Quest Journals
Journal of Research in Humanities and Social Science
Volume 13 ~ Issue 6 (June 2025) pp: 466-474
ISSN(Online):2321-9467
www.questjournals.org

Research Paper

Impact of MSP on Agricultural Advanced Areas with Special Reference to Punjab Agriculture

Dr. Pardeep Kumar
(Assistant Professor, Department of Economics, R.S.D. College, Ferozepur City)

ABSTRACT
The price of crops is one of the most important factors influencing farmers' decisions to favour a particular crop. A good crop price motivates farmers to change cropping patterns in favour of that crop. Many scholars argue that the favourable price policy in the form of MSP motivated farmers to increase the area under crops, resulting in an improvement in the production of foodgrains, especially wheat and paddy. The present study (based on secondary data taken from various sources from 1970-71 to 2020-21) investigates how, owing to this MSP policy, Punjab has become one of the agriculturally developed states in the country. However, the cropping pattern of Punjab has become a monoculture of wheat and paddy, as 85 percent of the area, out of the total gross cropped area of the state, is under these two food crops covered under the MSP scheme, and cropping intensity has increased to 189. Moreover, the entire gross cropped area is under assured irrigation, the total gross cropped area is also under high-yielding varieties (HYVs), and higher doses of fertilizers than required are being applied. Hence, there is no further scope for increasing productivity, production, or use of improved inputs, or gross cropped area under these crops by providing higher MSP.

KEY WORDS*: MSP, Impact of MSP, Agriculture Price Policy, and Punjab agriculture*

*Received 15 June., 2025; Revised 27 June., 2025; Accepted 29 June., 2025 © The author(s) 2025. Published with open access at **www.questjournas.org***

I. INTRODUCTION

The Minimum Support Price (MSP) is a policy of the Government of India (GOI) in the form of market intervention to safeguard the interests of the farmers as well as the consumers with the motive to make foodgrains available to the consumers at a reasonable price and in required quantities and also to protect farmers from distress sale (Parikh and Singh, 2007). Under this Scheme, the GOI announces the minimum support prices of 22 crops before the sowing season, allowing farmers to make informed decisions accordingly. The MSP of all these crops is recommended by the Commission for Agricultural Costs and Prices (CACP), considering many factors, including the cost of cultivation, safeguarding the interests of consumers and producers, and the impact of MSP on the other parts of the economy. But it's ensured that the MSP should cover 1.5 times the cost of cultivation (A2+FL), including payout costs and the cost of imputed family labour to justify the recommendations of the Swaminathan Commission by the government. For this purpose, micro-level data are collected and aggregated at many levels, like district, state, and country, by the commission. To implement the MSP policy, the Food Corporation of India (FCI) acts as the nodal agency of the GOI. In states, on behalf of FCI, the MSP Scheme is implemented through state agencies, and these state agencies step into the market to purchase the crops after the harvesting season.

It is observed in many studies (Kumbhar, 2011; Kumar, 2013) that the policy of MSP has motivated farmers to produce more crops in more areas. Due to this implication, the area and production of these crops, especially food crops, have increased. The country could solve the problem of food security, particularly due to the contribution of agriculturally advanced states like Punjab (Kumar, 2013). However, many studies (Das, 2020, Basantaray, 2023, etc.) don't accept this fact at the national level and explain that the benefits of MSP are available only to the big farmers in a few areas where farmers are aware of this MSP policy. This policy has had bad impacts on the efficient allocation of resources (Singh, P., et al., 2021), creating artificial inflation, distorting market mechanisms, and hindering agricultural growth, along with over-utilization of natural resources (Reddy, 1995) and creating monoculture in cropping patterns (Sergill, 2005), especially in the agriculturally developed areas

(Morales, Baliéb, and Magrinic, 2020). Moreover, the MSP has become the price of the crops and a political weapon. Hence, the need of the hour is to increase awareness and implementation of MSP carefully in all areas for all crops and take care of the benefits of all types of farmers instead of just announcing the MSP (Singh, 2015). Hence, it's pertinent to study how MSP policy has influenced the area, production, productivity, market surplus of foodgrains, etc., in agriculturally advanced areas of the country like Punjab.

II. OBJECTIVES OF THE STUDY

The present study is a humble attempt to analyze the impact of MSP on Punjab agriculture, having the following objectives:

1. To study the trends in the growth of MSP, especially wheat and paddy, two major food crops of Punjab, covered under the MSP policy.
2. To investigate the contribution of MSP in increasing the area, production, and productivity of wheat and paddy, two major food crops of the Rabi and Kharif seasons of Punjab.
3. To examine the impact of increasing production on increasing the marketable surplus and procurement of crops, especially wheat and paddy.
4. To evaluate the further scope of MSP in agriculturally advanced areas like Punjab.

III. METHODOLOGY

The present study is based on secondary data, covering the period from 1970–71 to 2020–21. The data were collected from various sources, including the Statistical Abstract of Punjab (various years), the Directorate of Economics and Statistics, Ministry of Agriculture and Farmers' Welfare, Government of India. Additionally, data on Minimum Support Prices (MSPs), as declared by the central government, were obtained from the official websites of the Ministry of Agriculture and the Reserve Bank of India (RBI).

To analyze the data, a simple linear regression model has been employed to test the stated hypotheses, determine their statistical significance, and examine the relationship between the independent variable (MSP) and various dependent variables such as gross cropped area, production, marketable surplus, and input use. Analysis of Variance (ANOVA) has also been applied to assess the overall significance of the regression model. To evaluate trends over time, both Average Annual Growth Rates (AAGR) and Compound Annual Growth Rates (CAGR) have been computed.

Furthermore, to assess the impact of MSP in agriculturally advanced states such as Punjab, the study focuses on two major crops, wheat and paddy. These crops collectively account for approximately 85 percent of the gross cropped area in Punjab. Moreover, 100 percent of the area under wheat and paddy is cultivated using High-Yielding Varieties (HYVs). The entire marketable surplus of these crops is procured by government agencies, making them ideal for analysing the influence of MSP policies.

IV. HYPOTHESES

To evaluate the impact of MSP on agricultural indicators in Punjab, the following hypotheses were formulated:

- **Hypothesis I:**
  - **Null (H0):** MSP does not influence the area under crops covered by the MSP scheme.
  - **Alternative (H1):** MSP influences the area under crops covered by the MSP scheme.
- **Hypothesis II:**
  - **Null (H0):** MSP does not affect the use of inputs for crops covered under the MSP scheme.
  - **Alternative (H1):** MSP affects the use of inputs for crops covered under the MSP scheme.
- **Hypothesis III:**
  - **Null (H0):** The area under cultivation does not impact production and marketable surplus.
  - **Alternative (H1):** The area under cultivation influences production and marketable surplus.

V. MSP: RATIONAL, DIFFERENT OPINIONS AND TRENDS

The price of agricultural products is one of the most important factors influencing a farmer's decision to favour a particular crop. It is observed in many studies (Like Kumbhar, 2010) that the good price of a crop motivates farmers to change cropping patterns in favour of that crop and vice versa. It is argued by Parikh, Kumar, and Darbha (2003) that the favourable price policy of the government in the form of MSP motivated the farmers to produce wheat and paddy in more areas and in more quantities. It has also been established in many studies that the area, production, and yield of the crops increased, which were covered under the MSP policy, and the farmers were aware of this (Gupta et al., 2020; Kumbhar, V. M., 2011). Dev and Rao (2010) have argued that agricultural price policy has been largely successful in playing a major role in providing a reasonable level of margins of around 20 percent over total costs to the farmers for both crops, paddy and wheat. Mainly due to this policy, the area, production, and productivity of crops, especially food crops, have increased, and India has become the world's second-largest producer of foodgrains. It has also stocked a huge quantity of foodgrain production (Chand, 2003).

This policy of providing a fair MSP is justified in the document of the sixth five-year plan. It is observed in the plan that modern agriculture increasingly involves the use of costly inputs as a part of improved technology. Therefore, an assured minimum price becomes necessary for sustained agricultural production. A study (2007) by the Planning Commission said that the MSP policy was implemented in the 1960s due to the shortage of foodgrains in the country, and it was very tough to meet the increasing domestic demand for foodgrains. Hence, the rationale behind implementing MSP was multifaceted. Primarily, it aimed to increase agricultural production by assuring farmers of a minimum return on their investment, even during periods of surplus production or low market demand (Kumar Basantaray, 2023). To ensure stable incomes for farmers, contributing to their economic well-being, and encouraging them to continue producing essential food crops. Moreover, MSP is used as a vital tool for safeguarding national food security by encouraging sufficient production levels to meet domestic demand.

MSP for wheat and paddy, major food crops of the Rabi and Kharif seasons of Punjab, were declared Rs 76 and Rs 51 per quintal for average fair quality in 1970-71(Table-I) which increased to Rs 130 and 105 in 1980-81, Rs 225 and Rs 205 in 1990-91, Rs 610 and Rs 510 in 2000-01, Rs 1170 and Rs 1000 in 2010-11 and finally reached at Rs 1925 and Rs 1868 respectively in 2020-21. Further, the figures of average annual growth rates have also been depicted in the table. These figures confirm that the growth rates of MSP of wheat and paddy were sufficient, ranging from 6.5 percent to 17.1 percent per annum in the case of wheat and from 8.7 percent to 14.9 percent per annum in the case of paddy. Hence, sufficient MSP along with increments in MSP were provided by the central government. Further, the annual average growth rates of MSP, especially in the case of wheat, increased regularly up to 2000-01 and then started to decline.

Table-I
MSP Declared /Per Quintal (For Average Fair Quality)

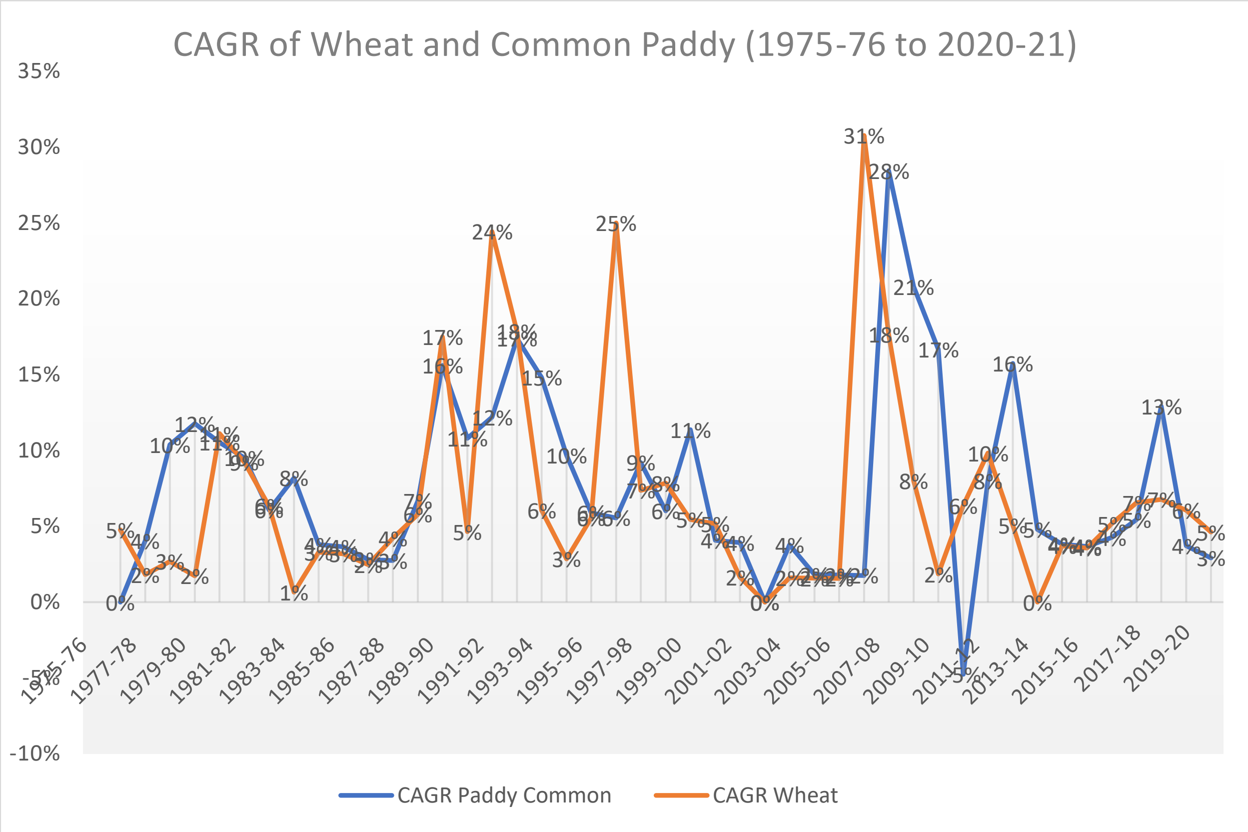
Year	Wheat	Paddy
1970-71	76	51
1980-81	130 (7.1)	105 (10.6)
1990-91	225 (7.3)	205 (9.5)
2000-01	610 (17.1)	510 (14.9)
2010-11	1170 (9.2)	1000 (9.6)
2020-21	1925 (6.5)	1868 (8.7)

(**Source:** Ministry of Agriculture, Government of India)
Figures in brackets are the average annual growth rates in percentage

These annual growth rates of MSP of wheat and paddy were regular and didn't increase at the end of the intervals. This can be observed from Figure I, which shows the trends of compound annual growth rates (CAGR) of wheat and paddy, calculated from the time series data from 1975-76 to 2020-21. It can be observed that the CAGR of wheat and paddy even increased by 31 percent and 28 percent, as compared to the previous year. The CAGR of paddy is negative only once, as the data of MSP declared is taken, and the bonus provided is not considered.

Hence, over the past five decades, the MSP for wheat and paddy has increased significantly. The average annual growth rates of MSP varied across decades, with particularly high growth observed during the 1990s. The Compound Annual Growth Rates (CAGR) also reflect consistent and substantial increases. These increments, coupled with regular announcements by the Government of India, indicate a strong and sustained policy commitment to supporting farmers through price assurance mechanisms.

Figure-I



VI. MSP: ITS IMPACT ON AGRICULTURAL DEVELOPMENT AND CHANGING CROPPING PATTERN TOWARDS MONOCULTURE

Present-day Punjab was reorganized in 1966, the year of implementation of new agriculture technologies, based on HYVs, and also supported by many government policies, including MSP. The farmers of Punjab were aware of MSP and other government policies. Moreover, the infrastructure in Punjab was favourable for this. Therefore, the farmers of Punjab took advantage of these policies in the beginning. They increased the area under these crops covered by the MSP scheme, especially wheat and paddy. Due to the increase in area, the production of wheat and paddy increased.

The fair price in the form of MSP motivated the farmers to further increase the area under these crops. As a consequence, the net cropped and the gross cropped area under these crops increased along with the other inputs, and these factors contributed to increasing the productivity (Table II). The table depicts that the net cropped area and the gross cropped area of the state increased regularly up to 2000-01. Due to the increment in the gross cropped area, the cropping intensity, which was 117 in 1970-71, reached 187 in 2000-01 and further reached 190 in 2010-11. Inputs used, like NPK and HYVs for wheat and paddy, also increased regularly. The use of NPK, which was 213 thousand nutrients in 1970-71, increased to 1938 thousand nutrients in 2020-21, and this increment was more than 9 times in the given period. Similarly, the area under HYVs of wheat and paddy, which was 71.3 percent and 33.3 percent in 1970-71, reached 100 percent in 2000-01 in the case of wheat crop and in 2020-21 in the case of paddy. In a nutshell, to take the maximum benefits of the MSP policy, the area as well as the use of inputs to increase productivity became the major component of the development of Punjab agriculture. However, the main improvement in the area, as well as the input used, was mainly in the case of wheat and paddy crops.

Therefore, the state became one of the major producers and contributors to the central pool of wheat and paddy. As a result, the cropping pattern of Punjab changed after the implementation of these policies.

It is clear from Table III that the area under foodgrains, especially wheat and paddy, increased, and the area under other major crops like cotton, oilseeds, sugarcane, and pulses declined. The area under wheat and paddy, which was 30 percent and 5 percent respectively in 1960-61, increased to 45 percent and 40 percent respectively in 2020-21, and the area under cotton declined from 9 percent to 3 percent, and under sugarcane from 3 percent to 1 percent. It can also be observed that the area under pulses and oil Seeds, which was 19 percent and 3 percent respectively in 1960-61, has almost been eliminated in 2020-21. The consequence was that the area under total foodgrains increased, especially of wheat and paddy. Hence, the sure MSP of foodgrains, especially of wheat and paddy, motivated the farmers to produce more, and Punjab has become a monoculture of wheat and paddy, where 85 percent of the total cropped area of the state is under these two food crops covered under the MSP policy.

In a nutshell, following the introduction of MSP and the Green Revolution technologies in the late 1960s, Punjab witnessed a crucial transformation in cropping patterns. Farmers increasingly allocated land to wheat and paddy, crops supported under the MSP scheme and backed by assured procurement. Data from 1970–71 to 2020–21 shows a significant increase in the gross and net cropped area, cropping intensity (from 117 to 189), fertilizer consumption (from 213 to 1938 thousand tonnes of NPK), and near-universal adoption of HYVs in wheat and paddy. Cropping pattern data reveals a stark shift: in 1960–61, wheat and paddy together accounted for only 35% of total cropped area, but by 2020–21, their share had reached 85%. This indicates a trend towards monoculture, accompanied by a decline in the cultivation of pulses, oilseeds, sugarcane, and cotton, and can be attributed to the negative impact of the MSP scheme.

Table-II
Other Development Indicators of Punjab Agriculture

Indicators/Years	1970-71	1980-81	1990-91	2000-01	2010-11	2020-21
*Gross Cropped	4732	6763	7502	7941	7882	7818
*Net Cropped	4053	4191	4218	4250	4158	4127
Cropping Intensity	117	161	178	187	190	189
**Nutrient (NPK) Use	213	762	1220	1313	1911	1938
*Area Under HYVs (Wheat)	1589 (71.3)	2757 (98)	3271 (99.9)	3408 (100)	3510 (100)	3530 (100)
*Area Under HYVs (Paddy)	130 (33.3)	1095 (92.6)	1906 (94.6)	2506 (95.9)	2830 (100)	3149 (100)

Source: Statistical Abstract of Punjab for Various Years
Figures in brackets show the area under HYVs as a percentage of the total cropped area of that crop
*Areas in Thousand Hectares
**In Thousand Nutrient Tonnes

Table-III
Cropping Pattern (Area in Percentage of Total Cropped Area)

Year	Total Cereals	Wheat	Paddy	Cotton	Oil Seeds	Sugar Cane	Pulses
1960-61	46	30	5	9	4	3	19
1970-71	62	40	7	7	5	2	7
1980-81	67	42	17	10	4	1	5
1990-91	74	44	27	9	1	1	1
2000-01	78	43	33	6	1	2	1
2010-11	82	45	36	7	1	1	0
2020-21	87	45	40	3	0	1	0

Calculated by Taking the Area Under the Given Crops from the Statistical Abstract of Punjab
For Various Years

VII. ASSESSING AGRICULTURAL OUTCOMES UNDER MSP POLICY: A HYPOTHESIS-BASED STUDY OF AREA, INPUTS, OUTPUT, AND MARKET ARRIVAL

To check the impact of MSP on gross cropped area that plays a vital role in increasing production of the crop is discussed by testing Hypothesis-I, to analyze the effects of MSP of the crop on the use of inputs that are responsible for increasing productivity, has been tested and discussed by Hypothesis-II, and to investigate the effect of increasing gross cropped area on production and marketed surplus of the crop, Hypothesis-III is tested and discussed. The results and discussion of all these hypotheses are based on the secondary data from 1980-81 to 2020-21. The discussion of the results of these hypotheses is given below.

7.1 Impact of MSP on Gross Cropped Area

To test this hypothesis and analyze the relationship between these two variables, a simple linear-regression model along with ANOVA was used, and the results are presented in Table IV (a and b). As the discussion is based on wheat and paddy crops, the results for wheat and paddy crops are presented in different tables and discussed separately in brief.

Table IV (a)
Results for MSP of Wheat and Gross Cropped Area under Wheat

R	R-Square	Adjusted R-Square	Std. Error of Estimation	R-Square Change	F-Change	df1	df2	Sig. F Change	Coefficient for Independent Variable
0.809	0.655	0.646	109.686	0.655	74.048	1	39	<0.001	0.2679

Independent Variable: MSP of Wheat
Dependent Variable: Gross Cropped Area

Table IV (a) shows that the value of R is 0.809, which indicates a strong positive correlation between the MSP of wheat and the area under wheat cultivation. $R^2 = 0.655$, which explains that about 65.5 percent of the variation in the gross cropped area under wheat is explained by changes in the MSP of wheat. This suggests that MSP is a dominant factor in influencing farmers' decisions on area allocation. Therefore, the model is highly statistically significant at the 1 percent level, and the effect of MSP on the cropped area is not due to random chance. The Coefficient ($\beta = 0.2679$) explains that for every 1 unit increase in the MSP of wheat, the gross cropped area under wheat increases by approximately 0.2679 units. This indicates a positive relationship. Hence, the null hypothesis is rejected due to the high value of R^2, a significant F-statistic, and a strong positive coefficient. Thus, the minimum support price of wheat significantly influences the gross cropped area under wheat cultivation.

Table IV (b)
Results for MSP of Paddy and Gross Cropped Area under Paddy

R	R-Square	Adjusted R-Square	Std. Error of Estimation	R-Square Change	F-Change	df1	df2	Sig. F Change	Coefficient for Independent Variable
0.869	0.755	0.749	277.351	0.755	120.245	1	39	<0.001	0.89

Independent Variable: MSP of Paddy
Dependent Variable: Gross Cropped Area under Paddy

Further, Table IV (b) shows the results calculated for MSP for the paddy crop. The value of R- 0.869 shows a strong positive correlation between MSP and the area under paddy. The value of $R^2= 0.755$ depicts that 75.5 percent of the variation in the gross cropped area is due to the MSP of paddy. This is very high. Adjusted-R^2 (0.749) confirms the model is reliable even after adjusting for degrees of freedom. Moreover, the F-statistic is very high, and the p-value is < 0.001, which is highly significant. This means the regression model is statistically significant. The value Coefficient $\beta = 0.89$, which means for every unit increase in MSP, the gross cropped area under paddy increases by 0.89 units. Hence, the null hypothesis is rejected due to the high R^2, significant F-statistic, and a strong positive coefficient. Therefore, the minimum support price of paddy significantly influences the gross cropped area under paddy cultivation.

Therefore, it can be safely concluded that the MSP of the crop influences the gross cropped area under that crop, or the MSP of the crop motivates the farmers to distribute more area for the crop that is covered under the MSP.

7.2 Impact of MSP on Irrigated Area, Consumption of Fertilizer, and Area Under HYVs

The quantity and quality of the inputs used in agriculture influence production and productivity. Here, the discussion is based on the impact or relationship of the MSP of the crop and the inputs used for that crop. The entire discussion is based on the results, which have been presented in Table V (a and b). These results are based on data for wheat and paddy crops related to the MSP of these crops and the inputs used.

Table-V (a)
Results for MSP of Wheat and Use of Inputs

Dependent Variable	R	R-Sq.	Adjusted R-Sq.	Std. Error of Est.	R-Sq. Change	F- Change	df1	df2	Sig. F-Change	Coefficient for Independent Variable
DVI	0.840	0.678	0.67	150.212	0.679	82.33	1	39	<0.001	0.3870
DVII	0.917	0.840	0.836	148.331	0.84	205.32	1	39	<0.001	0.6033

DVIII	0.804	0.646	0.637	116.118	0.646	71.26	1	39	<0.001	0.2782

Independent Variable: MSP of Wheat
Dependent Variables: DVI: Irrigated Area Under Wheat, DVII: Consumption of NPK, DVIII: Area Under HYVs

Table V (a) shows that the value of R, the correlation coefficient, for MSP of wheat and other input variables, lies between 0.80 to 0.91. This shows a stronger relationship between the variables with the MSP of wheat. Similarly, the value of R-Square, the percentage of variance in the input explained by MSP, lies between 0.64 to 0.84. For example, 67 percent of the variation in irrigated area under wheat, 84 percent of the variation in NPK usage, and 64 percent of the variation in area under HYVs is explained by the MSP of wheat. Further, the values of R^2, ranging from 0.646 to 0.840, indicate that a large proportion of the variation in the inputs used is explained by the MSP. Moreover, F-values are high, and all p-values < 0.001. Therefore, the results are highly statistically significant at the 1 percent level. Further, the Regression Coefficients (Beta Values) indicate the magnitude and direction of change in the dependent variable for a one-unit increase in MSP. The value for irrigated area is 0.387, for NPK is 0.6033, and for HYVs is 0.2782. All the values are positive, indicating that as MSP increases, input usage also increases.

Therefore, regression analysis strongly supports the alternative hypothesis (H_1) — that the MSP of wheat significantly impacts the use of inputs like irrigation, fertilizer, and adoption of HYVs. Thus, an increase in MSP incentivizes farmers to invest more in productivity-enhancing inputs, possibly improving the expectations of improvement in production or productivity. Moreover, (NPK Fertilizer use) has the strongest association (R^2 = 0.84, coefficient = 0.6033), suggesting that fertilizer use is highly sensitive to MSP changes. This affirms that the economic policies, such as MSP, play a pivotal role in shaping input behaviour in agriculture, potentially improving yields and agricultural efficiency.

Table-V(b)
Results for MSP of Paddy and Use of Inputs

Dependent Variable	R	R-Sq.	Adjusted R-Sq.	Std. Error of Est.	R-Sq. Change	F- Change	df1	df2	Sig. F Change	Coefficient for Independent Variable
DVI	0.87	0.757	0.75	285.631	0.757	121.29	1	39	<0.001	0.9191
DVII	0.88	0.789	0.784	170.422	0.789	146.09	1	39	<0.001	0.602
DVIII	0.88	0.774	0.768	285.327	0.774	133.38	1	39	<0.001	0.9634

Independent Variable: MSP of Paddy
Dependent Variables: DVI: Irrigated Area Under Paddy, DVII: Consumption Of NPK, DVIII: Area Under HYVs

Table V (b) depicts that R ranges from 0.87 to 0.888, indicating a strong positive relationship between the MSP of paddy and each of the input variables. R^2 for irrigated area indicates that 75.7 percent of the variation in irrigated area under paddy is due to the MSP. Similarly, 78.9 percent of the variation in fertilizer and 77.4 percent of the variation in HYVs adoption is due to the MSP of paddy. These values reflect a high explanatory power of MSP in determining input use in paddy cultivation. Further, Model Significance (F-Test and Sig. F Change) shows that F-values are quite high (ranging from 121.298 to 146.090), which means the models are statistically strong. Moreover, Significance levels (Sig. F Change) are all <0.001, meaning the relationship between MSP of paddy and each dependent variable is highly significant at the 1 percent level. This strongly suggests rejecting the null hypothesis. The Regression Coefficients show the impact of MSP on Inputs. Thus, a unit increase in MSP of paddy increases irrigated area under paddy by 0.9191 units, consumption of NPK by 0.602 units, and area under HYVs by 0.9634 units (strong impact). Thus, MSP of paddy significantly influences farmers' decisions regarding the use of inputs such as irrigation, fertilizers (NPK), and high-yielding seeds.

The strongest influence of MSP is seen on HYV adoption (coefficient = 0.9634). The second major impact is on irrigation (coefficient = 0.9191), followed by Fertilizer consumption of NPK (coefficient = 0.602). The findings reinforce that the price policy in agriculture influences producer behaviour, encouraging farmers to invest in productivity-enhancing inputs.

The entire discussion proves that the MSP of the crop influences the use of inputs. As a result, MSP motivates the farmers to use more units of inputs like fertilizers, HYVs, etc.

7.3 Impact of MSP on the Production and Market Arrival of the Crop

Here, the discussion is related to the issue of the gross cropped area under a crop and the production and marketed surplus of the crop. The results of wheat and paddy crops have been presented in Table VI (a and b).

Table-VI (a)
Results of Gross Cropped Area and Production, and Market Arrival of Wheat

Dependent Variable	R	R-Square	Adjusted R-Square	Std. Error of Estimation	R-Square Change	F-Change	df1	df2	Sig. F Change	Coefficient for Independent Variable
DVI	0.75	0.562	0.551	2341.803	0.562	50.066	1	39	<0.001	14.21
DVII	0.84	0.705	0.697	1625.112	0.705	93.104	1	39	<0.001	13.45

Independent Variable: Gross Cropped Area under Wheat
Dependent Variables: DVI: Production of Wheat, DVII: Market Arrival of Wheat

Results of Table-VI (a) show that in the case of the production of wheat, $R^2 = 0.562$, which means about 56.2 percent of the variation in wheat production is explained by the variation in the gross cropped area. Further, the F-value = 50.066 and Sig. < 0.001, which means the regression model is statistically significant at the 1 percent level; this means the relationship is not due to chance, and the Coefficient (14.21) shows that for every unit increase in gross cropped area, wheat production increases by 14.21 units. Therefore, the gross cropped area significantly impacts wheat production, and the null hypothesis is rejected.

Similarly, in the case of marketable surplus, $R^2 = 0.705$, which means about 70.5 percent of the variation in market arrival (marketable surplus) is explained by gross cropped area. The value of F is 93.104 and Sig. < 0.001. Thus, the model is highly significant. Further, the Coefficient 13.45 shows that for every unit increase in gross cropped area, the marketable surplus of wheat increases by 13.45 units. All these results prove that the Gross cropped area strongly influences the market arrival of wheat, and the null hypothesis is rejected. Since both models are statistically significant with high R^2 values and p-values < 0.001, the null hypothesis is rejected in both cases. This confirms that the area under wheat cultivation significantly impacts both wheat production and marketable surplus.

Table-VI (b)
Results of Gross Cropped Area and Production, and Market Arrival of Paddy

Dependent Variable	R	R-Square	Adjusted R-Square	Std. Error of Estimation	R-Square Change	F-Change	df1	df2	Sig. F Change	Coefficient for Independent Variable
DVI	0.97	0.956	0.955	613.132	0.956	841.806	1	39	<0.001	5.08
DVII	0.92	0.846	0.842	1579.882	0.846	213.706	1	39	<0.001	6.6

Independent Variable: Gross Cropped Area under Paddy
Dependent Variables: DVI: Production of Paddy, DVII: Market Arrival of Paddy

Table VI (b) shows that in the case of paddy production, $R^2 = 0.956$, which means a high percentage (95.6%) of the variation in paddy production is explained by the gross cropped area under this crop. Similarly, F-value = 841.806 with p-value < 0.001, which means the regression model is highly significant; the relationship is not due to chance, and the Coefficient 5.08 explains that for every unit increase in the gross cropped area under paddy, paddy production increases by 5.08 units. Therefore, the area under paddy cultivation strongly and significantly affects its production. Hence, the null hypothesis is rejected.

Similarly, in the case of market arrival of paddy, $R^2 = 0.846$ shows that about 84.6 percent of the variation in market arrival (marketable surplus) of paddy is explained by the gross cropped area. In case of market surplus of paddy, F-value = 213.706 with p-value < 0.001 proves the relationship is highly statistically significant. Further, the Coefficient value 6.6 shows that for every unit increase in area, the marketable surplus of paddy increases by 6.6 units. Hence, the Market arrival of paddy is strongly influenced by the gross cropped area, and the null hypothesis is rejected. The entire discussion shows that both the production and market arrival of paddy show a very strong and statistically significant relationship with the gross cropped area. The R^2 values of 0.956 and 0.846 indicate excellent model fits, and the p-values (<0.001) confirm the robustness of the results. Therefore, the area under crops significantly influences the production and marketable surplus of crops.

Thus, the statistical analysis strongly supports all three alternative hypotheses. Hence, MSP has significantly influenced area allocation in favour of wheat and paddy, encouraged greater use of inputs like irrigation, fertilizers, and HYVs, and contributed to higher production and surplus, especially in wheat and paddy.

VIII. CONCLUSION

Hence, it can be rationally concluded that the MSP for crops influences both the gross cropped area and the use of agricultural inputs. MSP also serves as a strong incentive for farmers to allocate more land and to apply more inputs, such as fertilizers and HYV seeds, etc., for crops covered under the MSP scheme. This, in turn, leads to higher production and a greater marketable surplus. Thus, the MSP scheme plays a vital role in encouraging increased cultivation, more intensive input use, and overall agricultural productivity.

The analysis further reveals that, in Punjab, the MSP policy has led to a noticeable expansion in the cultivation of wheat and paddy. Farmers have increased their use of inputs such as chemical fertilizers and HYV seeds. This has unquestionably resulted in higher productivity and a substantial market surplus of wheat and paddy crops. As a result, Punjab has also emerged as a major contributor of wheat and paddy to the central procurement system.

However, this success has come with uncomfortable consequences. The cropping pattern in Punjab has shifted in favour of wheat and paddy, pushing out other crops, and has become a monoculture. The entire gross cropped area devoted to these crops is now under irrigation and intensive cultivation using HYVs. The use of NPK fertilizers has increased many times, and the state's cropping intensity has reached 189, a very high level. Given these conditions, there is now a very limited scope for further increasing the gross cropped area, input use, or productivity through additional MSP hikes. In a nutshell, while the MSP scheme has been beneficial in promoting agricultural growth through the expansion of cropped area, increased input use, and higher output, it appears to have reached a saturation point in agriculturally advanced regions like Punjab. Here, the potential for further gains under the current MSP-driven model is negligible, as the impact of the MSP has reached its saturation point, suggesting the need for a more diversified and sustainable agricultural strategy.

REFERENCES

[1]. **Aditya, K. S.** (2017). Awareness about minimum support price and its impact on diversification decision of farmers in India. *Asia & the Pacific Policy Studies, 4*(3), 259–272.

[2]. **Annu, A., & Meena, R. P.** (2024). An analysis of the minimum support price in India: A systematic literature review. *Journal of Research in Agriculture and Animal Science, 11*(12), 1–6. https://doi.org/10.35629/9459

[3]. **Chand, R.** (2003). Minimum support price in agriculture: Changing requirements. *Economic and Political Weekly, 38*(29), 3027–3028.

[4]. **Chand, R.** (2010). Understanding the nature and cause of food inflation. *Economic and Political Weekly, 45*(9), 10–13.

[5]. **Das, R.** (2023). Minimum support price in India: What determines farmers' access? *Agricultural Economics Research Review, 33*(1), 61–69.

[6]. **Effectiveness of minimum support price policy for paddy in India: A case study of Punjab.** (2012). *Agricultural Economics Research Review, 25*(2), 231–242.

[7]. **Gulati, A.** (2002, May 17). *Challenges to Punjab agriculture in a globalizing world*. Paper presented at Policy Dialogue, New Delhi.

[8]. **Gupta, R. K., Kumar, V., Singh, P. K., Danish, M., & Dehariya, N.** (2020). Impact of minimum support price on agricultural production in western India. *International Journal of Current Microbiology and Applied Sciences, 9*(6), 2291–2303.

[9]. **Kumar, P.** (2013). Analysis of MSP and its impact with special reference to Punjab agriculture. *Journal of PCTE Business Management, 10*(1), 45–58.

[10]. **Kumar Basantaray, A.** (2023). Is minimum support price effective in India? Evidence from state-wise paddy procurement. *Asian Journal of Agricultural Extension Economics & Sociology, 41*, 53–65. https://doi.org/10.9734/ajaees/2023/v41i11833

[11]. **Kumbhar, V. M.** (2011). Impact of MSP on area under cultivation and level of production: A study of selected crops in India. *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.1748342

[12]. **Morales, L. E., Balié, J., & Magrini, E.** (2021). How has the minimum support price policy of India affected cross-commodity price linkages? *International Food and Agribusiness Management Review, 24*(2), 179–196. https://doi.org/10.22434/ifamr2020.0035

[13]. **Murgai, R.** (1999). *The green revolution and the productivity paradox: Evidence from the Indian Punjab* (World Bank Policy Research Working Paper No. 2234). World Bank.

[14]. **Parikh, J., & Singh, C.** (2007). *Extension of MSP: Fiscal and welfare implications* (Study for the Planning Commission). Integrated Research and Action for Development.

[15]. **Parikh, K. S.** (2003). Growth and welfare consequences of rise in MSP. *Economic and Political Weekly, 38*(10), 891–895.

[16]. **Reddy, V.** (1995). Environment and sustainable agricultural developments: Conflicts and contradictions. *Economic and Political Weekly, 30*(5), 21–28.

[17]. **Sergill, H. S.** (2005). Wheat and paddy cultivation and question of optimal cropping pattern in Punjab. *Journal of Punjab Studies, 12*(2), 239–251.

[18]. **Singh, J., & Sidhu, R. S.** (2004). Factors in declining crop diversification: Case study of Punjab. *Economic and Political Weekly, 39*(50), 5607–5610.

[19]. **Singh, J., Srivastava, S., Kaur, A. P., Jain, R., Immanuelraj, K., Raju, S., & Kaur, P.** (2017). Farm-size efficiency relationship in Punjab agriculture: Evidence from cost of cultivation survey. *Indian Journal of Economics and Development, 13*(2a), 357–366. https://doi.org/10.5958/2322-0430.2017.00096.8

[20]. **Singh, P., & Bhogal, S.** (2021). Interrogating the MSP regime, farm laws and agrarian future in India. *Millennial Asia, 12*(3), 332–349. https://doi.org/10.1177/09763996211056996

[21]. **Singh, R.** (2015). *Minimum support price and farmers' income*. CUTS International.

[22]. **Srinivasan, P. V.** (2003). Agriculture: Policy issues. *Economic and Political Weekly, 38*(9), 887–889.

[23]. **Vanshika, S., & Harsana, P.** (2022). Minimum support price conundrum and sustainable farming: A study of the impact of socio-economic factors on sustainable agriculture. *Vantage: Journal of Thematic Analysis, 3*, 45–62.