, it is essential for the government to diligently implement various input and output-oriented programs and initiatives established by both the central and state governments of Jharkhand. Diversifying the agricultural sector and promoting sustainable agricultural practices are crucial steps to address the persistent challenges. Continuous efforts to enhance infrastructure, adopt modern technologies, and carry out effective land reforms are essential for boosting productivity and sustainability in agriculture. The entire process of economic growth in Jharkhand is dependent on the dynamics of the agricultural sector.

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