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GROWTH TRENDS AND IMPACT OF MINIMUM SUPPORT PRICES ON CULTIVATION AREA OF MAJOR FOOD GRAINS IN INDIA

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ABSTRACT----------
In this paper an attempt has been made to examine the growth trends and impact of minimum support prices on the cultivation area of major food grains in India, on the basis of secondary data by using an exponential growth function and a log linear regression model. The results show that, during the study period, the compound growth rate (CGR) in minimum support price was observed highest among the maize foodgrain (5.83%), followed by paddy common (5.50%), paddy grade-A (5.22%), barley (5.35), and wheat food grain (5.10%), respectively. Further, the regression analysis reveals that the lagged minimum support prices have a significant positive impact on the cultivation area of rice and maize, with coefficients of 0.2312 and 0.3769, respectively. However, the impact on wheat and barley is not statistically significant, with coefficients of 0.0116 and -0.4707. Overall, the findings suggest that minimum support prices have a varying impact on different crops, with maize experiencing the highest growth rate and the strongest positive correlation with lagged minimum support prices. These findings are valuable for policymakers and farmers in understanding the dynamics of minimum support prices and their impact on crop cultivation and production in India.

KEYWORDS: *Growth trends, minimum support price, cultivation area, major foodgrains, India*.----------

1. INTRODUCTION

India's agricultural price policy has various issues for years, such as the problem of drought, barrenness, decline in commodity prices, climate change, and farmer suicides. An ideal price policy protect the rights of farmers, consumers, lending institutions, marketing intermediaries, traders and exporters. It encourage farmers to invest more in agribusiness and protect consumers' interests.

The Government of India set up an Agriculture Price Commission in January 1965 as per the recommendation of the Food Grains Inquiry Committee, the objective to advise and suggest the government on evolving balanced and integrated price structure. In 1985, the framework of the policy was modified; the focus was on balancing the demand and supply of food grains. It was reflected in the revised terms of reference of APC (which was later renamed as Commission for Agricultural Costs and Prices) with a shift from maximizing the production with the overall needs of the economy. The Minimum Support Price (MSP) is a safeguard to farmers/producers against any sharp decline in farm prices. These prices (MSP) are announced by the Government of India at the beginning of the every sowing season for certain crops on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP). These prices are fixed by Government of India to protect the farmers (producers) against excessive fall in price during bumper production years. At present Government of India (GoI) giving minimum support price (MSP) for paddy common, paddy grade-A, jowar-hybrid, jowar-maldandi, barjra, maize, ragi, tur (arhar), moong, urad, groundnut, sunflower seed, soyabean yellow, niger seed, medium staple cotton, and long staple cotton crop of kharif

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season, wheat, barley, gram, lentil (masur), rapeseed/mustard, and safflower crop of rabi season and for commercial crops such as Jute, sugarcane, copra (milling) and copra (ball)as per the recommendation of Commission for Agricultural Costs and Prices (CACP). These commodities are procured by the GoI (Government of India), however, wheat and rice having the lion's share in such procurement.

2. HYPOTHESIS

i. H_1: There is no impact of minimum support prices on cultivation area of major food grains in India.
ii. H_2: There is impact of minimum support prices on cultivation area of major food grains in India.

3. OBJECTIVES

i. To study the growth trends in Minimum Support Price of major food grains in India.
ii. To assess the impact of minimum support price on cultivation area of major food grains in India.

4. RESEARCH METHODOLOGY

The present study was based on secondary data. The data on area and minimum support price (MSP) of major food grains viz; rice, maize, wheat and barley (2014-15 to 2023-24) were compiled from the official websites of Directorate of Economics and Statistics (DES), and the Commission for Agricultural Costs and Prices (CACP), Department of Agriculture and Cooperation, Ministry of Agriculture and Farmers' Welfare, Government of India, New Delhi.
In order to achieve the objectives, the compound growth rates in minimum support prices of rice, maize, wheat and barley were calculated by fitting the exponential growth function as follows:

$$Y = ab^t$$

Y = dependent variable
A = constant term
B = (1+r), regression coefficient
R = (b-1)*100, Compound growth rate in percentage
T = time variable
While to examine the impact of minimum support prices on cultivation area of rice, maize, wheat and barley, a log linear regression model was applied by using explanatory variable on the basis of goodness of fit (R^2) for which equation has been calculated as under:

$$\text{Log At} = \text{b0} + \sum_{i=1}^{n} \text{bi log X1} + \text{U}$$

Where, At = Area at time (t year)
b0 = Intercept
X_1 = Lagged minimum support price (t-1 year)
U = error term.

5. RESULTS AND DISCUSSION

5.1 Growth Trends in Minimum support prices of major food grains in India

Over the past decade, there has been a noticeable increase in the minimum support prices of major food grains in India. This growth trend has been influenced by various factors, such as inflation, government policies, and market demand. The rising minimum support prices have a significant impact on farmers, consumers, and the overall economy of the country. The minimum support price for paddy common, paddy grade A, maize, wheat, and barley from 2014–15 to 2023–24 is shown in Table 1. According to the data in the table, during the year 2014–15 the minimum support price for ordinary paddy was Rs. 1360 per quintal, for paddy grade A it was Rs. 1440 per quintal, for maize it was Rs. 1310 per quintal, for wheat it was Rs. 1400 per quintal, and for barley crop it was Rs. 1100 per quintal. Whereas, during the year 2023-24, the minimum support price for ordinary paddy was Rs. 2183 per quintal, for paddy grade A

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it was Rs. 2203 per quintal, for maize it was Rs. 2090 per quintal, for wheat it was Rs. 2275 per quintal, and for barley crop it was Rs. 1850 per quintal.

Furthermore, the compound annual growth rate in the minimum support price has been calculated to be 5.50 percent for paddy common, 5.22 percent for paddy grade A, 5.83 percent for maize, 5.10 percent for wheat crop, and 5.35 percent for barley crop. From the results, it is observed that the compound growth rate in the per quintal minimum support price during the study period was higher among maize crop than of paddy common, paddy grade A, barley, and wheat, respectively.

These trends in minimum support prices reflect the government's efforts to ensure fair compensation for farmers and encourage the production of essential crops. The compound annual growth rates also indicate a steady rise in prices over the years, providing stability and predictability for farmers in planning their agricultural activities. Overall, these measures aim to support the agricultural sector and contribute to food security in the country.

Table-1: Growth Trends in Minimum support prices of major food grains in India

(Rs./Quintal)

Crops	Paddy			Maize	Wheat	Barley
	Paddy (Common)	Paddy (Grade A)	Avg. value			
2014-15	1360	1400	1380	1310	1400	1100
2015-16	1410	1450	1430	1325	1525	1225
2016-17	1470	1510	1490	1365	1625	1325
2017-18	1550	1590	1570	1425	1735	1410
2018-19	1750	1770	1760	1700	1840	1440
2019-20	1815	1835	1825	1760	1925	1525
2020-21	1868	1888	1878	1850	1975	1600
2021-22	1940	1960	1950	1870	2015	1635
2022-23	2040	2060	2050	1962	2125	1735
2023-24	2183	2203	2193	2090	2275	1850
Compound Growth Rate (%)	5.50	5.22	5.36	5.83	5.10	5.35

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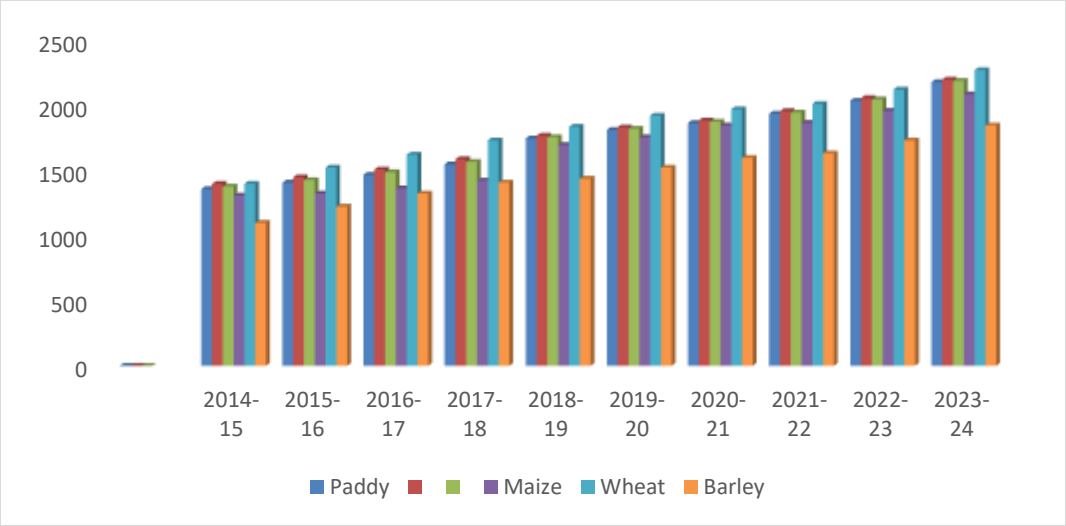


Figure-1: Minimum support prices of major food grains in India

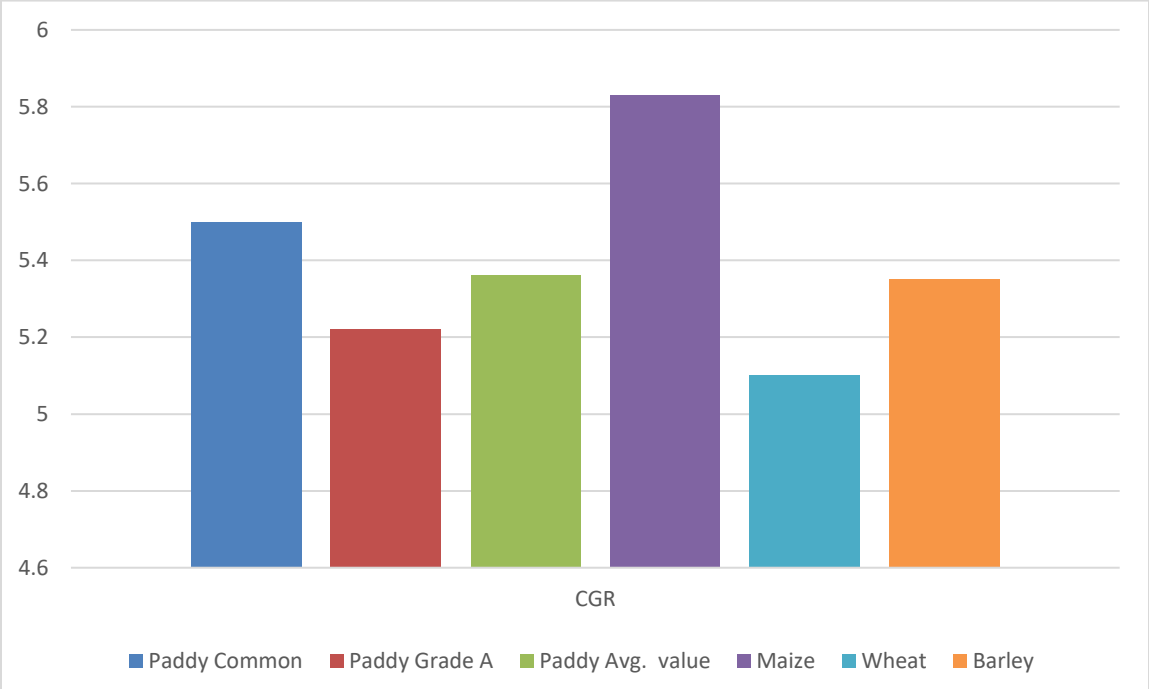


Figure-2: Growth Trends in Minimum support prices of major food grains in India

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5.2 Impact of Minimum Support price on cropping pattern of Paddy, Maize, Wheat and Barley

The price policy adopted during the sixties provided the instrument of minimum support prices not only as a guard against the lower side fluctuations in prices but also as an incentive to grow a particular crop and maneuver the cropping pattern. This is achieved by ensuring a steady increase in the minimum support price (MSP) price level over the years. It was designed to provide assurance to the farmers about the expected prices during the next season. In other words, minimum support price (MSP) as an instrument of price policy provided a rational basis for price expectations to the farmers. In the present study, in order to see the impact of lagged minimum support price (MSP) on cultivation area, a single variable regression equation with area under a particular crop as dependent variable and lagged minimum support price (MSP) as an independent variable was carried out. The results of the regression analysis have been given in Table 2.

Table-2: Regression of Coefficient for major food grain in India

Particulars	Rice	Maize	Wheat	Barely
Coefficient of X_1 (MSP_{t-1})	0.2312*	0.3769*	0.0116	-0.4707**
t Stat	4.6952	4.1561	0.1660	-1.7130
P value	0.0022	0.0043	0.8728	0.1304
F Stat	22.0446	17.2730	0.0275	2.9344
Significance of F value	0.0022	0.004263	0.8728	0.1304
Multiple R	0.8712	0.8436	0.0626	0.5435
R^2	0.7590	0.7116	0.0039	0.2954
Adjusted R^2	0.7246	0.6704	-0.1384	0.1947

*Significant at 5 percent level of Significance
** Significant at 10 percent level of Significance

The regression analysis reveals that the lagged minimum support price has a significant positive impact on the area of rice and maize, with coefficients of 0.2312 and 0.3769, respectively. However, the impact on wheat and barley is not statistically significant, with coefficients of 0.0116 and -0.4707, respectively. The results shows that one percent increase in lagged minimum support price in the previous year, the corresponding area increased by 0.23, 0.37 and 0.01 percent under rice, maize and wheat crops respectively, whereas one percent increase in lagged minimum support pricedecreased its area by 0.47 percent. This suggests that government intervention through the Minimum Support Price policy is more effective in increasing the cultivation area of rice and maize compared to wheat and barley. The high R-squared values for rice (0.7590) and maize (0.7116) indicate that the model explains a large proportion of the variation in the cultivation area of these crops, while the low R-squared values for wheat (0.0039) and barley (0.2954) suggest that other factors may be influencing their cultivation area. Furthermore, the findings highlight the importance of government policies specifically targeted at rice and maize production. The results also indicate that there may be external factors, such as market demand or climate conditions, that play a larger role in determining the cultivation area of wheat and barley.

5.3 Testing Hypothesis

The regression results for rice and maize food grains are statistically significant, while for wheat and barley food grains these results are non-significant. The null hypothesis (there is no impact of minimum support price on cultivation area of major food grains in India) for rice and maize food grains is rejected, and the alternate hypothesis (there is impact of minimum support price on the cultivation area of major food grains in India) is accepted. However, for wheat and barley foodgrains, the null hypothesis (there is no impact of minimum support prices on cultivation area of major food grains in India) is accepted, and the alternate hypothesis (there is impact of minimum support prices on cultivation area of major food grains in India) is rejected. Thus, it can be concluded that minimum support price (MSP) is a key determinant in the cultivation area of rice and maize food grains, but not in the case of wheat and barley; other factors may impact the area under these crops.

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6. CONCLUSIONS AND SUGGESTIONS

The results showed that the compound growth rate at the minimum support price during the period was higher among maize crops than paddy common, paddy grade-A, barley, and wheat, respectively. The results further showed that lagged minimum support price (MSP) had a positive and significant impact on the area of maize and paddy crops but these did not played significant role in case of wheat and barley food grains. Other factors may influenced the area for cultivation under these crops. This suggests that farmers are responding to changes in minimum support price (MSP) by increasing the area under cultivation for rice and maize crops. The positive impact of lagged minimum support price (MSP) on maize and paddy crops indicates that farmers are making decisions based on previous price trends. Furthermore, the study revealed that the increase in cultivation area for maize and paddy crops due to lagged minimum support price (MSP) has also led to a rise in overall production levels. This not only benefits the farmers economically but also contributes to food security and stability. The findings underscore the need for continued government intervention and support to ensure sustainable agricultural practices and a steady supply of staple crops on the market. These findings highlight the positive impact of minimum support price (MSP) on agricultural production and food security. It is essential for policymakers to recognise the importance of continued government intervention and support to sustain these benefits. By ensuring a steady supply of staple crops through minimum support price (MSP), policymakers can promote economic growth and stability in the farming sector. This research underscores the need for strategic policy implications to maintain sustainable agricultural practices and support farmers' livelihoods.

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