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Agricultural Crisis in India: An Economic Assessment of Challenges and Outcomes

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Abstract:

Agriculture is very important for India because it gives livelihood to almost half of the population, but it only contributes around 17–18 percent to GDP. Even after many government schemes and new technology, the sector is still facing a lot of problems. This study, tries to look at the main financial and structural issues faced by farmers and how it affects rural life. The study is based on secondary data. Data about farm income, debt, and household spending is taken from NSSO Agricultural Household Surveys (2013, 2019 & 2021). Information on credit flow and institutional loans comes from RBI Agricultural Credit Statistics (2005–2024). Data about agricultural GDP, crop production, and growth rates comes from Economic Survey, and NITI Aayog reports (2022–23) give details about regional differences and policy effects. FAO and World Bank databases are used to compare yields with other countries. Together, this data helps understand both national and state-level trends in agriculture. To analyze the data, simple descriptive stats, trend analysis, regression, cost–benefit analysis, and income inequality measures are used. Trend and CAGR are used to see how production and income have changed from 2004–05 to 2023–24. Regression shows how farm income depends on cost of cultivation and credit access. Cost–benefit analysis checks how profitable major crops are. Gini coefficient is used to see how income is spread among different farmers. The results show that even though total food grain production increased from 182 million tonnes in 2004–05 to 320 million tonnes in 2022–23, farmers' income did not increase much. NSSO (2021) says about 45 per cent of households are in debt, and around 25 per cent earn less than their monthly expenses, which causes financial stress and sometimes migration. States like Punjab and Haryana, with better irrigation and MSP support, earn more, while Bihar, Odisha, and Jharkhand farmers earn less. Also, agriculture's share in GDP fell from 23.5 per cent in 2004–05 to 17 per cent in 2023–24, but still more than 40 per cent of people work in it, causing disguised unemployment and inequality. Climate change, irregular rain, and falling groundwater make things worse.

The study concludes that while programs like PM-KISAN, MSP, and crop insurance help a bit, bigger changes are needed in markets, infrastructure, and farming methods. More public investment in irrigation, storage, and agro-processing can reduce differences between states and increase income. To make agriculture strong and sustainable, India needs a mix of income support, better technology, and institutional reforms.

Keywords: Agricultural Crisis, Farmer Income, Debt, Productivity, Rural Economy.

Introduction

Agriculture has long been the backbone of the Indian economy, providing employment to nearly 42 per cent of the population and contributing substantially to the country's GDP and food security. Historically, India has witnessed remarkable transformations in agriculture, from the Green Revolution in the 1960s to modern technological interventions. While these initiatives enhanced production and ensured self-sufficiency in food grains, they also created new challenges such as regional disparities, overuse of chemical fertilizers, and dependence on irrigation. In recent decades, the sector has been grappling with a multifaceted crisis characterized by declining crop productivity, fragmentation of landholdings, rising input costs, and stagnating farm incomes. Studies by Singh (2018) and Kumar (2020) have highlighted

that inadequate access to institutional credit, high debt burdens, and inefficient market linkages have intensified economic vulnerability among small and marginal farmers.

Government reports, including the Economic Survey of India (2023), NITI Aayog reports (2022), and RBI agricultural statistics, indicate a worrying trend of farmer indebtedness and growing income inequality across rural households. According to NSSO (2021), a significant proportion of farmers are unable to cover production costs through sales revenue alone, leading to distress borrowing and rising rates of farmer suicides in some regions. Scholars such as Reddy (2019) and Sharma (2021) have emphasized that climatic variability, erratic monsoon patterns, and depleting groundwater resources further exacerbate the crisis, threatening both livelihoods and national food security. Analytical tools such as cost–benefit analysis, regression analysis, trend evaluation, and income inequality measures have been employed in these studies to quantitatively assess financial pressures, productivity trends, and disparities in income distribution among farming households.

Despite various government initiatives such as Minimum Support Price (MSP) schemes, crop insurance programs, and rural credit facilities, the outcomes remain uneven, with many small and marginal farmers continuing to face economic distress due to structural inefficiencies and market volatility. This study aims to provide a comprehensive economic assessment of the agricultural crisis in India by examining secondary data from government publications, NSSO surveys, RBI reports, and scholarly research. Through this analysis, the study seeks to identify the major causes of the crisis, understand it's economic and social consequences, and propose policy recommendations to ensure sustainable agricultural growth, reduce income disparities, and improve the resilience of farm households.

Research Methodology

This study is based on secondary data from some reliable sources like the Economic Survey of India (2023), NITI Aayog reports (2022), RBI agricultural statistics, NSSO surveys, FAO reports, and other research articles. A descriptive and analytical approach is used to understand the economic problems in agriculture. Cost–benefit analysis is used to see how profitable different crops are, regression analysis shows the relation between farm incomes and factors like input cost, credit availability, trend evaluation is used to check the change in production and productivity over time, and income inequality measures help in finding the difference in incomes among farmers. This study gives idea about the main reasons, financial pressures, and possible policy suggestions, and helps to understand the current situation of Indian agriculture.

Data Analysis

This section examines the agricultural crisis in India using Trend Analysis, CAGR, Regression Analysis, Cost–Benefit Ratios, and Gini Coefficient. The analysis uses secondary data from NSSO, RBI, Economic Survey, and FAO to evaluate farm income, credit, productivity, and inequality.

Tables 1: Trends in Agricultural GDP and Growth Rate

Years	Agricultural GDP (Crore)	Annual Growth Rate (%)
2004-05	6,50, 000	-
2010-11	8,70,000	3.8
2015-16	10,90,000	3.6
2020-21	12,80,000	3.2
2023-24	14,00,000	2.9

Source: Economic Survey of India (2023), NITI Aayog Reports

Table 1 show that agricultural GDP increased from 6.5 lakh crore in 2004–05 to 14 lakh crore in 2023–24, with a CAGR of 3.8 per cent. This growth is slower than industry and service sectors, which explains the

declining share of agriculture in GDP from 23.5 per cent to 17 per cent. The trend indicates that while production has increased, income growth for farmers has not kept pace due to structural inefficiencies, dependence on monsoon rainfall, and poor market access. Regional differences are evident; states like Punjab and Haryana show higher GDP growth, while Bihar and Odisha lag. The data highlight that increased output alone does not ensure higher farm income, emphasizing the need for policy reforms to enhance profitability and reduce disparities.

Table 2: Regression Analysis of Farm Income

Variable	Coefficient (B)	Std. Error	t-value	p-value
Intercept (a)	-15,500	4,800	-3.23	0.006
Cost of Cultivation (B_1)	1.625	0.05	32.50	<0.001
Credit Access (B_2)	0.152	0.03	5.07	0.0003

Source: Derived from NSSO Agricultural Household Surveys (2013, 2019, 2021) and RBI Agricultural Credit Statistics

Table 2 shows that regression coefficients are statistically significant, with p-values < 0.01. The intercept (-15,500) indicates potential baseline loss without input investment or credit. The coefficient for Cost of Cultivation (1.625) shows that each 1 increase in inputs raises farm income by 1.625. The Credit Access (0.152) coefficient indicates improved credit slightly boosts income, helping small and marginal farmers.

Table 3: Regression Model

Statistic	Value
R^2	0.975
Adjusted R^2	0.972
F-Statistic	1420
Prob (F- Statistic)	<0.001

Source: NSSO Agricultural Household Surveys (2013, 2019, 2021) and RBI Agricultural Credit Statistics

Table 3 shows that both Cost of Cultivation and Credit Access significantly influence farm income. The high R^2 value indicates that 97.5 per cent of income variation is explained by these factors. The intercept reflects potential income loss without inputs or credit. Regions with better access to resources, such as Punjab and Haryana, achieve higher farm incomes, demonstrating the importance of investment and institutional support.

Table 4: Institutional Credit Flow to Agriculture

Year	Institutional Credit (Crore)	Percentage change
2005-06	1,80,000	-
2010-11	4,60,000	155.5
2015-16	8,80,000	91.3
2020-21	14,00,000	59.1

2023-24	18,50,000	32.1

Source: RBI Agricultural Credit Statistics

Table 4 shows that institutional credit increased from 1.8 lakh crore to 18.5 lakh crore, with a CAGR of 15.1 per cent, reflecting government efforts to expand lending. However, only about 65 per cent of farmers access formal credit; the rest rely on informal, high-interest loans. Regional disparities persist, with Punjab and Maharashtra receiving more credit than Bihar and Odisha. Despite the increase, many smallholders face persistent debt stress, showing that credit expansion alone is insufficient without proper allocation and supportive infrastructure.

Table 5: Cost-Benefit Ratio of Major Crops (2023-24)

Crops	Average Cost (ha)	Gross Return (ha)	CBR
Paddy	65,000	84,500	1:1.30
Wheat	58,000	75,000	1:1.29
Maize	46,000	59,000	1:1.28
Cotton	74,000	89,000	1:1.20
Pulses	42,000	47,500	1:1.13

Source: NSSO Agricultural Household Survey (2021), Economic Survey (2022–23)

Table 5 shows that major crops have narrow profit margins, with CBR ranging from 1:1.13 for pulses to 1:1.30 for paddy. Paddy and wheat are most profitable due to MSP support, while pulses and cotton earn less. Rising input costs reduce net returns, particularly for small and marginal farmers. The analysis highlights the need for crop diversification, better market access, and price stabilization to improve profitability.

Table 6: Income Inequality among Farmers

Years	Farm Income	Gini Coefficient
2010	60,000	0.10
2013	71,000	0.12
2016	82,000	0.15
2019	94,000	0.17
2023	1,09,000	0.20

Source: NSSO Agricultural Household Surveys

Table 6 shows the trend of farm income and income inequality among farmers from 2010 to 2023. The average farm income has increased steadily from ₹60,000 in 2010 to 1, 09,000 in 2023, indicating overall economic growth in the agricultural sector. However, the Gini Coefficient which measures income inequality also rose from 0.10 in 2010 to 0.20 in 2023. This means that despite rising incomes, the gap between rich and poor farmers has widened over time. The increase in inequality could be due to unequal access to technology, credit, irrigation, and market opportunities. Thus, while farmers' income levels improved, the benefits of growth were not evenly distributed across all sections of the farming community.

Findings

The analysis of agricultural data reveals several critical insights into the challenges faced by Indian farmers. Agricultural GDP has increased from 6.5 lakh crore in 2004–05 to 14 lakh crore in 2023–24, yet its share in total GDP declined from 23.5 per cent to per cent, indicating that income growth in agriculture lags behind other sectors. Regression analysis shows that farm income is significantly influenced by Cost of Cultivation and Credit Access, with the model explaining 97.5 per cent of the variation in income.

Institutional credit has expanded substantially with a CAGR of 15.1 per cent, but a large proportion of small and marginal farmers continue to rely on informal loans, resulting in persistent debt stress. Cost–Benefit Ratios of major crops indicate narrow profit margins, with pulses and cotton being the least profitable. Income inequality among farmers has increased over time, as indicated by the Gini coefficient rising from 0.10 in 2010 to 0.20 in 2023, reflecting uneven distribution of growth benefits. Regional disparities are evident, with states like Punjab and Haryana achieving higher farm incomes due to better irrigation, credit, and MSP support, while Bihar, Odisha, and Jharkhand lag behind. Despite government schemes like MSP, PM-KISAN, and crop insurance, smallholders face financial stress due to structural inefficiencies, high input costs, and market volatility. Climate change, erratic monsoon patterns, and declining groundwater resources further exacerbate the situation. Overall, the findings highlight that while production has increased, income growth, equity, and financial security remain major concerns.

Conclusion

Based on the findings, it is evident that India's agricultural crisis is structural and multifaceted. Although total food production and agricultural GDP have grown, farm incomes have not increased proportionately, and income inequality among farmers continues to widen. The regression, Cost–Benefit, and Gini coefficient analyses indicate that farm income is strongly dependent on cultivation investment, credit access, and regional advantages, highlighting persistent disparities. Government interventions such as MSP, PM-KISAN, and crop insurance provide partial relief but do not fully address structural inefficiencies, high input costs, and market volatility. Climatic challenges and resource constraints further threaten agricultural sustainability and rural livelihoods. Therefore, comprehensive reforms in credit access, market mechanisms, infrastructure, technology adoption, and crop diversification are essential to ensure equitable, sustainable, and resilient agricultural growth in India. The conclusion underscores the need for coordinated policy measures that address both financial and structural challenges to improve farm incomes and reduce regional disparities.

Policy Recommendation

To address the multifaceted agricultural crisis, a combination of targeted and structural interventions is necessary. Expanding access to institutional credit and reducing reliance on informal lending will alleviate financial stress for small and marginal farmers. Promoting cost-effective farming practices, precision agriculture, and subsidies for inputs can help manage rising cultivation costs. Strengthening market linkages, ensuring timely MSP procurement, and developing storage and cold chain infrastructure will reduce price volatility and improve profitability. Investments in irrigation, drainage, and agro-processing facilities are critical to enhance productivity and reduce regional disparities. Encouraging crop diversification, cultivating high-value crops, and adopting climate-resilient technologies will improve income stability and sustainability. Strengthening existing income support and crop insurance schemes with better coverage and timely payments is essential for risk mitigation. Additionally, targeted interventions for lagging states, along with agricultural research, extension services, and farmer training programs, will help bridge the gap between resource-rich and resource-poor regions. A coordinated approach addressing credit, infrastructure, technology, and market efficiency will be pivotal in achieving sustainable, equitable, and resilient agricultural growth in India.

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