MINIMUM SUPPORT PRICE, AGRICULTURAL PRODUCTIVITY AND

FARMER'S INCOME: A STUDY OF HARYANA

Thesis Submitted for the Award of the Degree of

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DECLARATION

I, hereby declared that the presented work in the thesis entitled **Minimum Support Price, Agricultural Productivity and Farmer's Income: A Study of Haryana**" in fulfilment of degree of **Doctor of Philosophy (Ph. D.)** is outcome of research work carried out by me under the supervision of **Dr Rajender Singh**, working as **Professor**, in the **Department of Economics/ Mittal School of Business** of Lovely Professional University, Punjab, India. In keeping with general practice of reporting scientific observations, due acknowledgements have been made whenever work

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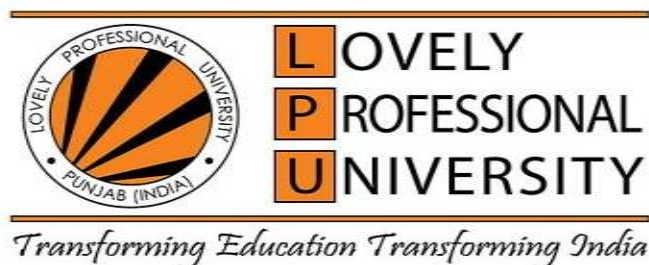
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CERTIFICATE

This is to certify that the work reported in the Ph. D. thesis entitled **"Minimum Support Price, Agricultural Productivity and Farmer's Income: A Study of Haryana"** submitted in fulfillment of the requirement for the award of degree of **Doctor of Philosophy (Ph.D.)** in the **Department of Economics/ Mittal School of Business**, is a research work carried out by **Bal Krishan, Registration No.: 41500076**, is bonafide record of his/her original work carried out under my supervision and that no part of thesis has been submitted for any other degree, diploma or equivalent course.

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Abstract

In India, horticulture turns into the lifestyle and a huge wellspring of business for individuals of India. Indian economy depends on agro-enterprises as in a greater piece of the monetary assets are made through this area. Work ingestion has been the primary element of this area in India. It is the biggest private area in India aside from giving open positions to the enormous lump of populace straightforwardly, this area additionally gives crude material to modern area at less expensive costs that plays as improvements to the monetary development of the economy. Handloom, cotton, turning, monitoring, material, rice, oil, sugar and so forth are the businesses which are straightforwardly founded on the horticulture area in India. Also, it is horticulture area which gives a premise to the improvement of unfamiliar exchange India. Agricultural area huge job and commitment to the fare a few products like as a tea, espresso, sugar, Cotton, rice, oilseeds and so forth. After green insurgency in 1966-69 India, High Yielding Varieties of seeds and manure, water assets the executives and new innovation had been utilized in agricultural area in India. The public authority carried out 10th arrangement to be incited for the agricultural area and agricultural approach was executed in 2000.

This arrangement was accentuation to create of the dirt protection water assets the executives and set an objective development of creation in agricultural area some particular yields like as sugarcane, jute, cotton, cereals and oilseeds and so on The middle government dispatched the plan in 1996-97 in this plan known as 'Sped up water system advantage customized'' (AIBP).According to this plan community government give the monetary advance to the water system and multi-reason advantage agricultural area. During this time span (1996-97 to 2005-06) focus government give the advance Rs 19,440 crore under this plan for the water system reason. Around 28 tasks finished under this AIBP conspire. In March 2006, agricultural area 3.7 million hectare has been covered under water system. Focus government foundation public water strategy in 1987. As indicated by this approach focus to satisfy the different reason like as the water assets the board under this plan. The plans give water system offices to the farmers and gather the charges of the water cost to be paid by the farmers. After mid in seventies, the goal of raising/balancing out ranch pay was the inward piece of the agricultural strategy.

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INTRODUCTION

1.1   INTRODUCTION

Agricultural area assumes a significant part in Indian economy. It is the fundamental wellspring of work for the significant extent of the populace in the country. In India, horticulture turns into the lifestyle and a huge wellspring of business for individuals of India. Indian economy depends on agro-enterprises as in a greater piece of the monetary assets are made through this area. Work ingestion has been the primary element of this area in India. It is the biggest private area in India. Aside from giving open positions to the enormous lump of populace straightforwardly, this area additionally gives crude material to modern area at less expensive costs that plays as improvements to the monetary development of the economy.

Handloom, cotton, turning, monitoring, material, rice, oil, sugar and so forth are the businesses which are straightforwardly founded on the horticulture area in India. Also, it is horticulture area which gives a premise to the improvement of unfamiliar exchange India. Agricultural area huge job and commitment to the fare a few products like as a tea, espresso, sugar, Cotton, rice, oilseeds and so forth One of the key insights from the economic survey that makes headlines is the GDP growth prediction. The GDP growth forecast is one of the important findings from the economic survey that grabs media attention.(Economic Survey 2024,) India's real GDP grew by 8.2% in FY 2023– 24, surpassing the 8% mark in three out of the four quarters during the year. India's real GDP growth in FY 2024–2025 is predicted to be between 6.5% and 7%. This result, however, is contingent upon international political and economic circumstances. India's economy has recovered from the pandemic and grown in a managed way. Few large economies were able to surpass 2020 levels of real GDP by 20% in 2024. Amidst geopolitical, financial market, and climate-related threats, the prospect for sustained robust growth beyond FY 2024–2025 appears favorable.

Indicators monitoring the health of the economy beyond GDP estimates also suggest growth resilience. India's real GDP increased by 8.2% in FY 2023–2024, surpassing the 8% threshold in three of the four quarters of that year. In FY 2024–25, India's real GDP growth is expected to range between 6.5% and 7%. According to the Economic Survey of

2024, 57.3% of all workers are self-employed, and 18.3% of them perform unpaid labour in household businesses.

One of the key conclusions from the economic survey that attracts media attention is the GDP growth prediction. India's real GDP grew by 8.2% in FY 2023– 24, exceeding the 8% mark in three of the four quarters during the year. According to Economic Survey 2024. India's real GDP is predicted to expand by 6.5% to 7% in FY 2024–2025.However, its outcome depends on global political and economic conditions. Following the pandemic, India's economy rebounded and expanded under control. In 2024, very few major economies were able to increase their real GDP by 20% over 2020 levels. Despite challenges from the financial markets, geopolitics, and climate change, there is a good chance for continued strong growth after FY 2024–2025. Growth resilience is also suggested by indicators of the economy's health that go beyond GDP projections. According to early evidence, the world economy is recovering. By 2030, the Indian economy needs to generate an average of 78.5 lakh non-farm sector jobs yearly to meet the demands of an expanding labor force. 18.3% of workers engage in unpaid labor in domestic companies, while 57.3% of all workers are self-employed, according to the 2024 Economic Survey. One of the key conclusions from the economic survey that attracts media attention is the GDP growth prediction. However, its outcome depends on global political and economic conditions. Following the pandemic, India's economy rebounded and expanded under control. In 2024, very few major economies were able to increase their real GDP by 20% over 2020 levels. Despite challenges from the financial markets, geopolitics, and climate change, there is a good chance for continued strong growth after FY 2024–2025. Growth resilience is also suggested by indicators of the economy's health that go beyond GDP projections. Leading indicators suggest that the global economy is recovering. To satisfy the demands of a growing labor force, the Indian economy must generate an average of more than 78.5 lakh jobs annually in the non-farm sector till 2030. 18.3% of workers engage in unpaid labor in domestic companies, while 57.3% of all workers are self- employed, according to the 2024 Economic Survey. The Haryana Department of Economic and Statistical Affairs prepares the estimates for the Gross State Domestic Product (GSDP). Section 1.3 presents the state's actual year-over-year (YoY) growth rates and GSDP at constant 2011–12 prices.

The state's Gross State Value Added (GSVA) is estimated to have grown by 10.1% in 2021–22 at constant 2011–12 prices. In 2022–23, the GSVA is projected to increase by 7.1%. The overall growth in 2022-23 was 7.1%, with the industrial sector growing by 6.3% and the services sector by 8.4%. (Haryana Statistical Abstract, 2022–23).The objective of raising or balancing out ranch pay after the mid-1970s was the internal component of the agricultural arrangement. Confirmation of gainful expenses will increase farmers' interest in farming, according to the Public Commission on Agricultural Strategy (1976). As declared by the DFI Committee and the Ministry of Agriculture and Farmers Welfare 2022. As of April 2016, there were two members of an inter-ministerial committee (DFI Committee). Indicators monitoring the health of the economy beyond GDP estimates also suggest growth resilience. Leading signs point to a recovery in the world economy. Until 2030, the Indian economy needs to create an average of over 78.5 lakh jobs per year in the non-farm sector to meet the demands of an expanding labour force. In terms of employment, 57.3% of the workforce is self-employed, while 18.3% are unpaid workers in household enterprises. (Economic Survey 2024)

This arrangement was accentuation to create of the dirt protection water assets the executives and set an objective development of creation in agricultural area some particular yields like as sugarcane, jute, cotton, cereals and oilseeds and so on the middle government dispatched the plan in 1996-97 in this plan known as 'Sped up water system advantage customized' **Agriculture Insurance benefit programme (AIBP).** According to this plan community government give the monetary advance to the water system and multi-reason advantage agricultural area. During this time span (1996-97 to 2005-06) focus government give the advance Rs 19,440 crore under this plan for the water system reason. Around 28 tasks finished under this AIBP conspire. In March 2006, agricultural area 3.7 million hectare has been covered under water system. Focus government foundation public water strategy in 1987. As indicated by this approach focus to satisfy the different reason like as the water assets the board under this plan. The plans give water system offices to the farmers and gather the charges of the water cost to be paid by the farmers. The internal component of the agrarian technique was the goal of increasing or offsetting farm compensation after the middle of the 1970s. General society assign on

horticultural methodology (1976) felt that certification productive expenses for the ranchers the ranchers will engage interest in agribusiness region. The farmers for the variation of current and new innovation exceptionally engaged the region of green upheaval like Haryana, Punjab. During mid-1990s, the Indian economy was opened for global exchange. Advancement exchange for

agricultural area a few wares was vital in redirection of land from oats and heartbeats to business crops. **(Nandkarni and Vedini 1990)**, the Indian economy was liberalized to allow global trade.**).** Farmers were urged by agricultural approaches to join high esteem crops in their editing design. To be keep up in practical advancement in agricultural area, government set up public venture for land change and tenure change for improve the efficiency and pay in agricultural area. Focus government set up the essential agricultural credit society. The general public gives the credit offices to the farmers was 23 lakhs in 1950-51. However, it has been expanded to 34500 lakhs in 2000-2001 for the profitability development in farming's area. For the improvement of agricultural area NABARD was set up in 23 July 1983 for give the credit ahead of time to the agricultural turn of events. After NABARD numerous banks set up for the agribusiness improvement. The local country bank set up in 2 October long term. Compared to 17.4% in 2021–2022, this indicates a rise of 14.2% in 2022–2023.The GDP is estimated to grow by 7.1% in 2022–23, reaching ₹6,08,420.26 crore at constant (2011–12) prices, compared to a growth of 11.3% in 2021–22. The Department of Economic and Statistical Affairs, Haryana, prepares the estimates for the Gross State Domestic Product (GSDP). According to the Advance Estimates for 2022–23, the GSDP of the state at current prices is projected to be ₹9,94,154.08 crore, reflecting a growth of 14.2% in 2022–23, as compared to 17.4% in 2021–22. At constant (2011– 12) prices, the GSDP is estimated at ₹6,08,420.26 crore, indicating a growth rate of 7.1% in 2022–23, in contrast to 11.3% recorded in the previous year. The GSDP at both current and constant (2011–12) prices, along with the year-over-year (YoY) growth rates in real terms, are presented in Section 1.3. The Gross State Value Added (GSVA) at constant (2011–12) prices is estimated to have grown by 10.1% in 2021–22. In 2022- 23 growth of GSVA has been estimated as7.1%. The growth of 6.3% in the industrial sector and 8.4% in the services sector contributed to an overall growth of 7.1% in 2022– 23 **(Haryana Statistical Abstract**

2022-23).

Market structure advancement is assuming an extremely significant part in increment the farmers' pay in agricultural area. Farmers get a profitable cost through the directed market. The agricultural commission was prescribed to set up agribusiness' directed market. In the event that the costs of horticulture item are supportive of the farmers, the farmers urge to move the more land under the chose crops. The farmers' pay has been incremented through the market structure improvements, bothering

offices and attractive excess. The choice identified with development of harvests has been rely upon accessibility of land, water and assumption for the costs of the horticulture's products. After mid in seventies, the target of raising/balancing out ranch pay was the inside piece of the agricultural arrangement. The public commission on agricultural strategy (1976) felt that the affirmation gainful costs to the farmers the farmers will be empowering interest in farming area. The farmers for the transformation of current and new innovation uniquely engaged the territory of green insurgency like Haryana, Punjab. During mid-1990s, the Indian economy was opened for global exchange. Advancement exchange for agricultural area a few wares was vital in redirection of land from cereals and heartbeats to business crops **(Nandkarni and Vedini 1990).** Farmers were urged by agricultural strategies to consolidate high worth harvests in their trimming design.

It is felt overall that farmers of India have been receiving current innovation to expand the development execution of agribusiness area. This has delivered the necessities of a part of the fortifying associations to be specific, Food Company of India, commission at horticultural Expenses and cost in 1965 which was made to give money related safeguard to ranchers and customers in India. Since 1965, the fundamental goal of Indian agricultural value strategy stays to spur the farmers for abusing assets at their ideal level to get greatest produce and simultaneously, this happens without influencing the premium of expenses of the modern area. Keeping in see the general requirements of the economy, in 1965, the foundation of the Agricultural Prices Commission was done to develop a decent and incorporated value set up in India. Since March 1985, the Commission has been known as Commission at Horticultural Expenses and cost.

To expand creation and efficiency in India, guarantee compensation costs strategy could

demonstrate instrumental at unsteadiness in costs may drove the misfortunes to certain makers regardless of whether they receive present day inputs. Accordingly, reliably, least assistance costs are fixed by the public power in view of the recommendations of the Commission at Agrarian Expenses and value **(Commission for Agricultural Costs and Prices, 2023).** Thus, government spends an enormous add up to give value impetuses to farmers to spur them to create more and change their trimming design according to the necessity of the economy. However, how far, this use has been demonstrated to profit the farmers regarding expansion in their pay from

significant harvest is the focal inquiry which is generally pulled in the consideration of analysts to discover the reaction. So, the current investigation will be led in Haryana state to look at the effect of homestead reap costs to build the farmers' pay. Simultaneously how far government has got accomplishment in acquiring wanted change editing design by receiving a positive value strategy for the focused-on crops.

Horticulture is a critical part in Indian economy. Lion's share of the number of inhabitants in state is locked in, straightforwardly or in a roundabout way in agricultural area. Haryana is one of the states to accomplish of the green upset just as high pace of development of horticulture creation. The chief harvests of the state are wheat, rice, maize, grain and bajra. Cereals structure a significant element of the veggie lover diet. They comprise the staple food and they are likewise a rich wellspring of energy, minerals and contain nutrients. In our country numerous yields has become because of the various soils and distinctive environment condition in various states in India. Haryana's dirt finds in fruitful and temperature is an appropriate for the trimming design.

The state's administration change editing example or yields expansion strategy for benefit in agricultural area. Because of the development of numerous offices to be incited in agricultural area run by the middle government just as the state government irrigation offices, crops broadening offices, crops protection, National Bamboo commission, endowments of the manure offices and Minimum help costs, numerous offices to expand the agricultural creation. Yet, the farmers don't face the challenge since they develop the harvests which have less danger like Wheat, Rice, cotton, mustard and rapeseed. Because of this numerous yield decrease fill in Haryana like bajra, jowar, maize, grain and gram. The creation and efficiency rely on the climate the change in costs in agricultural wares

and inconstancy of zone. Different variables rely upon the farmers' pay like as value strength, to utilize the new innovation in agricultural area, land change and occupancy reform.

As stated by the Ministry of Agriculture and Farmers Welfare 2022 and the DFI Committee. An inter-ministerial committee (DFI Committee) was established in April 2016 to examine DFI-related concerns and provide tactics for achieving the goals. The committee calculated three board variables: increased productivity, decreased costs, and compensating pricing.

These variables were obtained from the fundamental equation of economics, which is

Net Return= Gross Returns - Cost of Production

Best possible financialization of farmers' output. Production that is sustainable, increased resource efficiency, restoration of knowledge-based and extended services, as well as risk management.

The current examination has an incredible significance concerning Haryana state. Because of progress in the editing design it shifts towards specialization of few yields. Farmers are developing that crop whose market request is high and they get more benefit of that crop. It influences states' economy. Then again, because of varieties in region, creation and efficiency of significant yields to change the pay of the farmers and in the supplies that they had utilized in developing harvests. Singular rancher needs improved strategy detailing as well as better direction for dynamic. The correspondence of this information to farmers could assist with utilizing their assets all the more sensibly and settle on better short and since a long time ago run choices on speculation and arranging. The fundamental need of human existence is Food, sanctuary and material. The food creation relies upon the advancement of agribusiness. Food grains like oats say paddy, wheat, millets - sorghum, ragi and maize and heartbeats - red gram, green gram, and dark gram are delivered in enormous amount in India. The nation devours significant amount of food created in our country. The Indian populace gets over 1.21 billion which is to be taken care of and it is the superb obligation of the Government to make sans hunger. The all-out arable region in our nation comes around 60% which is the second biggest on the planet. The nation has different environments like cold, winter, summer and pre-winter which clears route for the diverse creation of different food creations in our country

which isn't existed in some other country on the planet. In future, the food items will fundamentally affect our economy. The populace expansions in mathematical manner where the development advancement of agribusiness is in number-crunching way.

To have supportable creation of food grains to the mouth of arising and colossal human populace it is inescapable to pay high note on agricultural area. The development of farming additionally adds to give greater business freedoms to the jobless likewise it is demonstrated that only food necessity isn't the primary standards whatever the food produce ought to have the dietary prerequisites for the general population to have sound individuals. India lives in towns. The provincial regions are the wellspring of the biggest vocation in our country by methods for crop raising, creature raising and its unified areas. The portion of agribusiness towards the Gross Domestic Product is exceptionally urgent. Indian economy is overwhelmed by agrarian economy and it. The economy of Haryana State was primarily based on agriculture when the State was formed. The agriculture and related sectors (crops, livestock, forestry, and fishery) contributed the most to the gross state domestic product (GSDP) at constant prices at the start of the fourth five-year plan (1969–1970) (60.7%).Services (21.7%) and Industry (17.6%) Sectors came next.1.5 The Gross State Value Added (GSVA) growth of the State at constant (2011–12) prices has been assessed as 10.1% in 2021–22. This increase occurred over the 37 years (1969–70 to 2006–07) between the 4th and 10th Five Year Plans. The increase of GSVA is projected to be 7.1% in 2022–2023. The overall increase in 2022–2023 was 7.1%, driven by the 8.4% growth in the service sector and the 6.3% growth in the industry sector **(Haryana Statistical Abstract 2023-24).**

To have comprehensive improvement of food security, rustic work and eco- reasonable advances like soil protection, economical public asset the executives, and keep up of biodiversity which are generally fundamental to accomplish the supportability in horticulture. Most noteworthy accomplishment underway isn't the incredible assignment yet keeping up something similar and expanding pattern of food creation constantly is the more prominent undertaking for our country, which should be the number two in total populace.

Various types of Food grains creation in India have shown wonderful accomplishment lately and the food grain creation comes around 225 to 230 million tons each Twelve

months. The significant food crops like paddy, wheat, maize, grain which are generally cereal yields and the millets like sorghum, cumber, and finger millet crops are developed in our country. The green unrest prompts independence in food creation. The bye-results of the food grain creation which is the crude material for the handling of food items contribute 40% of agricultural monetary worth. Worth expansion of the food items gives more minor pay raise to the food makers say farmers. The farmers not exclusively ought to have the cutting-edge information on crop creation yet additionally they ought to include themselves in promoting of the food items through the cycle of significant worth option.

In non-modern countries, where agribusiness is essential, the Horticultural expenses have a lead position in the worth shape. Examination of significant worth lead is a basic fundamental of any strong worth methodology. Farming Value Strategy and worth sincerely strong organization have gone under academic examination as a result of the new changes towards headway of the Indian economy. As agribusiness turns out to be more market arranged and attractive overflow expands, changes in relative costs of various ranch items influence the grounds that rancher might want to put under each yield which thus would likewise influence the degree of creation of various endeavours.

Any agricultural approach investigation needs to manage the issues or factors affecting interest of the agricultural yield. The vital choices in agricultural creation, for example, how do farmers 'choose what to deliver and the amount to create? What technique instruments and various parts influence their decisions concerning land's piece under different harvests ought to be found to construct a sound and powerful rural plan? The completion of supply in cultivating is presumably going to be made on the data relating to particular co-capable, expenses of information sources and yield. Minimum Support Price is stabled by govt preceding establishing season, yet mindfulness level among rancher is cheap. Henceforth this investigation centres around the strategy for assessing MSP dependent on Twenty Thousand Eighteen Financial plan presented by the public authority wonder "at any rate Fifty percent extra than the weighted normal expense of the creation. An entrance would be created to make mindfulness between the farmers.

Minimum Support Price is a chief section of Horticultural Value Strategy of India. It centres to validate support cost to ranchers and reasonable expenses for buyers through

Open Circulation Framework. The worth sincerely steady organization was conceptualized during pre-green uprising period as a regulatory framework for helping ranchers to adjust new progressions. A short time later, Farming Value Commission was set up in the year 1965, considering Jha leading group of legal administrators' recommendations to propose support costs for crops following contemplating the cost of improvement. It was reflected in the redesigned terms of reference of Rural Costs Commission (which was in this way renamed as Commission at Horticultural Expenses and cost) with a move from expanding the creation to developing a creation plan standard with the overall necessities of the economy. The Commission at Agrarian Expenses and value (CACP) proposes MSP. For 26 cultivating yields for instance grains (paddy, wheat and ragi), coarse cereals (grain, jowar, bajra and maize), pulses (gram, arhar/tur, moong, urad and lentil), oilseeds (groundnut, rapeseed/mustard, toria, soyabean, sunflower seed, sesame safflower seed and niger seed), rough cotton, unrefined jute, copra, de-husked coconut, sugarcane, VFC tobacco. Wide objectives of the Horticulture Value Commission are to ensure profitable expenses for ranchers and moderate expenses for purchasers and advance prudent usage of all resources towards socially appealing yield mix. The more deplorable situation of the worth methodology to the degree stressed over the zone task under gram crop considering the way that the district has been decreasing notwithstanding giving more expenses for the gather. Cost motivating forces as least help costs assisted India with expanding food creation during green upheaval period. Least Help Costs (MSP) moreover targets acquiring food grains from food flood states for dissemination through Open Circulation Framework and keeping up support stock and thusly fulfil the interest supply opening **(Jha and Srinivasan, 2006)** examined how Minimum Support Prices (MSP) served as a key cost-incentive mechanism during the Green Revolution's not only increased food production but also helped procure food grain from surplus states (like Punjab and Haryana) to buffer against shortfalls and distribute via the Public Distribution System (PDS), thus bridging the demand–supply gap .The MSP-driven incentives are credited with expanding acreage under wheat and rice in Green

Revolution states such as Punjab and Haryana.

Cost rousing powers as MSP are credited for the augmentation in domain under wheat

and rice in the green bombshell states like Haryana and Punjab. Also, the Horticultural worth technique is considered to have upheld food crops more than various yields. Hence, a gigantic mass of good quality and was moved from oilseeds, beats and other critical harvests to paddy and wheat crops, making a real anomaly in the interest and supply of various other rural products.

In different locales of the nation because of little attractive overflows, the Agricultural value strategy is viewed as ineffectual as the public authority has less revenue in acquisition tasks. In this way, it is contended that the market costs for wheat and paddy crop rule lower than the Minimum Support Price (MSP) in these areas during post-gather period and shoot up during the lean time frames, which is normally not the situation in the excess delivering locales **(ADRT, 2003)**. As of late, the Minimum Support Price (MSP) strategy has been reprimanded by the two farmers and defenders of streamlined commerce. The hefty sponsorship of agricultural fares by created nations because of WTO commitments, the circumstance is quick evolving. Since global agricultural costs have become lower than the Indian agricultural costs, farmers in the state have been put to a genuine impediment.

Indian economy is predominately country in character is as yet overwhelmed by the agribusiness area, which represents almost one-fifth of the total national output (GDP) and utilizes near two-third of the workforce. In spite of good GDP development rates (around 5% every year), India has joblessness rate of about 15%. Investigating the inauspicious circumstance of work in the nation all in all and farming area specifically, there is earnest need to offer accentuation to produce roads for making more positions in this area.

Horticulture is a state subject in India, and the role of the focal government is limited to providing strategic direction and financial support to the region. India's legislature has strongly supported the development of agriculture for the expansion of the agricultural creation for the food supply of the developing people. However, despite the rapid improvement of agricultural areas other than horticulture, cultivating continues to be essential for the vocation of a large part of small, marginal and old farmers. New advances have not filtered down among the farmers to the desired extent. Over the past decade, many attempts have been made in the Agri- business area by introducing various

plans. However, the results have not been reflected in the ideal level of the public agri-production, profitability, remuneration and value indicators. This indicates a few shortcomings in the implementation interaction of such projects and thus necessitates development in the implementation methodology. Additionally, an organized arrangement and prioritization is required to identify the greatest benefit of the improvement program.

The right approach is to supplement accessible assets to improve explicit creation exercises and take up extra exercises that are appropriate to the specific agro climate and social conditions of various areas to use the accessible assets to improve horticulture area development through in general region planning idea. The innovative difference during the 1960s was a phase to meet the food emergency that threatened the country's food security during that time. Around that time, it was suggested that innovative change alone would not bring the dynamism to the development of the agricultural area and it would have to be upheld with proper institutional reinforcement.

Therefore, a gradual process of institutional changes was adopted to improve and encourage development. Land changes were redone in the mid-70s to declare its second stage during the time of institutional change. The second step was shaped by agricultural organization and augmentation. This was accompanied by fortifying the structure of agricultural schooling.

"As a crucial and immediate measure, the financial sector underwent nationalization with a renewed focus on need-based lending. This was followed by significant advancements in promoting an agricultural value strategy that would foster sustainable growth through incentivizing value creation. To establish an effective and appropriate structure for this strategy, the Government of India formed a panel under the leadership of Late Shri L K Jha to recommend necessary steps towards organizing the country's agricultural value policy. Following the recommendations of the Jha Committee, a series of actions were taken resulting in the establishment of the Agricultural Prices Commission in January 1965. The first report, covering the Kharif season, was submitted in August 1965. This report clearly outlines the key objectives of the emerging value policy at that time. As stated in its preface, "The Agricultural Prices Commission and cost was set up in January".

This was the beginning of the worth intercession contrive that went through for the last three and half numerous years. Rural Costs Commission through its reports framed and composed the worth system of the country during the latest forty years. In the early years, the worth technique maintained the exercises taken on the mechanical front giving movement to recognize the new advancement. All through the drawn out it transformed into a recognized reality that ranchers responded to esteem inspirations more powerfully now than beforehand. Raj Krishna in his central paper, curiously, highlighted the worth response of Indian ranchers no matter what the strength of means developing **(Raj Krishna 1963)** Following this, different worth responses mulls over showed the strong aspect of expenses as rousing powers in horticultural region. It has been noted by Acharya (Previous Director of the CACP) that "for sure, the instruments of Least Help Costs, food allotment and data blessings have expected a critical part in achieving the objectives of food security and accelerated improvement of the economy and benefits all of the region of the overall population" (1997). Thus, the responsibility of Farming Value Strategy towards supporting the beat had by the mechanical effect during the sixties has been by and large perceived. During the latest forty years the agrarian methodology implications have changed by and large. Costs played much greater and more urgent part than just supporting the gathering of development. It was during the eighties that the ranchers' affiliations pushed profitable piece of expenses and requested getting back to the procedure for appearing at the Base Help Costs. Many changes were introduced in the way of thinking and move toward following Sen Panel (GOI 1980) and Hanumantha Rao Board (GOI 1990) reports. The accompanying issue was separate by the conversation based on conditions of trade among cultivating and non-agricultural region (GOI 1995). The situation in the horticultural region went through liberal changes directly following movement. In this remarkable situation, questions are being raised about the sufficiency and feasibility of the instruments of significant worth technique unequivocally the Base Help Costs.

1.2   INTRODUCTION OF MSP

The committee presented separate data showing crop prices for Kharif and Rabi seasons. The central government will select the management cost fairly and equitably after taking into account the report of the committee and the opinion of the state government and

carefully monitoring the results of the benefits and services of the state. The commission proposed two payment schemes: minimum contribution rate and acceptance rate. The minimum support price is set by government authorities to ensure that farmers are protected from a significant price reduction when protection is granted. The minimum aid price for canes has been reduced to the legal level and the advertised price is therefore the nominal legal minimum price. Candy manufacturers have a legal limit on the starting price they can advertise, and any transaction or purchase below that is considered illegal. The government has announced price subsidies for various agricultural products (e.g. wheat, oilseeds, fiber crops, sugar and tobacco). Production starts before the planting season in India. This allows farmers to determine the extent to which the value of their profits is protected by government regulations. The Economic and Research Services of the Department of Agriculture (DESMOA) is responsible for the dissemination, integration and dissemination of valuable agricultural information. The value proposition for agricultural products aims to guarantee profitable production of agricultural products to farmers to support higher demand and production, and to protect consumers by offering affordable products. Effective strategies also seek to develop a vision that respects and encompasses all the needs of the business. "The minimum cost of aid is the cost to the government of purchasing products from farmers, regardless of the cost of production." If the output price falls after construction, the government will purchase at MSP, so the assessment cannot be lower than MSP. So this directly helps farmers. In an unprecedented move, Indian authorities announced subsidized prices for rice in 1966-67 due to the green crisis and expanded the crop to avoid loss of profits for farmers. Since then, MSP systems have been expanded to cover many production units. Indian public authorities announce service prices for the first 27 harvests (i.e. rabbis and kharif) at the beginning of each season.

Following are the crops covered under MSP:

- Cereals: rice, wheat, jowar, bajra, maize, ragi and grains.
- Additional products: moong, urad, arhar, gram, lentils and peas.
- Oilseeds: Peanut, rapeseed and mustard, niger seed, soybean, sunflower, sesame and safflower.
- Fiber products: cotton and jute. Other: Sugarcane, VFC tobacco, onion, potato

and coconut **(Commission for Agricultural Costs & Prices by published report food subsidy policy during 1966-67).**

The government announces the Minimum Price (MSP) in every season. Prices are controlled at this level by opening suitable and other offices in places where large- scale agricultural equipment and purchases are required. It sets the subsidy prices for different agricultural products, including the recommendations of the Committee on Agriculture and Prices (CACP), the opinion of the state government and the midstream industry, and other factors deemed important for the service charge. MSP is announced well before the crop season so that farmers can make informed decisions regarding crop cuts.

We've got the agricultural industry from the UK, plus the economy and the total area accounts for around three-quarters of gross domestic product (GDP) and employs more than four-fifths of the population. Food shortages that occurred in the mid-1960s forced India to change its agriculture. India has undergone major organizational changes to achieve food independence. Domestic reform plans have been made to stimulate agricultural production and increase crop yields. These include land reform, major changes in agricultural plans, agricultural planning, introduction of support prices and also introduction of minimum support prices (MSP).

GROSS STATE DOMESTIC PRODUCT

The Department of Economic& Statistical Affairs, Haryana prepares the estimates of Gross State Domestic Product (GSDP). As per the Advance Estimates for the year 2022-23, the GSDP of the State at current prices has been estimated as 9, 94,154.08 crore, recording the growth of 14.2% in 2022-23 as compared to the growth of 17.4% recorded in 2021-22. The GSDP at constant (2011-12) prices is estimated to be 6, 08,420.26 crore with a growth of 7.1% in 2022-23 as compared to the growth of 11.3% recorded in 2021-22 **(Economic survey of Haryana 2022-23).**

1.3   AGRICULTURE, THE BEDROCK OF INDIAN ECONOMY

Agriculture plays an important role in the economic development of underdeveloped countries like India. It has been involved in significant developments in the financial development of India since independence and is considered one of the most important sources of finance affecting the entire economy. The fact is that the success of India's financial planning largely depends on the development of the horticulture industry, which

shows that agriculture has reached high attention, especially after the Green Revolution; Whether the agricultural sector has reached or not. Independent and valid level; or does it remain irrelevant and situational because conflicts occur regularly and undermine the ability and integrity of Indian farmers to risk increasing crops? India, where nearly two-thirds of the population is engaged in horticulture **(Ministry of agriculture and farmers' welfare India 2017-18)** has witnessed many crises throughout the century due to the factors that determined its development; both are human works.

India is the seventh biggest country in topographical zone, the second biggest in populace size and the twelfth biggest country in financial savvy. The economy of India is however assorted as it seems to be huge, with various significant areas including producing ventures, agribusiness, materials and painstaking work, and administrations. Horticulture is a significant part of Indian economy, the bedrock of its financial establishment

The share of Services Sector increased from 21.7% to 46.6%during this period. Since the 11th Five Year Plan, the pace of structural transformation of the State's

economy remained continued consequent upon the higher growth recorded in Services sector as compared to other two Sectors during this period and onwards, the share of Services sector in GSVA strengthened to 49.4% in 2022-23 resulting in the decrease share of Agriculture and Allied Sectors (17.4%).The contribution of Industry Sector has been recorded as 33.2% of the GSVA in 2022-23.The share of different sectors in the State's economy is presented in **(Haryana State Economic Survey 2022-23).**

Agribusiness in India is largely the business of small farms (cultivation of two hectares or less). Small farmers and ranchers account for three-thirds of all estates. For these resource-hungry small farmers and ranchers, the effects of drought and depression can be devastating. Crop failure due to additional disasters and diseases, such as floods, droughts or droughts, can cause great suffering. Farmers provide resources to meet their needs and their use is unforeseen, affecting the creation of the future **(Jodha 1975)** Recent examples of farmers committing suicide due to poor harvest or falling market prices are unprecedented. Low profits reduced economic activity in rural areas, leading to inadequate public services. It has financial and social consequences because unemployment reduces farmers' interest in foreign aid. According to the information

obtained, the reduction of the pasture plan has led to indifference to the entire economy, causing the entire economy to be exposed to the profits of agriculture, where the victims and most importantly the farmers are. Although there are major disasters such as changes in progress, reductions in seed crops and different schedules for the same season, and other reductions, provisional schedule estimates effectively received by the government and farmers cannot be considered fair **(Ahsan 1985).**

India has a predominantly agricultural culture and approximately 66% of the population is employed in agriculture. Agriculture is a lifestyle and culture that has created its own philosophy, behavior, and culture and business life. Therefore, agriculture is and will continue to be important for all means of developing the country's economy. The rapid development of agriculture is important not only for the achievement of civil liberties, but also for widespread prosperity, leading to domestic food security, the appreciation of the value of labor, and the rapid reduction of poverty.

1.4 STATUS OF AGRICULTURE IN HARYANA

Haryana is situated in the north western piece of the country. The environment is dry to semi-bone-dry with 354.5 mm of precipitation. Precipitation from July to September is around 29% and there is additionally precipitation from December to February. The state has two agro-climatic zones. The Northwest is reasonable for developing rice, wheat, vegetables and normal grains; the southwest is appropriate for developing superior grade, tropical natural produce, great vegetables and lovely plants.

The state's surface region is 4.42 million hectares (mha), which represents 1.4% of the country's topographical region. Arable land is 3.7 mha or 84% of the state's geological region, of which 3.64 mha or 98% is created. The all-out pruning region of the state is 6.51 million hectares, the net pruning region is 36,400 hectares, and the pruning rate is 184.91 % (Directorate of Economics and Statistics 2022-23).**.**

1.5 RISKS IN AGRICULTURE

It is not surprising that agriculture is dangerous in connection with the negative consequences caused by physical, climatic and economic factors. These factors include normal poverty (e.g. stress and disease) and weather conditions beyond the farmer's control, and thus the same man-made changes (e.g. poor fertilizer use, destruction of the natural environment, Agriculture, evolution of life). They also include adverse changes in

material and production costs. In order to have a discussion about the best way to manage hazards in horticulture, it is important that the various sources of hazards affecting the agricultural industry have different characteristics.

(i)   Production risks

Nurturing is often defined as making a difference in the outcome or creating a risk. Unlike most business people, farmers cannot predict that production will occur due to external factors such as weather conditions, drought, and disease. Farmers may also be stressed by adverse conditions during harvest or inspection, which can lead to production losse**s.**

(ii)   Price shock or Market risks

Cultivation is often defined as changing values or creating risks. Unlike most businesses, farmers cannot predict where production will occur due to weather, drought and other factors such as disease. Farmers may also be stressed by adverse conditions during harvest or inspection, which can lead to losses.

(iii)   Financial & Credit risks

The way an organization finances its operations is an important consideration for some financial projects. In this respect, agriculture also has its own characteristics. Most agricultural production cycles take a long time, and farmers should expect to have the option of refunding prices once the product is available. This leads to income problems, which are exacerbated by lack of access to savings management, credit and basic costs. These problems can be called exchange rate risk.

(iv)   Institutional risks

Another important problem for farmers is that unexpected changes in the instructions regarding agriculture in the workplace will not have an impact and will not be good. Changes in guidelines, financial management, price levels or incentives and incentives may change the outcome of the competition. This is particularly useful for import/trade and product promotion, but is also important because sterilization and cleaning procedures can restrict movement and place a heavy burden on the company.

(v)   Technology risks

Like most business visionaries, farmers are responsible for all the consequences of their actions. Selection Today, new developments in agriculture such as the emergence of

genetically modified crops can lead to serious risks for producers.

(vi)   Personal Assets risks

Finally, like some financial market matters, farming families are also exposed to risk. Personal hazards affecting the lives and livelihoods of farm workers are exposed, as well as potential damage from floods, storms and droughts, as well as damage or theft to production and other agricultural activities.

(vii)   Other Risks

Changes in prices of products and raw materials, production facilities and wages, data protection, government savings, risks, interest in products and facilities in the market and society.

1.6   PERILS AND PREDICAMENTS IN AGRICULTURE

Cultivating is naturally one of the most dangerous financial exercises. Vacillations in ranch pay are because of fluctuation in crop yields and ware costs. Agribusiness creation is precarious as a result of its reliance on climate and intrinsic natural vulnerabilities in overseeing crops. The advancement of machinery and machinery has little impact on the risks of pasture production and does not help improve farmers' risks to the fullest. As indicated by the National Agricultural Policy 2000, "In spite of innovative and monetary headways, the state of farmers keeps on being insecure because of normal catastrophes and value vacillations." "In some cases, these negative situations are also one of the reasons that drive farmers to commit suicide, and now the real balance will be reached as to which farmer will commit suicide" **(Chand and Raju 2007).**

Et al Sharma (2000) also found similar results to those seen in NAO 2000. In addition, the result is poor, competitiveness is low, the lack of financial or technical access is too great compared to production costs, etc. Factors such as make production very important. Also, the reaction of various makers to advertise signals changes across reality, prompting vacillations in the total stock bringing about variances in the market costs. In India, the greater part of the cultivating is polished as downpour took care of horticulture and it is helpless before the climate. Out of the all-out net developed territory of almost 191 million hectares (Mha), just 37% has enduring water system office and the rest 63% is subject to precipitation. Due to the short duration of the storm, the country uses less than 20% of the rainfall. The remainder of the shower disappears with runoff. Many

Indian farmers suffer from crop failure during times of poor or reduced rainfall. Horticulture, being the main area in Indian economy, it isn't just adding to the public pay yet additionally gives job to about 66% (**National Horticulture Board Annual report 2023)** of the labor force in the country. The difference in agriculture affects many sectors of the economy due to its forward and backward linkages. Issues turns out to be more intense when broad dry season or floods lead to trim disappointment influencing huge number of makers. For this situation, the monetary sufferings of the farmers become a local area issue that influences the government assistance of everybody. Creative activities in business differ from those in agriculture because they are done using new knowledge and under different management than agriculture. In this vast region, the power of nature can increase or decrease yields even as farmers try to balance their effects. Sicknesses just as bugs and irritations harm the yields and break of pandemics cause passing's. Infections and nuisances likewise murder and impair significant domesticated animals regularly causing misfortunes of extraordinary worth. Customary farming should be sane and proficient. However, some studies indicate that hard-working but desperate farmers will struggle over time and will not invest enough in the current system, considering it more dangerous than traditional strategies. There is plenty of evidence that unhappy farmers are dangerous and prevent them from making more money from assets.

Hazard avoidance of the farmers" brings about continuation of the conventional practices and development of customary harvest assortments rather than High Yielding Varieties (HYVs), which are thought to be more hazardous when contrasted with customary or neighbourhood assortments. Without formal procedures of danger dispersion, farmers do receive customary danger limiting practices like bury/blend trimming, crop expansion or danger sharing systems through share-editing and tenure business sectors and other legally binding game plans **(Jodha 1975)** The customary danger sharing practices don't upgrade social government assistance and, more often than not, implied protection expenses are one-sided against the guaranteed. In the event that agribusiness is a hazardous business, human inventiveness has not neglected to devise available resources to decrease chances or to alleviate their outcomes. To adapt up to different dangers, farmers and provincial social orders have built up various danger the board procedures,

which could be assembled as danger decreasing and hazard adapting techniques **(Walker and Jodha 1986).** The ex-bet estimates received to lower or limit dangers can be assembled as danger decreasing procedures while ex- present estimates embraced on alleviate hazards are named hazard adapting measures or methodologies. Some o these techniques, frequently practically speaking, include:

➢ Crop enhancement;

➢ Mix-trimming; and

➢ Cultivation of dry spell or flood safe yields

1. **Crop Diversification** Crop broadening is viewed as the most widely recognized and powerful danger the board system utilized by farmers. In expansion, the rancher spreads hazard across different crops with the expectation that regardless of whether one crop fizzles, it very well might be repaid by different crops. However, cultivation encourages the transfer of limited equipment between crops, and the cost of increased production means that the most profitable crops cannot be produced "without exception or sacrifice of income".

2. **Mixed Cropping:** Reduced crop yield due to reduced incidence of pests and diseases. The income potential of mixed cropping is even more significant. It also enables the freedom to grow short-term and long-term crops, thus limiting competition for soil resources and yielding moisture, sunlight, etc., despite the fact that intercropping is not effective in reducing crop yields. Increases its usage. Yield. The role of risk undoubtedly helps to avoid all disappointing outcomes (Singh and Walker 1984), as shown in some comparisons between crops of embedded crops (Walker and Jodha), Stay in farming or provide assistance to limit danger. Sharecropping is common in dry lands and hillsides.

Cultivation of the farm is more beneficial, especially in cases where the resident is a small farmer, and against danger, because the resident has to share a disproportionate share of the crop with the landowner and is protected from the difference in yield

3. **Switch to water or flood resistant crops**: especially in areas that experience floods and frequent flooding.

1.7 DETERMINATION OF MINIMUM SUPPORT PRICES

Considering the entire structure of the market for a product or collection of products, as well as making recommendations regarding the minimum support price and other

parameters. The committee decided on the following points:

1. Production cost
2. Change the entrance fee
3. Input-output values are equal to
4. Business price trends
5. Demand and supply
6. Equalization of crop prices
7. Impact on technology costs
8. Impact on cost of resources
9. Impact on overhead costs
10. International Value Environment
11. Comparison of future prices and the prices farmers will receive.
12. Effect on prices offered and free consultancy.

In forming the proposals in regard of the degree of Minimum Support Prices and other non-value gauges, the Commission considers, aside from an exhaustive perspective on the whole design of the economy of a specific ware or gathering of items, the accompanying elements:

1. Cost of creation
2. Changes in input costs
3. Input-yield value equality
4. Trends in market costs
5. Demand and supply
6. Inter-crop value equality
7. Effect on mechanical expense structure
8. Effect on typical cost for basic items
9. Effect on broad value level
10. International value circumstance
11. Parity between costs followed through on and costs got by the farmers,
12. Effect on issue costs and suggestions for endowment

Assessment of cost of cultivation/cost of production is an important factor in the development of MSP recommendations and may be submitted to the Committee through

the Joint Study on the Growth Rate of Core Product Prepared by the Bureau of Economics and Statistics, Bureau of Economics and Statistics. Agriculture and Cooperation, Government of India. These estimates take into account the realities of construction and take into account all financial and physical costs incurred by the farmer, rent, and estimate for employment generation by the family, estimated cost of capital investment (excluding land), estimated rent. Land (excluding land income), pasture and building depreciation and other random costs.

1.7.1 Need to review MSP

The main objective of the Agricultural Price Commission (APC) is to reduce and reduce fluctuations in food prices, protect consumers from inflation, provide and support price drivers to producers. Innovation. Consumers embrace innovation. As seen earlier in the mid-80s, the purpose of the strategy changed significantly due to changes in the agricultural industry. These improvements were achieved through a change in objectives and a focus on cost effectiveness. Later, the importance of the research question also changed during this period. MSP is now seen as a bargaining chip for the government and a powerful measure for farmers (Welfare Network). Although it has been fully implemented in the WTO, concerns remain about its stability and willingness to achieve the goals set by its engineers. The explanation behind the continuation of the Participation Rate, the adequacy of the targets set out in the 1986 report, and the Support Value compared to the perceived profitability of the country are among the main issues currently being discussed. A more important question is whether the MSP strategy needs to be adjusted. In general, the configuration of strategic values has changed a lot over time, and therefore the process and performance of strategic values affect the business. This has led many social scientists to re-examine MSPs as a tool for working with significant boundaries in the agricultural industry. The main objectives of price policy (as seen in the 1986 Declaration) include the incentive to encourage innovation, land use and different assets, the impact of prices on the average price of goods, the role of agricultural income and wages. A more remarkable issue has come to the fore in different sectors of the economy. As it was done, MSP received significant recognition because state intervention in agriculture is only part of the protection package. This also relates to work. There are two important points to consider in the current context; Mine.,

i.   Protecting farmers from price fluctuations in international currencies **(Nayyar and Sen 1994)**

ii.   Create an incentive for pasture companies to manage the production of assets for the development/marketing of ready crops. The center aims to spread respect for doctors. Therefore, it is important to monitor the entire cycle and feasibility of this important tool, MSP.

It has been noted in the recent past that the development of certain crops varies for different reasons. Questions are sometimes asked about the reason for allocating space to such products and the impact of the product change date on general government aid. This is a bit provocative to evaluate manufacturers' speculations on MSP response from market prices and bases. Likewise, the growth potential of the new past is not emphasized, especially in areas where technological change has not yet made a significant impact. It is therefore important to consider MSPs as a tool to promote innovation adoption, capital planning in the current environment, and to identify and report companies' responses to these micro-level intermediation outcomes. Assessing the adequacy of the MSP scheme demonstrates its use as part of a useful tool, as it is a necessary tool in current policy. It is necessary to see both the results on a large scale and the current reality on a micro scale. The issue of impact and operational errors became an important part of the investigation. However, this question will not lead to a monosyllabic answer; alternatively, it is necessary to look at other rhythmic devices from top to bottom. Current research focuses on the possible impact of the minimum support price on different frontiers of the agricultural economy. These include development boundaries, distribution angles, dynamics of property distribution, natural impacts, etc. takes place.

1.8   MINIMUM WAGE FOR AGRICULTURE IN HARYANA

Haryana is another food spillover state where most grains are followed by rice. In Haryana, the minimum support price exercise starts from the beginning. It is one of the states where the mediation process is effective in giving incentives to farmers in the horticulture sector and ensuring that they focus on work. This chapter first sets a good tone as it examines the feasibility of the MSP strategy in the state. Farmers have a high desire for information and preparation.

According to the guidelines, Kaithal district was chosen to handle the food products of the district; While Sirsa district was chosen to deal with the cash zone, Bhiwani district was chosen to deal with the coarse rice and non-oilseed area. . In each of the three selected locations, three cities were selected based on their distance from the nearest reporting area. Then, from each region, a city close to the market, a city from the street market, and a third city from the middle of the environment are selected. In all recognized cities, families are selected according to need. In general, it covers all the situations of 120 farmers in our area and the situation alone is similar.

The viability of value strategy is investigated here with the assistance of auxiliary just as essential information. Based on the optional information, we attempted to check the effect of MSP available costs and different factors, though, the essential information assisted us with discovering the reaction to the Minimum Support Prices at miniature level.

1.8.1   Trends and growth of Agriculture

Agriculture plays an important role in the development of the economy and agriculture is important in creating fair trade. It can be said that agriculture has become an important part of the development of Haryana. Science and innovation help the country reach new people. Following the green influence, Haryana has emerged as a stable base for agricultural development. Agricultural development is critical to the current financial crisis. The spread of grains, seeds, and crops helped the growth of agriculture. Advances in agriculture provided significant funds for developments in areas such as trade, transportation, and communications. In fact, agriculture-industry balance is the need of our day.Haryana came into existence on 1 November 1966 as a cultural divergence in the culture of India. Haryana is arguably the smallest state in India with 4.4 million hectares of land and 1.34% of the country's surface area. Approximately 80% of the state's prime acreage is under development, of which approximately 84% is underwater and 184% is available for pruning.

Zone I: There are 8 regions namely Panchkula, Ambala, Kurukshetra, Yamunanagar, Karnal, Kaithal, Panipat and Sonipat. This area accounts for almost 32% of the state's total area. Zone II: There are 7 zones planned for Sirsa, Fatehabad, Hisar, Jind, Rohtak, Faridabad and Palwal. The built-up area accounts for almost 39 percent of the state's total

area. (Haryana Government https:haryana.gov.in.geography)

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1.8.2 Performance of Agriculture in Haryana

Agriculture has grown at post-independence pace in Haryana's GDP and the government has given special emphasis to this sector in its long-term plans. Moreover, the green movement in Haryana has accelerated the growth of the agricultural sector. As a result of rapid and significant changes in the in past few years, the economic development of the state has become a trend in the business and service sectors, but new experience shows that there is no stability and rapid growth, GDP growth can lead to the expansion of the state, which can lead to further damage improvement measures. Therefore, the development of agriculture and land management is still an important factor in the overall economy of the state **(Haryana Statistical Abstract 2013-14).**

1.8.3 Relationship of agricultural productivity and farmers' income in Haryana

Haryana is the state which has enormous measure of prolific land, in India. It is doing great in modern just as agrarian areas. About 60% of the populace is occupied with agriculture, straightforwardly or by implication. Haryana has accomplished an astounding development in its farming area, which not just has made it independent in food grains creation yet additionally has raised it to the second biggest supporter of India's focal pool of food grains. On the inquiry the connection among development and unsteadiness, in the instances of certain harvests; the cutting edge innovation diminished variety while other accept that it will undoubtedly increment. The advanced innovations do assist with diminishing changeability in yields and creation a couple of harvests **(Economic Survey of Haryana 2000).**

Haryana is perhaps the most reformist States in the country. It has been a pioneer State in doing financial changes and our monetary administration is figured as truly outstanding in the country. Public money identifies with the assortment of duties by the Government from the individuals who profit by the arrangement of public merchandise and the utilization of those assessment assets towards creation and appropriation of public products. Asset age, asset assignment and consumption the executives (asset usage) are the fundamental segments of a public monetary administration framework. The domain of public money is viewed as three overlap in particular; effective portion of assets, conveyance of pay, and full scale monetary adjustment.

Simultaneously they have likewise brought up that this development has been went with the increment in the yield/yield changeability There are numerous reasons which make new agriculture plan in India. Among these the green revaluation is great a couple of yields; it improve the efficiency, yet just for a couple of harvests, Minimum Support Price **(Hazell and Ramasamy 1991)** and government strategy are positive just for a couple of explicit harvests. These whole factors aggregately change the conventional trimming design in Haryana just as in India. Accordingly the adjustment in the changeability and unsteadiness with the reception of green upheaval turns into a significant issue It profoundly diminishes the flimsiness in a couple of harvests, while it expands high shakiness in coarse oats and differentiates the asset in mono-crop culture in Haryana

1.9   SIGNIFICANCE OF THE STUDY

Legislature of India apportioned a huge piece of the financial plan every year to give motivations to farmers as far as cost and diverse non-cost through various organizations. Yet, these the achievement of these endeavors reflects in the speed at which agricultural area reacts. In this way, how and how much, a positive agricultural cost strategy is useful in accomplishing the destinations for it was formed or the impetuses gave as least help cost for significant crops in India has been effective to build the farmers pay in order to spur them to develop more by utilizing current data sources and innovation and expanding profitability at their field is of fundamental significance not exclusively to get the components of creation however for the legitimate arranging of the public projects and to realize the yield government spending. In India government is spending gigantic sum on agricultural items to get the greater efficiency from agricultural area. Simultaneously to get change cropping design are additionally the superb goals of the value motivations which are giving to Indian farmers through least help value strategy as it is viewed as that choice identified with territory designation under a crop is especially affected by the compensation of the crop. Molding the speed and example of the agricultural area is the principle object of agricultural value strategy. Thus, it is fundamental for the advanced government to direct the costs of agricultural crops to guarantee higher yield and acquire change example of showing various crops according to the requirements of the economy. The fundamental motivation behind agricultural value strategy is the reshaping the asset assignment and reallocate the pay in economy. In this way, in Indian economy, the value strategy for agricultural area can be compelling to get wanted change the yield level and example. Thus, government can utilize agricultural value strategy as a system by utilization of which the organizers can persuade the farmers to assign their assets according to the organizers arranging.

So the investigation focused on to know whether farmers of Haryana are receptive to the agricultural value strategy. The examination isn't just centered around the information on heading of the farmers reaction yet to measure the reaction of the farmers towards ranch gather costs of concerned crops of Haryana, is the target on which the investigation is based with the goal that administration can detail a proper value strategy. The achievement pace of any approach planned at government level relies upon the partner's

reaction that are influenced or profited by the arrangement choice. It is in this substance that the reaction of farmers to changes in costs of their items has pulled in the consideration of the business analysts, specialists and the strategy creators. Thus, the consequences of the current examination are relied upon to be of extraordinary for the approach creators according to plan a reasonable value strategy for agricultural items.

1.10   OBJECTIVES OF THE STUDY

1.   Trends and Performance of Agriculture production in Haryana

2.   To study the relationship of minimum support price and farmer's income in Haryana

3.   To study the relationship of agricultural productivity and farmer's income in Haryana.

1.11   METHODOLOGY RESEARCH METHODOLOGY

The current investigation, named "Minimum Support Price, Agricultural Productivity and Farmer's Income: A Study of Haryana" has been completed to break down the patterns and construction of MSP behind the scenes of Agricultural economy of India regarding Western Uttar Pradesh. The philosophy of the investigation is both distinct and prescriptive. In the current investigation, we have applied straightforward factual strategies to measure the effect of MSP on horticultural improvement in India. The straightforward plain, rate, graphical and basic factual methods has been utilized in the investigation. This is a direct result of its effortlessness and its capacity to giving great outcomes. The Estimation Procedure of Compound Annual Growth Rate A generally acknowledged dramatic mode, y = a bteu,

A bteu, been fitted to the time arrangement information for assessing development rates. The logarithmic type of this capacity is given by;

$$\ln(y) = \ln(a) + t\ln(b) + u$$

Where,

- y is the dependent variable whose growth rate is to be estimated.
- t is the independent variable (Time)
- U is the disturbance or error term
- At and b are the parameters to be estimated from sample observations. The

regression coefficient b is estimated by ordinary least squares (OLS) technique.

The Compound Average Growth Rate (CAGR) in % term is estimated as:

$$CAGR = \{antilog\ (b) - 1\}^*100$$

1.11.1 Time Period of the Study

The present study will be conducted for the selected districts of Haryana State for the period from 2010–11 to 2022–23. The study period will be divided into two time spans: 2010–11 to 2015–16 and 2016–17 to 2022–23. For the purpose of the study, three districts from each zone having the maximum area under wheat and paddy will be selected.

1.11.2 AREA OF THE STUDY

This study is covered five districts namely Bhiwani, Ambala, Charkhidadri Haryana.

In the current investigation, we have utilized optional information sources. The information on important factors has been gotten from the different government distributions. The fundamental information sources are given beneath;

1.11.2.01   Hand book of Statistics on Indian Economy (various volumes), Reserve Bank of India (RBI), Mumbai

1.11.2.02   Agricultural Statistics, Ministry of Agriculture, GOI.

1.11.2.03   National Account Statistics, Central Statistical Organization (CSO), Government of India (GOI).

1.11.2.04   Economic Survey (Various Issues), Ministry of Finance, Government of India (GOI). The computation has been done by using the simple software packages.

1.11.3 SCOPE OF STUDY

The present study will be conducted for the selected districts of the Haryana state for the time period during 2010-11 to 2022-23 (will be divided in two time span and 2010-11 to 2022-23). For the purpose of study, three districts from each zone having maximum area under wheat and paddy will be selected.

The current investigation will be directed for the chose areas of the Haryana state for the time-frame during 2010-11 to 2022-23 (will be separated in double cross range and 2010-11 to 2022-23). For the purpose of study, three regions from each zone having most

extreme region under wheat and paddy will be chosen.

1.11.4 Selection of Crops

Wheat, paddy, gram, cotton, barley, millet, sugarcane, corn, and oilseeds are the major crops grown in Haryana State. In the present study, two major crops—wheat (Rabi) and paddy (Kharif)—have been selected, as they are the most important food grain crops of Haryana.

1.11.5 Sources and Collection of Data

The present investigation will be based on secondary data. The secondary data related to farm harvest prices, area, production, and yield of various crops will be collected from different annual issues of the Statistical Abstract of Haryana and the Economic Survey of India.

1.11.6 STATISTICAL TECHNIQUES AND TOOLS

To make the more level-headed examination the measurable apparatuses and strategies like central tendency in statistics. CAGR (Compound Annual growth rate).

I.   Calculation the farmers income: In the unlikely event that we mean pay by 1, yield by y, and ranch collect cost by p, then lo is equal to yo*po, where io denotes base year pay, Yo denotes base year yield, and PO denotes base year cost. Similar to this, in is equal to Yn*pn where Yn demotes the current year's yield, pn denotes the current year's cost, and in indicates the compensation for the current year.

To find out the trends in Farm Harvest Prices, Area, Production, Yield and Income*:*

To register development conduct of homestead gather costs, territory, yield, creation and pay, outstanding capacity will be fitted. Following type of least square outstanding capacity will be utilized to figure the compound development rates.

$Y = AB^t$

Where,

Y= Farm harvest prices, Area, Production, Yield and Income A=Constant;

B=1+r;

r =Compound growth rate

t =time variable in years (1, 2, 3, 4   10, 10, 10, 30)

(Against log B-1) x 100 will address the build development rate (r). the log type of B will be figured by utilizing the accompanying type of equation:

$$\text{Log B} = \frac{\Sigma t \, \log Y - \frac{\Sigma t \log Y}{N}}{\Sigma t^2 - \frac{(\Sigma t)^2}{N}}$$

The development rate will be tested by determining the importance level, where t = r/s, and's' represents the standard error.

Trial of critical of assessment esteem apply to t-test

II.   Breakdown of yield and price effects on income:

To deteriorate the pay of chosen crops of the Haryana state, zone, yield and collaboration, the model formed by Sharma (1977) will be utilized. The communication impacts among yield and cost will likewise been concentrated by utilizing the model given beneath:

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$$\text{Yield effect (\%)} = \frac{P_0 \Delta Y}{\Delta I} \times 100$$

$$\text{Similarly, Price effect (\%)} = \frac{Y_0 \Delta P}{\Delta I} \times 100$$

$$\text{Interaction effect (\%)} = \frac{\Delta Y \Delta P}{\Delta I} \times 100$$

In the above formula

P_0 = Price in the base year, P_n = Price in the current year Y_0 = yield in the base yea,

Y_n = yield in the current years

$Y = Y_n - Y_0$ i.e. difference between the yields of current and base year $P = P_n - P_0$ i.e. difference between the prices of current and base year. AA =Auto distribution regression

III. Pricing's effect on relative profitability

To show the effect of costs on the relative productivity, contending crops will be chosen every one of crop chose for the study. The information acquired to register the grounds reaction work regarding costs sway on relative advantage will serve as the basis for the Nerlovian dispersed slack examination. The current crops grounds will relapse on a year with real estate, yield, and ranch reap value, relative cost to the competing crop, and yield that is related to those deficiencies. One-year slack will be utilized in real estates, yield and cost accepting them as the premise of assumptions impacting the current year grounds. The slack direct capacity of the accompanying structure will be fitted:

$Y_t = a + b_1 X_{t-1} + b_2 Y_{t-1} + b_3 P_{t-1} + b_4 R P_{t-1} + b_5 R Y_{t-1} + e_t$

Where;

Y_t = crop area in thousand hectares for the year t

X_{t-1} denotes the crop's area in thousand hectares in year t-1; Y_{t-1} is the crop's yield in

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quintals;

Pt -1 is the wheat price in rupees per quintal in year t-1; RPt -1 is the crop's aggregate harvest price in year t-1; and RYt -1 is the crop's aggregate yield in year t-1.

Statistical Tools and Analysis

Descriptive Analysis

Used to summarize trends in:

- Area, production, and yield of crops
- MSP versus realized prices
- Income levels across landholding sizes and crop combinations

Correlation Analysis.

Pearson correlation was conducted to measure the strength and direction of the relationship between:

- **Productivity (yield per hectare)** and **farmer income**
- **MSP realization** and **income levels**

Sample Design

- Multistage stratified sampling ensured balanced representation of marginal, small, medium, and large farmers.
- Districts were selected based on agro-climatic zones and cropping diversity.

Analytical Framework

To analyze long-term production trends:

- Time-series data (10–15 years) on area, yield, and production of selected crops was compiled.
- **Compound Annual Growth Rate (CAGR)** and **trend analysis** techniques were used to assess performance over time.
- Graphical and tabular representations illustrated variations in production across crops and time.

To study how MSP impacts actual income:

- **Income at MSP** was calculated as:

  MSP-Based Income = (MSP × Yield per hectare) – Total Variable Costs

- **Income Gap due to Non-Realization of MSP**:

This helped quantify how much income farmers potentially lose when selling below

MSP.

This highlights the potential income loss when MSP is not realized, central to understanding the income gap and market distortions.

Income Estimation Framework

Estimation of Farmers' Income

Farmers' income from each crop was estimated using the following formula:

Net Income per Crop = (Realized Market Price × Yield per Hectare) – Total Variable Costs

Where:

- **Realized Market Price** = Actual price received by the farmer at the time of sale

- **Yield per Hectare** = Crop productivity data collected through surveys and secondary sources

- **Total Variable Costs** included:

o   Cost of seeds

o   Fertilizers and pesticides

o   Hired and family labor

o   Irrigation and electricity

o   Machinery and fuel

o   Transportation and post-harvest handling Additionally, the **Income Shortfall from MSP** was calculated as:

Income Shortfall = (MSP – Realized Market Price) × Yield per Hectare

This allowed a clear estimation of **potential income (at MSP)** versus **actual income (at market price)**.

Aggregated Income Estimation

The income from all 11 crops was aggregated per farmer to estimate total annual crop income. This provided a comprehensive view of the farmer's earnings and the cumulative loss (if any) due to non-realization of MSPs.

Estimation of Farmers' Income

Farmers' income was estimated by summing up the net returns from crop production, livestock, and allied agricultural activities. The formula used was:

Farm Income = (Gross Return from Crop Production + Income from Livestock and Allied Activities) – (Cost of Cultivation + Other Farm Expenses)

The income data was then standardized to account for differences in landholding size and cropping intensity.

Net Realized Income Calculation

Farmers' income was estimated **per crop and per hectare** using the following formula:

Net Realized Income = (Realized Market Price × Yield per hectare) – Total Variable Costs

Where:

- **Realized Market Price** = Actual price received by the farmer
- **Yield per hectare** = Productivity per unit area
- **Variable Costs** = Input costs including seeds, fertilizers, labor, irrigation, fuel, machinery, and transportation

Correlation Analysis

To determine the strength and direction of the relationship between farmers' income and various independent variables, Pearson's correlation coefficient was computed. Variables included:

- Landholding size
- Fertilizers, Chemical, and pesticides, insecticides, etc.
- Irrigation access
- High yielding verities seeds
- Use of modern agricultural technology inputs
- Education level of the farmer
- Access to government schemes
- Market distance

The correlation analysis helped identify which factors were most strongly associated with income variations among farmers.

Regression Analysis

A multiple linear regression model was applied to assess the impact of various explanatory variables on farmers' income. The regression equation used was:

$$Y = \beta + \beta X + \beta X + ... + \beta X + \varepsilon$$

Where:
- **Y** = Estimated farmers' income
- **X, X, ..., X** = Independent variables (e.g., landholding size, irrigation access, education level, etc.)
- **β** = Intercept
- **β, β, ..., β** = Regression coefficients
- **ε** = Error term

Interpretation and Validation

Significant variables ($p < 0.05$) were interpreted to understand their effect size and direction. Robustness of the results was ensured through residual analysis and cross-validation with subsets of the data. The model helped identify key determinants of farmers' income and provided insights for policy interventions.

To analyse how crop productivity affects income:

- **Pearson's correlation coefficient** was calculated between **yield per hectare** and **net income**.

- Further analysis was conducted using **multiple linear regression** to identify the contribution of productivity among other factors influencing income.

Variables Used in the Study

Variable	Description
Farmer's Income	Net crop income (per hectare and total annual)
MSP	Government-declared Minimum Support Price (per quintal)
Realized Market Price	Actual sale price received by the farmer
Yield	Output per hectare (quintals)
Total Variable Costs	Input costs including seed, fertilizers, irrigation, labor, etc.
Landholding Size	Size of land cultivated by the farmer (in hectares)
Irrigation Access	Dummy variable (1 = irrigated, 0 = rainfed)
Education Level	Years of schooling of the farmer
Market Distance	Distance to the nearest regulated market (in km)
Crop Diversification	Measured using Herfindahl Index
Credit Access	Access to formal credit (1 = yes, 0 = no)

Statistical Techniques and Tools

- **Descriptive Statistics** for summarizing yields, prices, and costs

- **CAGR and trend analysis** for time-series crop production data

- **Correlation Analysis** to explore relationships among variables

- **Multiple Linear Regression Analysis** to determine key income determinants

o Model:

$$Y = \beta + \beta X + \beta X + ... + \beta X + \varepsilon$$

Where:

o **Y** = Net realized income

o **X to X** = Independent variables (e.g., yield, price, irrigation)

o **β** = Coefficients

o **ε** = Error term

- **Software Tools** used: MS Excel, SPSS/R for statistical computation and regression diagnostics.

Adjustment for Market Prices

In cases where farmers sold their produce below MSP (due to market failures or lack of procurement), actual market prices were recorded and used to adjust the gross revenue accordingly. This helped in estimating **realized income** as opposed to **potential income** based on MSP alone.

Correlation and Regression Analysis

To analyse the relationship between farmers' income and key influencing factors, the following statistical methods were employed:

- **Pearson's Correlation Coefficient** was used to examine the linear relationship between net income and factors such as:

o Landholding size

o Crop diversification index

o Access to irrigation

o Use of fertilizers/pesticides

o Education level

o Credit availability

- **Multiple Linear Regression Model** was employed to assess the combined

effect of independent variables on farmers' income. The model used was:

$$Y = \beta + \beta X + \beta X + ... + \beta X + \varepsilon$$

Where:

- **Y** = Net income of the farmer (aggregated over all crops)

- **X to X** = Explanatory variables (e.g., land size, input costs, irrigation, education)

- **β** = Constant term

- **β to β** = Regression coefficients

- **ε** = Error term

1.12   CHAPTERISATION CHAPTER-I: INTRODUCTION

The current section is managed the foundation of the point, explicit targets of the examination, avocation of the investigation, constraints and plan of Cauterization.

CHAPTER-I: METHODOLOGY

Territory of the investigation, time of the examination, wellsprings of the information, and measures for choice of the crops, Sources and assortment of information and factual methods utilized for reaching inferences will be talked about in this section.

CHAPTER-II: REVIEW OF LITERATURE

Objective-wise audit of writing will be introduced in this part.

CHAPTER-III: TRENDS   OF   FARMHARVEST   PRICES   AREA, PRODUCTION, YIELD AND INCOME OF MAJOR CROPS

The outfitted identified with accumulate development pace of territory, creation and profitability and pay from significant crops in Haryana will be examined in this section.

CHAPTER-IV: CONTRIBUTION OF PRICE AND YIELD IN THE INCREMENTAL INCOME FROM MAJOR CROPS

The outfitted outcomes to register the commitment of Prices, and yield, creation, pay and commitment of costs and yield in pay will be examined in this section.

CHAPTER-V: IMPACT OF PRICE ON THE RELATIVE PROFITABILITY OF MAJOR CROPS AND SUBSEQUENTLY ON CROPPING PATTERN

This part manages the outcomes identified with effect of value reap costs on the general productivity of significant crops and consequently on cropping design.

CHAPTER-VI: SUMMARY AND CONCLUSIONS

A short outline alongside ends and ideas will be remembered for this part.

1.13   LIMITATIONS OF THE STUDY

Some usable impediments will likewise be of the current investigation. Above all else, to see the restricted time and assets to comprehend, the current examination will be taken for just Haryana state to satisfy the specified targets of the investigation. Besides, the investigation will utilize the auxiliary information taken from the solid distributed sources. Thirdly, it has included just eight crops. Fourth, the examination period will be founded on the accessibility of information on various parts of the investigation. Fifth, approach suggestions and ideas which will control with these limits through this investigation just depend on the outcomes and ends drawn through this examination. An exertion has been made to feature the aftereffects of the chose destinations of the examination.

CHAPTER-2
REVIEW OF LITERATURE

2.1   INTRODUCTION

It is always a pleasure to make references to passages from related research works and other related writing, not only to provide essential background information for the nearby examination but also to offer a fresh perspective on the interaction between the research's lead and practical implementation.

2.2   REVIEW OF LITERATURE

According to the Commission on Farmers' Welfare in Andhra Pradesh (2005), "agriculture in India has been in a high-level phase of emergency." Major ideological groups, legal bodies, and exploration examiners all agree that Indian agriculture is facing difficult circumstances. Over the past 50 years, the majority of farmers have become impoverished and harried pariahs in their own country, with no aware spot in the public arrangements. As a result, cultivating local area has been at the minor in Indian monetary, social, and political life. Agriculture has become generally an unrewarding action due to the problematic value system and low worth expansion, which leads to the abandonment of farming and increases the number of farmers moving from provincial zones. The most extreme sign of the emergency is the number of farmers taking their own lives across the nation. "This illustrates that something is horribly wrong in the countryside," says Swaminathan (2006).

A large portion of Indian farmers are under obligation, and a large portion of that obligation stems from a sharp increase in agricultural costs and declining returns in the latter part of the 1990s. The pay gap between rural and urban families, as well as between cultivators and non-cultivators, has been widening very quickly. According to NSSO (2003), the monthly per-capita buyer usage of three farmers' forwards was less than Rs. 615.

Agrarian trouble is anything but another marvel for India; yet the self- destruction by farmers is an astonishing lack of concern. Farmers faced a variety of challenges during the British and post-British eras, including drought seasons, crop failures, and, most obviously, terrible value drops. They also had to deal with the burden of debt and abundant land income. It includes elements such as altered land ownership models; cropping strategies

that shifted from food grains to cash crops, advancement strategies, and so forth that precipitously thrust Indian agriculture into the global market without an equal playing field. Hefty reliance on significant expense paid out inputs, market caprices, absence of gainful costs, obligation, disregard of agriculture on approach front, decrease in open speculation, separate of joint families, individualization of agricultural activities, and soon has also been similarly liable for the ranch trouble. The results of multiple investigations and reports brought to light that the policies pursued by public authorities at the state and local levels over the past twenty years have contributed to the suffering of the agricultural community.

Kerala, a state known for its rubber development, was the site of the first recorded instance of farmers destroying themselves in 1986. Nevertheless, the state authorities wrote off the frequency as an accident. In the Keralan province, a greater proportion of farmers ended their lives by self-destruction thereafter.

The epidemic of farmer suicides continued throughout the 1990s, spreading from Karnataka, Andhra Pradesh, Maharashtra, and Punjab in the north to the south. The rising number of farmer suicides has come to light, particularly after the nation's New Economic Policy was unveiled. Farmers have been at the back foot in the period of changed market economy. Indian farmers couldn't rival the created nations because of excessive cost of native item. Notwithstanding, agricultural results of the created nations are less expensive in view of the more serious level of appropriations to them by the public authority. Hence, the global costs are set at low level which isn't reasonable because of the circumstance of cost surpassing business sector costs. Subsequently, the hole among pay and consumption has broadened throughout the long term. The institutional credit component is relied upon to assume an indispensable part in agricultural turn of events. However, the portion of something similar, which was minimal more than 7% in 1951, expanded complex to more than 66 percent in 1991 and further decelerated. The co - agents are exceptionally implied for the stockpile of credit to the little and minor farmers. But the portion of the area was deteriorated at 22% in 2005 - 06 which is not exactly 50% of what it was in 1992 - 93 (62%). The portion of non-institutional sources was 93% in 1951 which declined pointedly after the nationalization of the business banks. Again the equivalent has been on the ascent during the time of monetary progression. This shot up to 30.9 percent in 2000 and further around 36% in 2006. It involves concern. Since the underlying driver of the current pain is

obligation and which is by virtue of the expanding portion of the non-institutional sources in agricultural credit dispensing and the substantial paces of interest. The primary changes which have occurred during the 1990s had a drawn-out effect on Indian economy all in all and that of agriculture specifically. At the underlying phase of the WTO (AOA) change, the agriculture area was performing admirably.

However, the East Asian Crisis of 1996 caused decrease in the costs of agricultural items which antagonistically influenced the homegrown farmers. After 1997, Indian government significantly diminished appropriation to the agriculture area which was according to the rules of the WTO alteration. On the other hand, created nations persistently shielded their farmers through expanding of appropriations under various names. Government additionally killed the quantitative limitations on imports too an important tax from 35 to 5 percent in 2002. It supported the imports of agricultural wares in the last part of the 1990s. This came about in to the terrible of the agrarian local area in India. It is the indication of foreboding shadows of misery over the agriculture area. Further it showed in to a pain demonstration of suicides by farmers in wide open of the different states.

Farmers' suicides in 1995 were only reported by "Paper News." Furthermore, there was no disparity in the public authority's record about farmer suicides. Following 1996, the government initiated the separate registration of farmers' self-destruction cases with the National Crime Record Bureau (NCRB). Furthermore, Maharashtra has had access to it since 1997.

There is hardly a single research available that was accepted prior to 1995. M. Assadi led the first inquiry into farmer suicides in Karnataka in 1997, which sparked a public and intellectual conversation about the issue. The primary focus of the investigation was on the key alterations that occurred after 1991. Which was the main cause of the agricultural unrest and the subsequent suicides of farmers in the Karnataka region?

Henceforth, Tata Institute of Social Sciences directed an overview in Vidarbha, Khandesh and Marathwada locales of the state. Both the investigations found that obligation of farmers has been the underlying driver of the agrarian trouble and in this manner suicides of farmers. Be that as it may, the absence of water system offices, just as, the powerless institutional help is at the base of the unrewarding idea of the agricultural practices in the

state. Subsequently, the Indian government dispatched an inspection team known as a "Fact Finding Team" led by M S Swaminathan. The panel discussed farmer suicides and looked at the historical and current records of suffering in the state's Vidarbha region. The agrarian crises that resulted in farmer suicides in the state were caused by the study's unethical application of the new financial strategy and disregard for the agricultural sector during the post-change period.

There exist regional disparities in the causes of farmer suicides. Every state has a different magnificent characteristic. Nonetheless, the fundamental cause of suicides is duty, for which there are unique state-specific justifications. Farmers' suicides in Maharashtra have been linked to the lack of water system offices, the disappearance of institutional financing, and the unpredictable value of cotton. Farmers in Kerala's area ceased to exist in 1991 when the exchange progress was implemented. The state farmers were forced into financial difficulties because they were unable to survive on the questionable notion of a global market. In Karnataka, the Northern Region, which is characterized by dry land cultivation, has the highest incidence of farmer suicides. Local farmers must overcome obstacles in order to create new seed varieties. Consequently, there is a decline in profitability, and with it, agricultural employment and production.

The cost of development has been rising steadily while profits have decreased. Additionally, it makes the state of Karnataka feel obligated to demonstrate self- destruction via suffering. Increasing input costs by 400% and a lack of water system offices in Andhra Pradesh province drove farmers to engage in self-destructive behavior. The agrarian situation in Punjab has also been largely caused by an increase in non-agricultural use. Furthermore, the crisis has affected growers of cash crops including cotton, chilies, groundnuts, rubber, and so on. In comparison to producers of money crops, farmers who grow food grains on a moderate basis have fewer emergencies. Furthermore, it is discovered that workers' compensation conditions are often better than those of farmers. The workers are also having financial difficulties as a result of the decrease in real pay. The research institutions and state governments' recent adoption of these studies serves as a major source of inspiration for the writing for the current study. The provinces of Andhra Pradesh, Karnataka, Kerala, Punjab, and, to a lesser extent, four, Maharashtra, are where most studies are finished. Nevertheless, for the reason in Maharashtra, not even a single

study attempted to cover the entire state. They covered a location or a district, at most.

The state and the central government took action in (2006) when they announced a Relief Package valued at Rs. 4820 crores for six areas in Maharashtra's western Vidarbha locality that had been affected by suicides. It also failed to directly address the farmers because of debasement and the public authority authorities' inefficient implementation of the equivalent. During the post-bundle period, the suicide rates among farmers have increased regardless of the circumstances. In any event, the terrible rate of farmer suicides in the Maharashtra province's Vidarbha region continues to be greater even now.

(Rajagopalan and Varadarajan 1978) conducted a study in the sloping region of Tamil Nadu the regions of Tamil Nadu, Oversaw an investigation to determine the impact of risk and vulnerability on ranch creation and remuneration, demonstrating how the spread of innovation aids in reducing risks and providing general security for the farmers. It also demonstrates that slope cultivation is not only limited in its potential for improvement but also a successful project that is appropriate for current cultivation. It suggested mixed cropping and better advertising practices to reduce risks.

Jodha (1981) argued that farmers' efforts to reduce the risk of cultivating in semi-arid tropical India were costly and often insufficient to reduce the risk of cultivating and to adapt to conditions of scarcity and dry season. It was also discovered that official credit establishments were ill-prepared to reduce the opportunities available to Indian farmers because they were unable to provide utilization advances to farmers affected by the dry spell. This indicates that credit offices were unable to adjust to the risk factors faced by farmers on both an individual basis and in their workplace.

Pomareda (1986) examined the effects of crop credit protection using data from an example of guaranteed and uninsured advances made between 1974 and 1980. The following findings were made: (I) the real length of protected advances is almost always essentially shorter than that of uninsured advances, indicating better recovery execution, a reduction in accounting and recovery costs for banks, and an increase in the capital turnover rate; (ii) guaranteed advances typically have slightly larger net bank re-visits than uninsured advances, and the former have more consistent returns than the latter; and (iii) dissecting the potential benefits of credit protection on bank credit with the aid of a bank

portfolio regulation model. The standardizing investigation and the observational data both showed that credit protection can significantly boost bank growth and income. Notwithstanding, the majority of these advantages of protection rise out of diminished assortment costs, guide reimbursement, more prominent turnover and more productive utilization of human and actual assets. They don't emerge from diminished changeability of credit returns. Thus, it very well may be feasible to accomplish part of these increases just with progress in administration, better management and advance evaluation.

Prabhu and Ramachandran (1986) used supplementary data on the difference in the higher rates suggested by ISPE to investigate the implications of the connections between the new crop protection plot and the institutional credit framework for agriculture. It was found that there will definitely be a credit-connected crop protection plot as the Primary Agricultural Credit Society overtakes the temporary acknowledgement disbursal to agriculture for in equally in its entrance and inclusion. This will likely result in the crop protection plot benefiting larger farmer's more than small and minimal farmers. Additionally, he suggested readjusting the special prices for various crops and regions in line with the ISPE's suggested rates.

Tsuji and Hiroshi (1986) studied the assessment of crop protection in Japan for rice crops, the endowment of Japan's rice protection program didn't seem to be helpful in expanding public rice creation, based on data from 1962 to 1981. The government's commitment to the protection program has a drawn-out advantage/lost percentage of just 0.39 at global market value, and a short-run advantage/lost proportion of just 0.15. It was suggested that the program be made voluntary rather than required. This would extraordinarily lessen the organization cost appropriation required and would permit the protection market to work all the more productively. Besides, the pay move innate in the protection endowments ought to be decreased. Move of pay to farmers might be given uniquely if there should arise an occurrence of serious calamity as help plot, not as protection conspire.

Goodwin, in (1993) examined the factors that affect the desire for multi-hazard crop protection on a sample of 90 countries and found that the factors that have long been recognized as important in the province of Iowa are essential for evaluating the program's adequacy using the logit relapse model. The precise outcome of the inquiry revealed that crop security interests are better served by adaptability with little disaster risk than by

persons who receive large reimbursements commensurate with extraordinary compensation.

Mishra, P.K. (1994) examined the impact of a credit-connected comprehensive agricultural Insurance Scheme (CCIS) on agricultural advances, specifically for small farmers in Gujarat, was examined by The increased loan amount per borrower and the decline in the percentage of small farmers who are non-borrowers demonstrate the guarantee effect of CCIS. The implications of credit extension include the potential for increased loan accessibility to boost input utilization and production as well as the potential for businesses that serve a larger percentage of small farmers to negatively impact value and effectiveness considerations. Despite the fact that crop protection in dependent on region yield, it guarantees the advance sum. As a result, small and marginal farmers are better able to obtain institutional finance, and the protected families make more contributions to agricultural information sources, which raises the production and compensation per unit of land. Based on data from 1991, it was discovered that CCIS contributed 23%, 15%, and 29% of the guaranteed farmers' pay increases in Gujarat, Orissa, and Tamil Nadu, respectively.

Khonarkar (1995) conducted a financial research into crop protection in the Nagpur area. Based on pre-tried timelines and important facts, the study found that farmers had clearly benefited from the crop protection plot. It made the case that the plan should be extended to non-borrowers even if beneficiaries would benefit from crop advancement, so it could be used to support local agricultural interests.

Smith and Alan (1996) with the aid of 380 samples finished an econometric analysis of the interest in multi-risk crop protection for wheat in Montana. This is the primary study that examined the Heckman model in two phases to determine the farmers' purchasing decisions. Farmers choose whether or not to participate in the crop protection program at one stage, and the appropriate level of participation is determined at a later step if the rancher has decided to participate. The conclusion suggests that the only quantitative effect of improved rate increments on MPCI investment is a decrease in inclusion levels. Raising premium rates will result in smaller misfortune ratios and fewer outright sponsorship levels, assuming that premium rate fluctuations have no effect on cooperation.

Miranda and Glauber (1997) emphasized the need for risk to be eliminated among the guaranteed, arguing that crop safety net providers face portfolio risk that is approximately multiple times greater than that looked by private guarantors offering more regular lines of protection, such as auto, fire, and so forth, due to connections among individual yields. Re-safety net providers are reluctant to accept portfolios that might need significant financial commitments. They have depicted a spectrum of risks that progresses from totally free risk to fully correlated hazard along a central axis. The risks of vehicles, life, and fire are quite near the free limit and appropriate for safety precautions. Costs associated with agriculture are much closer to the whole related limit and more suited for alternative and prospective markets.

Assadi (1998) examined the causes of farmer suicides in Karnataka. Farmers' suicides were found in large quantities in Karnataka's northern arid area. The main source of the state's agrarian suffering appears to be significant misfortunes brought on by crop disappointment and growing debts of the private moneylenders. Many of them were market-based Arhar (Tur) emerging farmers who ultimately lost it all. The market's value collapse caused the farmers great losses. It is a sign of the public authority offices' dissatisfaction with their acquisition of guard crop. Farmers were forced to borrow money from private sources at higher interest rates for both creation and use, despite the fact that institutional credit was either just stale or occasionally declining due to decreases in salary and increases in development costs. Due to their delinquent debts, a larger portion of the farmers were not eligible for the institutional credit. The great majority of them grow on property that is rented, and the landowner receives 50% of the yield. However, the rancher who develops the property has just recently discovered it in the case of catastrophe. As a result, these growers' situation is becoming hopeless. It's important to remember that because the land isn't registered in their names, these farmers are ineligible for the institutional credit. Accordingly, this group of farmers was entirely dependent on non-institutional sources. Overall governmental authority negligence, market weaknesses, decreasing effectiveness, and subsequently an increase in private debt problems are found to be the causes of the unruly behavior of the state's agricultural region.

E Revathi (1999) in study led by it was revealed that farmers in the Karnataka province committed suicide as a result of their crushing debt brought on by market imperfections

and their decline. P Sainath, a writer, took up the topic for the first time in Maharashtra in 1997. When he traveled to the Yavatmal location, a region devastated by self-destruction in the nation, he discovered that growing responsibility is the fundamental cause of farmers' suicides and agrarian suffering in the Vidarbha region of Maharashtra province. Subsequently, the state government appointed a panel headed by Pune's Agricultural Commissioner. But the report was unavailable for selection for a considerable amount of time. Following 1997, the number of farmer suicides in the state and throughout the nation consistently increased. In 2004, Kerala's governmental planning made farmer self-destruction necessary. The Keralan administration conveyed a thorough analysis and implemented the recommendations made by many inquiry teams. Thereafter, the frequency of the farmer's suicides dropped significantly. The states like Kerala, Andhra Pradesh, Karnataka and Punjab executed approach measures to wipe out the spate of suicides among the cultivating local area. Then again, state administration of Maharashtra who did the investigation on farmer's suicides in 1998 kept quiet till 2006.

Mahul (1999) used individual beta co-effective, which measures the affectability of ranch production, demonstrated the advantages of zone yield crop protection over other crop protectors and what factors determine the zone yield crop protection as suitable primary center. Using the Expected Utility Model (EUM), the estimation of the beta co-proficient was evaluated. Assuming $\beta > 0$, the estimated evaluated beta co-effectiveness indicates that payback occurs when the recognized zone yield drops below a fundamental yield, with optimal protection functioning as a put option. In the unlikely event that $\beta < 0$, reimbursement is made when the ideal territory yield protection works as a call option and the recognized area yield is more notable than this fundamental yield. Many experimental attempts to evaluate the beta co- proficient of different region yield crop safeguards have demonstrated that all beta co- productive ways are positive in that repayments are made if the recognized region yield is less than a basic yield that is obvious.

Vasavi's (1999) study, the implosion that is happening in neighborhood farming is basically a social, financial, and natural crisis in the territory of Karnataka. The state's Bidar region filled in as the examination's point of convergence. Such enduring is being caused by horticultural practices that dismissed the area's reasonable ecological worries and the upkeep of an unjustifiable financial design imbued in the ground. Cultivators who are liable

to market and capital powers with next to no type of security net can't uphold themselves during seasons of harvest deficiency, which has been obliterating rustic networks. Following the green upset, horticulture acquired ubiquity and developed more capital-concentrated, yet a bigger piece of ranchers can't effectively utilize it. Somewhere in the range of 1987 and 1992, the portion of nationalized banks offering advances to the agrarian area declined to 11.7 percent. Thus, the portion of non-institutional sources dispensing agribusiness advances is developing, expanding rancher commitments all the while.

Even if the information sources are there, farmers lack the requisite administrations to use them, thus they have no clue how to apply it. Furthermore, the quality of the information sources is subpar. As a result, it increases development costs by expanding the quantitative use of information sources. An increasing amount of responsibility combined with declining profitability and low returns create significant strain. Additionally, it was evident in the upsetting display of farmer suicides in the Karnataka region. In another examination on the province of Karnataka.

Dark and Jeffrey (2000) Studied the southeast United States established a link between farmers' characteristics and their choice of crop protection product. Farmers in Georgia who grow cotton and nuts provided information in order to identify the link that would enable the insurance companies to focus showcasing and reduce crop protection hazards. The results demonstrated that farmers, who had the ability to protect themselves by improving and amassing sufficient wealth and savings relative to earnings, are given an alternative when it comes to choosing a crop protection option.

J. Duncan & Robert (2000) examined another protection model was developed by to illustrate the implications of catastrophic threat on the structure and existence of crop protection market equilibrium. They developed the concept in relation to the risk- averse and apolitical US farmers, particularly in the all-hazard protection model, arguing that in dire situations of peril, private actors and organizations are uninterested since the risks are interconnected. In this sense, it cannot be assured again until and until there are government sponsorships. Their findings demonstrate that a considerable degree of catastrophic risk may reduce inclusion rates, raise fees, and, in extreme cases, cause the market to collapse completely. This occurs because regular risk cannot be reduced by simply expanding the structure of crop protection contracts, and catastrophic danger makes protection farms act

as though they are hazard averse. Concerned about modifications to the US Federal Multiple-Peril Crop Insurance Program for exceptional harvests.

Richards (2000) studied crop protection recommendations and found that request gauges for three degrees of protection inclusion (50%, 65%, and 75%), in view of total information from grape makers in 11 nations (US) for the time frame 1986-96, showed that the cost versatility of interest for 50% inclusion was more flexible; and that top-notch increments may to be sure diminish investment essentially. Such increments may likewise cause a critical redistribution of producers among inclusion levels.

Jennifer (2001) fundamentally assessed the different crop protection plans and discovered different progressions of this plan and contrasted and different nations. In both creating and created nations government crop protection conspires have end up being a disappointment because of not conveying viable item. The examination found that compulsory for loaned farmers, the main reason for the dissatisfaction with the public agriculture protection conspiracy (NAIS) was the unfavourable decision to unlatch premium with danger level zone approach if an occurrence of non-loanee farmers should occur. According to the inquiry, the administration ought to show more interest in crop security through agriculture foundation sponsorships. Instead of trying to play god, the government ought to support farmers in helping themselves.

Mahul (2001) presented a model to investigate the role that secularization and protection play in managing catastrophic risk. Von-Neuman-Morgenstern utility theory was used in conjunction with a number of models, such as the static model that examined the standard anticipated utility system and the ideal difference participating model that contained additional substance hazard segments, to evaluate the risk. It was found that, in addition to crop protection, future and choice agreements assist in mitigating the terrible risk faced by executives, and that each method will be more suitable in the event of regulatory costs.

Musser and Patrick (2001) laid out various types of dangers just as the wellsprings of dangers that appear in agriculture. Creation hazard concerns varieties in crop yields and in domesticated animal's creation because of climate conditions, illnesses and nuisances while showcasing hazard is identified with the varieties in product costs and amounts that can be advertised. Monetary danger identifies with the capacity to take care of bills when due, to

have cash to keep cultivating and to evade liquidation. Lawful and natural danger concerns the chance of claims started by different organizations or people and changes in unofficial laws identified with climate and cultivating rehearses. At last, HR hazard concerning the likelihood that family or workers won't be accessible to give work or the board.

A report published in 2002 on agricultural loans, cooperation, and protection in India discovered a direct and favorable correlation between credit payment and agricultural protection productivity.

The relationship's justification may be that farmers are paying back their advances when it's convenient and that protection has reduced risk in agriculture. Moreover, it might be due to the method in which farmers are ensured that they can repay their debts even in the event of typical calamities occurring. The financial foundations then agree to extend loans at a higher interest rate. This research only provided the relationship at the national level for all of India; no earlier work could have focused on the state level overall or on Odisha specifically.

Deshpande (2002) investigated the financial and agro-economic factors contributing to farmer suicides and agricultural emergencies in the Karnataka region. The great majority of farmers who reported suicides were from the state's northern Karnataka area, which is inclined toward the dry season. For the reason, individual meetings of self-destruction influenced families and town bunch conversations were embraced. The study determined that the primary cause of agrarian distress in the state's region was the shift in cropping practices from food grains to commercial crops, which led to an increase in the cost of development and auxiliary compensation with the fundamental assistance of an institutional credit component. A significant proportion of the farmers who reported suicide were small and insignificant farmers who belonged to reverse networks. Cost of development expanded due to higher utilization of composts, pesticides and for the water system offices at singular ranch level. The diminishing business advantage was brought about by information-yield markets' disappointment and value assurance's reliance on intermediaries. Because of the public's waning interest in agriculture, the state government has stopped providing assistance. Simultaneously, the percentage of farmers who depend on input vendors to access information sources has increased. Farmers have not been informed about the new assortments' applications by state government expansion

administrations. Expansion, division, and cracking of the land bases to support the uneven venture revisits. The new seed assortments have higher water content. Moreover, the inadequate water system offices were unable to provide the expected benefits of the development. However, decreased productivity and, as a result, production, as well as low market prices, the farmers no longer make money from agriculture. On the other hand, family usage of other social capacities and their consumption increased dramatically. Farmers became defaulters as a result of their inability to pay excessive advances. Farmers then require fresh advances and turn to non-institutional sources rather than repaying the previous debts. Simultaneously, moneylenders charge hefty paces of revenue and the advance sum goes past the reimbursing limit of farmers. Again the endless loop of creation, showcasing and credit prompts causing of enormous misfortunes from the agriculture. Some of the time moneylenders strongly procure the land to recuperate advance sum. The deficiency of resources has been the matter of embarrassment especially in the country parts. Additionally, it causes psychological strain and, as a result, distress when farmers in the Karnataka region commit suicide. The research emphasizes long-term solutions rather than short-term fixes in order to address the relevant issues.

Grover et al. (2002) conducted in 2002 by 1 looked at farmer suicides in Punjab. The rising incidence of farmer suicides in Punjab are attributed to the shifting dynamics of agricultural relations, ongoing crop disappointments, particularly with cotton in the 1990s, growing debt problems within the local farming community, expanding joblessness in the provincial pieces of the state and expanding spending on friendly capacities like relationships. The investigation was attempted to unwind the financial reasons for trouble looked by the cultivating local area and to archive the economic situations and framework accessibility in item just as variables markets. The ultimate objective of the inquiry was to bring 30 relatives of the victims closer to understand the terrible circumstances that led to the state's farmers taking their own lives. The study also found that growers' problems are mostly caused by weaknesses in the market. There was an excess of people on the lookout at the hour of a guard gathering, and public authority offices were hesitant to acquire large amounts of food grains because of the previously overwhelming stock. The market price of rice and wheat falls beneath the cost of expansion due to the overflow of supply. The typical returns then become negative, increasing the obligation weight of obtaining from

town brokers and pesticide vendors who play a major role in Punjab's promotion of cotton, rice, and wheat. The merchants forced the farmers to sell their produce via them, and typically charged higher commissions or absurd allowances. Similarly, the acquisition of government offices after their scheduled time contributed to the mistreatment of farmers by private dealers who offered lower prices for their goods. Simultaneously, farmers are likewise in rush to bring in cash to satisfy the past responsibilities, Vis - a- Vis utilization. The age range of 18 to 37 years old accounted for the majority of the casualties. Joint families made up around 57 of every cent of the casualty families, and there was a significant degree of ignorance among them all. For 86.58 percent of the sample population, the excellent rationale for self-destruction was obligation, which applied to almost all of the example families. About 65% of the total outstanding credit was non-institutional credit. In this way, obligations-related problems lead to a burden on an individual's life, and psychological issues lead to a clear example of self- destruction. Cotton's profitability has been dropping throughout the course of an especially expensive year. The severe attack of American bollworm occasionally forces cotton growers to abandon the whole crop. In order to obtain enough water for their water systems, ranchers have been forced to use sub-surface pump sets due to the sharp decline in the water table over the past few years. The financial burden on the farmers has increased as a result. Due to the entire list of problems, effectively obligated farmers thought that it was hard to reimburse their obligations and thusly it prompted mental pressure for t stitch and at last towards self-destruction.

Bhende (2003) Used optional data obtained from General Insurance Corporation of India Ltd. sought to analyze the crop protection plans (CIS) in Karnataka and discovered that the distribution and inclusion of CCIS was minimal. Except for 1994, Karnataka had a relatively high case premium percentage. Generally, GIC reimbursed itself for Rs. 3.33 for every rupee it collected in premiums under CCIS. The study suggested reconsidering homogeneous regions, including cultivation crops, and implementing a mindfulness mission to encourage non-borrowers to get insurance for important/knowledgeable crops

Just and Peterson (2003) condemned the Expected Utility Theorem (EUT) as a proportion of danger, as doesn't think about abundance as a variable which fundamentally decides the danger of the rancher because of its tendency of

„diminishing minimal utility". They utilized an elective technique for example. No such observational study was conducted in this regard; the Minimum Concavity utility ability to assess hazard in agriculture was not discovered.

McCarthy (2003) evaluated respondents' inclination to purchase the downpour fall file protection option in Morocco. Findings showed that respondents in the high

changeability districts preferred more expensive, but more frequently paying agreements (with higher precipitation trigger levels). It is noteworthy that a significant majority of participants expressed their willingness to purchase these agreements at their acceptable value; the assessed middle ability to pay for such agreements being between 12-20 percent over the reasonable worth agreement. Be that as it may, in the lower precipitation inconstancy districts, a solitary agreement's assessed middle readiness to pay was more significant than its reasonable estimation for the less costly agreements with lower trigger characteristics. At last, assessed coefficients for logical factors like human and actual resources, obligation levels, and so forth didn't have predictable effects, either across or inside areas. Distinctive measurable techniques like histogram, combined recurrence chart was utilized to fill the need.

Mohanty and Shroff (2003) examined crop misfortunes, obligations, and market imperfections causing financial difficulties for farmers, of every joint research of Maharashtra found that social factors were also grinding away, leading to a significant number of cases of farmers committing suicide. Rancher "s suicides in Vidharbha area was the consequence of an intricate cycle of connection of both authentic and contemporary financial powers. The examination has covered 30 farmers self-destruction influenced families from Amravati, Yavatmal and Wardha areas of the state. Nearly, taking all things together classifications of farmers had taken credit from the proper offices because of substantial employments of high yielding assortment of seeds, manures and pesticides. In contrast to the proper sources, the obligation to casual organizations was brought about by non - agricultural purposes. The deficiency of agricultural pay caused a financial emergency for every one of the farmers. Incessant dry season and along these lines crop disappointment, vis - a-vis, withdrawal of the state backing to agriculture consistently fix the rope of trouble around the neck of farmers. The examination further tracked down that the dissemination of suicides based on significant reasons uncovers that suicides were

essentially credited to social reasons like family issues, more seasoned age, disease, liquor addiction and betting, relationships and demise of close family members additionally assume a prevailing part in the self-destructive conduct. As indicated by the size classes, the social reasons of the suicides were more noticeable on account of enormous and medium farmers. It was tracked down that out of the 7 huge farmers who submitted suicides, the deficiency of agricultural pay prompted the suicide of just a single rancher. Countless farmers from little and minor gatherings submitted suicides because of the deficiency of agricultural earnings and obligation. In spite of the fact that the deficiency of agricultural pay and obligation seemed to have ended the existences of various little farmers, as a rule the underlying foundations of such passing's lay in the social issues too.

Pope and Just (2003) looked at the state of experimental research on certain agricultural risk concerns, how feature agricultural creation conditions are fused in standard danger models like fixed assigned data sources, defective capital business sectors, bury transient monetary administration with chapter 11, proposing two premises identifying with the agricultural creation and danger. To start with, to provide clarification on how to improve agricultural strategy examination and how to respond to hazards in the creation of agricultural practices. Additionally, risk clarifications in agriculture and optional explanations for behavior that appears to be responsive to hazards are extensively featured alongside econometric models of observational work to improve assessment.

Satyanarayana et al. (2003) another financial strategy and the opening of Indian agriculture to the world without institutional assistance, according to affected domestic costs and, in turn, farmer pay. Different from other states in the country, the state farmers of Andhra Pradesh were greatly impacted by the free movement of multinational corporations in the seed market. Farmers were unable to obtain private financing at faster rates of interest to satisfy their needs for development and use due to an inadequate supply of institutional bank credit. Burrowing and expanding wells and tube wells are among the individual water system offices' alerts that most farmers in the state have purchased. Remunerative value design decreased the reimbursing limit of farmers. A few social and psychological factors occurred during that period that compelled them to undertake a distressing display of suicides; however, the fundamental cause of the social and psychological pressure was the state's rustic economy's collapse in the late past. As a result, they believe that policies that

can enhance farmers' financial situations are necessary rather than focusing solely on assisting them.

Serra et al. (2003) examined the changes made in the United States in the 1990s with regard to crop protection. The findings suggested that crop protection interest is not influenced by premium rates. It had a sharp decline in absolute value in 1995 and 1996 to the point that, in 1996, it couldn't be measured in relation to nothing.

This can be clarified by the execution of obligatory support in the crop protection program during these years. Two, the outcomes likewise demonstrated a decrease in the cost versatility before the decade's over, which is unplanned with significant expansions in government premium endowments close to the furthest limit of the 1990s. What's more, results mirror the presentation of new income protection items, which may have moved the interest for crop protection and made protection more alluring and accordingly less cost responsive. More agricultural protection cooperation may be challenging to achieve through premium sponsorships or premium limitations, according to the reduced interest flexibility. Increased interest in crop protection in the future might be attributed to the design of more appealing products. The findings support the hypothesis that the use of creation inputs and protection investment might be negatively correlated, an outcome predictable with moral peril. Higher expected overall gains diminish the interest for crop protection, which is as per more extravagant ranches being less danger antagonistic than less fortunate ones. Farms' abundant assets have a consistent detrimental impact on program collaboration, with farms' tendencies being the kind where danger avoidance decreases as farms' abundance increases. The inadequate assessment of crop protection costs, a factor strongly linked to farmers' efforts to prevent hazards, decidedly impacts the interest for crop protection. Predictable with past discoveries, the outcomes show that animals' ranches are more averse to protect. The meaning of animal's deals and It seems that in the second half of the 1990s decade, the typical total remuneration for elucidating the interest in crop protection goes down. This results from the enlisted expansion that was made popular by modifications to the American crop protection program.

Chandrashekhar and Ghosh (2004) examined some of the problems affecting agriculture as well as the broader context in which the problems occurred in the Andhra Pradesh province. Researchers have shown that farmers' inability to cope with the burden of debt—

which they render themselves incapable of repaying—is the main cause of these suicides. Since banks and cooperatives were lending less agricultural credit, especially to small and marginal farmers, the responsibility was largely delegated to private moneylenders. Farmers in Andhra Pradesh have shifted to money crops with doubtful yield markets and ambiguous harvests in the last several years because to skyrocketing input expenses. Farmers are now forced to adjust to the whims and volatility of the global market, and the previous certainty provided by the government has vanished as a result of the opening up of agricultural trade. The public bureaucracies that oversaw agricultural progress have disappeared, putting farmers at the mercy of commercial information vendors. Due to the information vendor's lack of adequate guidelines, incorrect crop selections, excessively expensive information prices, deceptive data sources, and coercion were all difficulties. These development plans were also adhering to the emergency in water and water system sources. There are further personal and societal factors that have made obligation problems worse. Declining profits and rising development costs and along these lines obligation drove farmers into a gigantic pressure and they found that self-destruction is the best way to get independence from this pressure.

Gangopadhaya (2004) are optional, with respect to little and minor farmers; it didn't appear to be a serviceable arrangement. Farmers appear to have little ability to absorb the risk of bad luck, despite the extraordinary rates to cover these risks giving the appearance that they are high. The plan was to carry out the crop protection scheme with the aid of small-scale non-governmental organizations collaborating with a consortium of communities.

Hardaker et al. (2004). Discussed these risks included creation, market, institutional, and individual hazards pertaining to business opportunities. Creation hazard is because of erratic climate and execution of crops and domesticated animals. Market hazard is identified with vulnerability about the cost of yields and, some of the time likewise contributions, when decisions about creation are made. Government actions and regulations, such as those governing the use of pesticides or the removal of animal fertilizer, are the source of institutional hazard. Charge arrangements and installments. Individual dangers are because of questionable life occasions like demise, separation, or ailment. Second, monetary dangers result from various techniques for financing the ranch business. When bought supports are used, interest charges must be paid before value is

compensated, which increases risk due to influence. Additionally, there is a financial risk when borrowing becomes more expensive or difficult to obtain credit.

Revathi (2004) led an entomb locale examination comprising four areas in Andhra Pradesh. For the reason, the inquiry made use of data that was available from the chief office on farmer suicides. The inquiry focused on how the little and insignificant designers from the regressive networks were affected by the agricultural disaster. The examination found that, rate of self destruction is high among the original farmers having a place with the retrogressive (dalit) networks. During the tenure changes, the regressive networks acquired land ownership. The land that has been distributed among these populations has been less plentiful and unsuitable for development. Farmers made significant contributions both during the first stages of cultivation and later on for the actual development. Due to the rise in input costs, development expenses increased significantly during the post-change period. Additionally these classes of farmers are away from the public water system offices. Consequently, they are more reliant on subsurface water resources or storms. Once more, farmers made contributions to the wells and tube wells that are part of the individual water systems offices. The majority of suicides occurred in areas with higher gross inland inundation due to subterranean water sources. The region with non-food crops and the grouping of farmers' suicides have a favorable, significant association. Farmers that emulated the large farmers' farming practices faced significant risk. Farmers are unable to communicate the hidden risk associated with real money crops due to essentially weak financial conditions. In any event, the significant degree of financial weight is caused by the decline in compensation from agriculture.

Sharma (2004) mentioned that the Indian focal administration, in collaboration with GIC and four other protection offices, proposed a strategy for agriculture protection in Kharif 2004. The plan included four crops: bajra, arhar, cotton, and maize. NABARD received 30% of the amount, GIC received 35%, and the remaining portion was distributed among 4 protection groups. This approach would work for corn in four selected locations and cotton in six regions, and for bajra in thirteen. Based on the average agricultural output over the preceding five years, the state would repay 90% of the arhar harvest, 80% of the bajra and maize crop, and 60% of the cotton crop.

Sherrick et al. (2004) two-stage evaluation method was used to look at their choices made

on optional items. The study's findings demonstrated that crop protection participants varied significantly from non-participants and among the various types of protection products in terms of their commercial, personal, and unique features. Given the theorized relationships, it is predictable that Midwesterners who labor larger acreages, are less wealthy, more risk-taking, and more deeply involved in agriculture will choose income assurance over more explicit yield and hail security. These protection clients value the CEOs' overall risk more highly and Think of safety as just one of the risks the board practices. These market characteristics have emerged recently as the range of protective goods has expanded, despite the fact that farmers get typically large government payments. The investigation's findings also shown that the more significant yield risk that frequently occurs outside the viewing region may have more substantial impacts on protection values elsewhere. The proceeded with extension of protection insurance to forte crops may yield comparable interest profiles. From an arrangement point of view, the profiles of these protection clients recommend that further investigations of charge sponsorships across market portions could prompt a nearer fitting of expenses to make credits, especially in meeting the needs of young, low-resource farmers and in reviving the motivation of security experts to serve this segment of the market.

Jayati Ghosh (2005), Examined areas where state administrations have most successfully pursued neo-liberal monetary strategies from the post-1990s, emergencies have often been remarkable. A specifically intended package for agriculture was not included in the budgetary adjustments. It has just centered on the modern turn of events. Changes in monetary estimates and government expenditure patterns have also had a significant impact on the states of development. Exchange and monetary liberalization have an impact on the evolution, credit, exchange and rustic livelihoods. The primary driver of this misery act is predominantly identified with public strategy by and large and that of post changes specifically. The new financial structure systematically reduced the insurance coverage provided to farmers and exposed them to private exploitative companies and unpredictability in the absence of sufficient regulations. It has been a major factor in the decline of the rural economy in the years after the reforms. The availability of institutional financing only dried up after financial progress. In order to gain more from clear and safe lending, public area banks started to relocate the rural businesses into urban areas. For their

finance requirements, farmers must thus rely on the private market. After the exchange advancement, farmers are able to access their basic wage. In which, neither they support nor would they be able to reimburse the advance sum. In all, reasons of agrarian emergency and in this way self-destructive conduct are accumulated to the changed strategies presented during the 1990s.

Bhende (2005), discussed the periodic paper while breaking down different periods of crop protection in the nation, using additional data obtained from General Insurance Corporation of India Ltd., spoke about the kinds of risks associated with crop protection. It was found that the NAIS display was unusual since it did not cover all regions equally. Only loanee farmers were eligible for protection under the CCIS, and many farmers who were not able to get funding from institutional sources were not able to receive crop protection benefits. When groundnuts were present, the case premium proportion was highest (20.22) and lowest (0.88) when wheat was present. If the typical crop income (as in the USA) is certain, it suggests being more prudent. In the event of crop failure, this will help farmers meet their usage demands development.

Mallikarjun and Jayshree (2005) conducted a field study to determine a financial analysis of crop protection for onions in the Dharwad area of Karnataka. They discovered that a significant percentage of the farmers whose crops were already included under NAIS were satisfied. It was also shown that region yield protection was more expensive when compared to premium determined using the current technique, suggesting an optional model for crop protection. The entire insurance agency suffered losses due to territorial inclusion reimbursements, thus the extraordinary rates—which amount to Rs. 315 per hectare—were assertively set at 3.45 percent of the total insured. He employed the Likert scale as the scale for attitudes.

Indira Gandhi Institute of Development Research (IGIDR) (2006) — The study conducted by IGIDR (2006) analyzed agricultural growth and policy implications in India, focusing on price support mechanisms, production trends, and farmers' income levels.

Gill and Singh (2006). Studied Punjabi farmers' suicides were discussed by the state's Amritsar and Patiala areas hosted the examination. The state was in an emergency due to the stagnation of the green insurgency's innovation, the rise in the average cost of

necessities, the lack of elective business opportunities in the state, and the closure of the base assistance expenses. Getting is a necessity in the agricultural system. It is neither startling nor a sign of a weakness. It is the institutional setup's displeasure in not offering an equivalent acknowledgement for requests that is essentially liable for the emergency and its indication as suicides. The reasons for the suicides, of which obligation figured noticeably, were numerous. Different variables included monetary pain, crop disappointment, alcoholism's, conjugal and homegrown conflict, and so forth every one of these causes, it undoubtedly indicated the unfortunate financial situation of the victims, which was demonstrated in a different way. It is primarily attributable to rising costs combined with falling returns, stale innovation, and a near-freeze in the base assistance costs of wheat and paddy, which changed the otherwise terrible terms of exchange into something even more regrettable. These factors also clearly reduced the profits from the production of food grains. Because there is an abundance of supply during the guard crop, market prices are low. During the terrible gather, the government enters the market to settle food prices, further reducing expenses. Farmers are the quiet beneficiary and those at the end of the situation in both cases. The primary source of obligation stemmed from non- institutional sources of acquisition, where commission experts played a prominent role. The commission specialists resolved any discrepancies in interest in credit in rural Punjab and the availability of credit from institutional sources. Most of the advancements (59%) from both of these victims' sources were used for what are typically referred to be ineffective purposes. It has been the main justification for the duty and, as a result, Punjabi farmers' suicides.

Jain (2006) attempted to address several fundamental concerns connected with agricultural protection in non-industrial nations. About 10% of Indian farmers participate in crop protection each year, and the country's annual danger liability (guaranteed total) was approximately Rs. 10,000 crore. He also discussed Farm Income Insurance Plans, NATS, and CCIS. He emphasized the incremental approach and suggested that protective products for the rural areas should have an easy-to-understand design and introduction. Additionally, the state can play a significant role by creating additional reinsurance offices, either directly by granting reinsurance or by enabling the formation of reinsurance agency.

Jeromis (2006) studied farmer suicides in Kerala revealed that the advancement of

exchange had a negative impact on the agriculture sector. Actually, Kerala has the highest rate of overall self-destruction of any state in India. It is very nearly multiple times more than public normal. The investigation's ultimate purpose was to investigate 316 households in the states of Wayanand and Kannur that were impacted by self- destruction. About forty percent of the families that were reviewed were unable to identify the reason why their relative had filed the self-destruction. This demonstrates the sensitive nature of family dynamics and communication within the family. Farmers' self-destruction was happening more quickly in areas where the growth of strategically important corporate crops was prioritized. However, increased imports and fierce competition for exports in the worldwide market have affected ranchers' ability to grow profitable crops since the quantitative import restrictions were lifted and tax rates were lowered. In addition, during the past ten years, the profitability of agricultural areas has declined and the expense of development has gone up because of overabundance utilization of manures and expanding input costs. Substantial utilization of composts and pesticides has been one of the explanation s of decrease in efficiency of the area which likewise came about into natural corruption. The productivity of farmers decreased as a result of monocropping design. The rise in farmer suicide rates can be attributed to the horrifying state of the emergency situation in the area. The study concludes with recommendations for lowering the rates of return on all agricultural credits, protecting farmers from global price volatility by obtaining a fair price for their produce, bolstering agricultural growth through state government assistance, offering advice to farmers, and enhancing rancher-broker communication to resolve the problem.

Rao and Suri (2006) for the reason they visited 75 homestead families of two towns in Guntur locale, one of the self-destructions hit areas in Andhra Pradesh. Despite the fact that agrarian emergency and obligation are the two significant variables which power farmers to make a limit stride of self-destruction in the countrywide, the explanations for it were diverse in various states/locales. The province of Andhra Pradesh discovered that the main cause of obligation was the rising cost of development. Between 1992 and 2002, the cost of seeds increased by 400%, and a comparison of the prices of pesticides and manures was found. This was particularly significant when compared to other states in the nation. However, yield costs did not increase in line with information costs. Because of the

absence of augmentation administrations, farmers for the most part rely upon the vender for the information and the data about the employments of substance inputs. Merchant or dealer recommends them to utilize substantial portions of composts so they will get higher creation and in this way pay. Farmers plant BT Cotton seeds, however other than bollworms, the variety isn't free of insects. As such, the number of showers has increased significantly. When compared to other Indian states, Andhra Pradesh has the highest pesticide usage rate. In the state alone, 45% of all insecticides used nationwide are burnt, and a significant amount of those pesticides are used with cotton as the final product. It affects the state's nature, productivity, profitability, and fertility of the soil. The rise in development prices can be attributed to excessive expenditures and heavy use of pesticides and composts. A flawed agricultural market structure that heavily favors brokers and commission specialists spares farmers no portion of the value assurance or extremely little subsequently they get low cost for the produce which didn't take care of the expense of development for quite a while. It resulted from agriculture's unsatisfactory character. Farmers are in dire financial situations, thus they want money for usage and agricultural growth. Along these lines, they are in rush to sell their whole produce at the accessible cost on the lookout. Additionally, merchants provide them a lesser price since they are aware of their poverty. The government publishes MSPs for a range of crops, however these don't include development costs. Farmers were forced to borrow money from private moneylenders at exorbitant rates of return, ranging from 36 to 120 percent annually, for use and production because of rising development costs, declining returns, and the lack of institutional credit offices. A noteworthy fact is that 62% of the state's credit is used by farmers for creation, while 38% is used for non- agricultural purposes. Furthermore, of all the states in the nation, it has the second highest level of acquired cash use for agricultural purposes, only exceeded by Maharashtra. Because there are no offices for the water system, Farmers now depend more and more on subsurface water. It is the reason behind the state's unsettling decline in the subsurface water table. Additionally, during the past several years, financial shortages and well disappointments/drying out have increased. In addition to these components, the state government's urban-based financial and formative strategy pursued the development of the nation's rural and local economies. In the province of Andhra Pradesh, the gap between per capita national and metropolitan pay has widened,

particularly in the post-change period. It is evident that the compensated workers' conditions are superior to those of the growers. Due to the unsatisfactory state of their business, farmers are willing to sell their land, but no one is willing to purchase it. It encompasses the majority of the state's rural residents' emotional and financial conditions. The increasing expense of development, defective market structure, carelessness by the public authority are discovered the explanations behind emergency and subsequently farmers suicides. All in all, study recommends that to draft an arrangement where provincial economy ought to be at the middle phase of whole monetary advancement measure.

Suri (2006) analysed the country's agricultural problems have gotten worse due to the interplay between the primary and financial changes that followed independence, as well as the evolving notion of political economy and strategic requirements in the new past. Research uncovers more ambiguous circumstances surrounding the agricultural crises. The states that have witnessed significant worker developments either during the pilgrim period or after autonomy, a) somewhat agriculturally created, +b) where the initiative of ideological groups comes primarily from cultivating local area of the country regions, and c) where a large number of farmer suicides have been reported. Farmers make up one-fifth of the voters, yet they are still disregarded when it comes to the demands of public authorities. States like Karnataka, Kerala, Andhra Pradesh, Maharashtra, and Punjab are the most severely affected. Some or all of the previously listed characteristics are shared by the states. India's agricultural landscape has changed since the British era. The laborer category benefited from it by increasing both creation and profitability. A remarkable sense of despondency was simultaneously sparked by the "extraction of excess" from agriculture through land revenue, other routes, and a problematic value system and obligation among the cultivating local area. During the long stretches of crop disappointment and value gloom, all endured gravely. Worker development and prioritizing the more prominent offer for farmers in the agricultural surplus was the main emphasis of missions during the pre-freedom period. An agitator of laborers in the Maharashtra province's Ahmednagar and Pune districts is known for his involvement in the "Deccan Riots" and opposition to the growth of moneylenders in the late nineteenth century. It was directed against Zamindars and private moneylenders. Farmers faced financial difficulties at the same period, but they

did not resort to self-destruction.

According to all accounts, there were three stages in the development of agrarian relations following autonomy: I) Reforms and union of agriculture during the opportunity struggle in the 1950s and 1960s; II) The rise of political populism and the green insurgency in the 1970s and 1980s; and III) The advancement and deterioration of farmer conditions in the 1990s and beyond (for more information, see R. S. Deshpande, 2008). The agreements that the government obtained following the independence, such as the revocation of mediators' authority and adjustments to land, brought to significant advancements in rural areas of the nation. This allowed landless people to become landowners and become eligible for institutional loans. However, what the land told them was less rich. From that point on, this new group of farmers had to contribute more to the development. Following the environmental upheaval of the 1970s, agriculture turned into a company that needed more funding than before. Concurrently, a lack of sufficient support for credit from the nationalized banks led to an increased reliance on private loan sources for the developing region at faster rates of income. For a considerable amount of time, the basic assistance costs for certain crops have been lower than the actual cost of cultivation. Family usage for agricultural work, education, health, and utilization all sharply increased, but the development's benefits remained stagnant and occasionally even went negative. The lack of socio-financial status, income instability, enormous responsibilities, and unmet needs and the factors that might cause their financial situation to collapse include their inability to disentangle. It suggests that the gap between the actual and expected financial standard of life is what kills people, not their poverty. The impoverished are less likely to take their own lives than those who generally lead better lives or are socially expected to maintain a particular standard of living but are unable to do so due to the fragile state of the individual family economy.

They have been thrown into a psychological nightmare that has led to self- destruction. The roots of the self-destructive behavior of the developing local region include poverty and immiserization, a gap between the perceived and actual status, and a broken sense of pride. Over the most recent twenty years, money managers and industrialists have the more noteworthy say in the public authority undertakings and strategy planning. Consequently, the public authority has been formulating plans that benefit them. It suggests that the way

government issues are handled is changing, particularly with regard to corporations and speakers. As a result, changes in how agriculture and rural areas are seen have led to an agricultural crisis and farmer suicides.

Jain (2006) attempted to address some basic problems related to crop protection in developing countries, featured the necessity of agricultural protection. The yearly crop protection inclusion of the farmers in India is around 10% and the annual aggregate assured danger duty was around Rs. 10,000 crore. He also discussed Farm Income Insurance Plans, NATS, and CCIS. He emphasized the piecemeal approach and suggested that protective goods for the province areas should have a clear plan. And introduction so they could undoubtedly comprehend. The state can likewise assume a huge part by making extra re-protection offices,.via directly providing reinsurance or by endowing the creation of reinsurance agencies.

Dandekar and Narvade (2007) started that it comes from the political economy and the discontent with local and state arrangements. The disparity between the state government's advised costs and the middle's reported costs (CACP) is the cause of the expanding gap between the least expensive assistance and development expenses. With the exception of sugarcane, which had a 12% loss for the year 2005– 06, the typical gap between costs and revenues for other crops is between 38 and 50% (cost over income). Following instructions and requests from the World Bank and IMF, in response to a rural turn of events, the Indian government cut its financial arrangements. As a result, it did not provide the expected results when it came to creating non-ranch job opportunities and other infrastructure offices in rural areas of the nation. The public authority also reduced interest in and appropriations for agricultural areas. As a result, farmers must make a larger independent contribution to the construction of infrastructure. The contributing factors to the distressing trend of farmer suicides in Maharashtra state are the unfavorable development, high costs associated with information sources, growing consumption and use for maintaining social status, and lack of access to institutional credit.

Farmers were forced to get loan from non-institutional sources due to a lack of institutional availability, and moneylenders demanded annual income rates ranging from 36 to 96 percent. As a result, the amount obtained doubles within a year and exceeds the amount that farmers can be reimbursed. Because agricultural revenues are not acceptable, they

cannot be used to cover development costs. Once more, farmers get development funds from private businesses with the hope that they would receive good harvests and be able to repay the credit amount in the upcoming year. However, they once more experience the drawbacks of agriculture due to commonplace elements like annoyances and untimely downpours. Moreover, it evolved into an unending cycle of duty. In addition, hundreds of farmers in the Maharashtra area lost their lives as the circle came to an end.

Gnyanmudra (2007) self- destruction has arisen as an expanding general medical condition in India throughout the most recent twenty years. The rising rates of male teenage self-destruction, particularly in rural areas, are what stand out about it. Higher rates of male self-destruction in rural areas compared to metropolitan areas have been seen worldwide in many countries. Disengagement from society and the hardships of country living have been blamed for an increase in rural male suicides, fluctuating financial difficulty from environment and product costs, more prominent admittance to harm, absence of business openings, winning provincial manly culture and absence of psychological wellness offices. It implies that the condition of cultivating local area is same at around the world. Multinational Companies (MNCs) were heavily impacted by the introduction of the seed business and the presentation of capital-escalating agricultural techniques. A great number of farmers in India committed suicide as a result of a mix of financial issues, poorly chosen modern plans, and genetically modified (GM) crops. Research suggested that a growing number of young men are taking their own lives as a result of living in a sophisticated society and yet it isn't influencing such a lot of young ladies. It needs a guiding organization for discouraged individuals as a rule and farmers specifically.

Prasad (2007), the state of Andhra Pradesh's farmer suicides are closely linked to the customary approaches adopted by the federal and state governments, as well as the arrangements made during the post-change period. The misfortune making agricultural activities can be attributed to some unacceptable assessment of the cost of development and, as a result, the CACP's (Commission on Agriculture Cost and Prices) declaration of the MSP, which is consistently below the suggested cost by the state government and disappointment with information yield markets of agriculture produce. The decline of cultivators has been attributed to the global opening of the agricultural sphere. Farmers must face the unpredictable nature of global expenses in the absence of a safety net. The

high expenses of tube wells increased as a result of the negligence of water system developments. Farmers are compelled to borrow money at higher interest rates from private sources when there is no institutional credit available. Additionally, the duty issue becomes problematic. Because of the unrewarding idea of the agriculture. Because of the absence of general wellbeing offices, the use on the equivalent has expanded. Just as, proficiency of the rustic individuals is declining at a disturbing rate, which influenced the profitability and furthermore the creation of the area. Then again farmers spent more on ineffective purposes for example to keep up the specific measure of economic wellbeing. It is emphasized that all of these social, pragmatic, and strategic issues are to blame for the suffering that farmers in the Andhra Pradesh region have demonstrated by taking their own lives.

Ratna Kumari (2007) in a study conducted by, the impact of Andhra Pradesh's agrarian unrest and farmer suicides on the deceased's wives and other surviving relatives was examined from a sex perspective. A summary of 30 farmers' families impacted by self-destruction was given by a state representative from the Guntur region. Research finds that the causes of the agricultural crises or the factors responsible for farmer suicides are the same as those mentioned by other scientists. These include duty, rainfall disappointment, the unfettered entry of multinational corporations in the market for seeds and manures, the falling subsurface water table, and a few other social and psychological factors. In any case, the investigation zeroed in on the immaculate issue of the difficult which is identified with the self-destruction influenced relatives. Following the painful death of the family patriarch, the surviving wives must deal with the financial burden in addition to the closely associated friendly, mental, and verbal obligations. Moreover, there is a connection to the self-destruction of girls or sisters due to a lack of funds for their marriage. Spouses are permitted to repay the duty once it has been gathered by the deceased farmers. Sometimes, moneylenders invade a family's domain and take their children as slave labor. It resulted from the female family members' suicides. The victim's family must endure greater suffering than the upper class. The victims are in this situation because the government does not have a suitable compensation plan in place. Relief is provided by the present strategic action just in terms of money. But neither the state government nor the focus receive this kind of strategy for the up-grading of the deceased family by creating opportunities for non- ranch labor in the provinces. The study goes on to suggest that in

order to engage families affected by self-destruction, it is necessary to provide employment, education, excellent infrastructure, a supply of valuable seeds and manures, and profitable prices for their output.

Deshpande (2008) the number of farmer suicides was often linked to the way the region was presented, along with other obviously noticeable aspects including the arrival of the WTO, GM crop assortments, value breakdown, and fake seeds. Farmers are always carrying a heavy burden of responsibility as a group. However during nineties farmers " obligation trouble expanded considerably in the territory of Karnataka. The circumstance turned out to be more awful during the time of the 1990s which has been because of the adjustments in market circumstance, climate incurred vulnerabilities toward the decade's end and fundamental fall in the credit conveyance framework. Therefore, The suffering in rural areas worsened, leading to a wave of farmer suicides in the Karnataka region. Additionally, the study discovered that social factors such as family problems, advanced age and illness, and a predisposition to drink and gamble account for the majority of self-destruction cases. In Karanataka, the responsibility issue is most acute in the areas that have the potential to expand as well as in the state's northern districts. Shifting from food grains to money crops in the cropping plan does not provide them with regular food or monetary compensation. Pay and consumption consequently go out of balance. The fundamental causes of the agricultural emergency are discovered to be creative changes and crop expansion, and social and mental factors are present or worsening the situation, which has been contributing to the state's farmers' demise.

Enjolras and Patrick (2008) guaranteed and unprotected information from different farms covering the years 2002–2005. According to the results of the strategic relapse, protected ranches exhibit greater financial and agricultural sizes and a more expansive creation when compared to non-protected homesteads. This is likely due to the recurring adverse weather events. Money limits have a moderating effect on the decision to protect, while being crucial in the cross-sectional analysis. The findings further revealed that the ranches' agricultural characteristics validate their motivating influence on crop protection arrangement participation.

Lover (2008) assessed the current crop protection plot in Odisha, recommending a few measures to fortify the materialness of the plan in a condition of globalization. Auxiliary

data pertaining to the number of farmers who benefited, the premium received, and the payback inclusion in Odisha revealed a few shortcomings in the existing crop protection plan. The bomb protection scheme for downpour is better than the many strategies that are in place in Odisha. Due to globalization, prices are now renowned for being unpredictable, and the risk has increased with time. That multi- hazard protection strategy will be useful in addressing the threat that prevails in the agriculture sector.

Raju and Chand (2008) have done a commendable job. Using Andhra Pradesh state as their contextual research, they assessed the agricultural threat by taking the creation, territory, and yield of major crops from 1981 to 2004 at both the public and disaggregate levels. It was discovered that following the time of transition, there was a decrease in hazards. In terms of manageability, crop protection effectively mitigated most of the risks, particularly in the states of Rajasthan, Andhra Pradesh, Tamilnadu, Haryana, and Punjab.

Ginder et al. (2009) determined the factors influencing farmers' decisions to purchase crop protection in northern Illinois. Their findings provide clear insights into the most influential factor in crop protection acquisition. 92% of the respondents purchased crop protection in 2005, according to the results of the engaging measures. Eighty percent of those who purchased crop protection did so for both their corn and

soybean crops. 82% selected crop protection strategies that included their individual corn crop from 2005. For their corn-growing portions of land, just 37% of respondents purchased crop hail protection in 2005. 68% of respondents indicated that they have chosen to include many hazards in their soybean crop in 2005, however, 35% of the soybean sections of land purchased crop hail inclusion. Regarding the most persuasive factor, research revealed that 39% of respondents indicated they made their 2005 crop protection purchase decision on their own, without consulting anyone else. Meanwhile, 34% of participants indicated that their crop protection specialist had the most influence on their purchase decision. The computed relapse result demonstrated that fully farmed corn portions of land are identified as the independent variable which most much of the time influenced the log chances of an adjustment in a reliant variable. Nonetheless, there are various variables that are compelling based on crop and kind of protection chose.

James and Nair (2009) evaluated The National Agricultural Insurance Schemes (NAIS)

using data from the Agricultural Census (1995–1996) and the Agricultural Insurance Company of India Ltd. for both crop seasons. They discovered that the program is well-positioned in terms of value and that many places and crops benefited from its inclusion and reimbursement payouts by basically dissecting and interpreting the data. i.e., regarding proportionate inclusion and advantages gathered by little and negligible farmers. They showed that the issue of antagonistic choice which is normal in numerous agricultural arrangements worldwide has been fundamentally decreased.

Kumaravardan et al. (2009) the necessary data were gathered for a research by to look at trends in the production and area of food grains crops throughout the years 1980–2005. During the whole research period, there was a decrease in the area in Tamil Nadu dedicated to the cultivation of paddy, jowar, and bajra. Additionally, it was discovered that a drop in acreage and productivity had contributed to the food grains crop's poor performance in Tamil Nadu during the post-liberalization era. Between 1980 and 1990, the yield grew at a healthy rate of about 5%, but between 1991 and 2005, it decreased. Overall, the commercial crops had fared well, with strong growth both before and after the changes.

Buddy and Mondal (2010) fundamentally assessed the distinctive agriculture protection plot. When it was implemented in 1995, CCIS relied on the homogenous zone strategy. However, horticulture social and commercial crops are not included in this scheme, which was limited to loanee farmers. The CCIS was replaced by the current public agriculture conspiracy (NAIS) in 1999. The analysis determined that the overall premium to guarantee percentage of NAIS has increased relative to CCI Show ever a long way from accomplishing independence is. This plan covered restricted level of farmers and guarantee settlement is likewise deferred. NAIS likewise gave incomplete creation to farmers pay as it covers just creation chances. The scientists gave different ideas to improve the plan. According to the study, the protection unit should be lowered to the gram panchyat level in order to receive creation misfortunes with a healthy degree of accuracy. It is also suggested that the above plan be extended to include pre-planting and post-collection misfortunes. Climate indented protection plan would be urged because of monetary practicality for the guarantor by viably moving his danger to the financial backers in the optional capital market. It additionally dispensed with the issues of unfavorable determination and good peril by lessening authoritative expenses. Additionally, this method would provide for

quick lawsuit resolution.

Debdatta and Mondal (2010) who condemned the entire crop protection scheme on the grounds of financial non-reasonability as low-premium to guarantee proportion (17.28 percent) over the operational period due to non-actuarial based premium, avoidance of significant cultivation and business crops, and inclusion limited to advanced farmers. NAIS's main drawback was that it was unable to address unfavorable decisions made by farmers who were not eligible for loans. It covered only 9–15 percent of farmers, 8–16 percent of crop area, and 2.14–3.57% of crop output in cash terms.

Maity and Chatterjee (2010) to estimate the food grain production growth in West Bengal over the period 1969-2003. They concluded that the food grain production growth was decreasing returns to scale to modern inputs. The per cent change in all the inputs could not lead to change food grain production by equal percentage.

In order to determine the effect of territory under development (AUC) and the efficiency of rice, wheat, heartbeats, cotton, and sugarcane on the overall creation of these crops, Dr. Vijay Kumbhar (2010) examined the effect and significance of MSP/SMP. Based on his findings, MSP, zone under development, and profitability are reasonable predictors of the overall creation of rice, wheat, heartbeats, cotton, and sugarcane in India. According to Dr. Kumbhar, one reason for the poor performance of heartbeats compared to food grains in India is the lack of a definite market cost. The market price for beats is always more significant than the MSP announced by the government. According to Iqbal and Merwe (2010), the increase in MSP by the government led to an expansion in the production of rice and wheat.

Molua (2010) conducted a study to find out the response of farmers in relation to supply of rice the country Cameroon. 1.35 per cent increase was occurred in produce as a result of 10 per cent increase in the word price whereas 10 per cent increment in the price of competing crop led the 1.17 per cent decrease in area allocation of rice in the country. It was found that the current year acreage was affected positively by the lagged acreage as suggested by the positive coefficients. There was also found positive relationship between lagged yield and acreage. The public investment and rainfall were also observed to bearing positive impact on the current acreage of rice. The lagged price has also affected the current acreage

of rice in Cameroon.

Ranugadevi, S. (2010) used primary and secondary data to examine how well crop protection plots are used in South India. A schedule was used to help collect the necessary data, and an Indian agricultural insurance organization provided additional information. He categorized the songwriters into three groups: small, medium, and large farms. It was found that Andhra Pradesh has significantly improved the way crop protection was presented in terms of inclusion (area and total protected). It was suggested that the crop protection plan would only be effective if it is upgraded to only pay in the event of a disaster depending on the case's worth rather than paying out in whole.

Theresa and Nieuwoudt (2010) examined the South African Cane Growers Association's measures department's restricted scope cultivator was used to analyze time arrangement data spanning from 1985–1986 to 1999–2000. A restricted scope stick cultivator was a person who produced between 0.5 and 30 hectors of land. Reimbursements were evaluated using yield gauges, and yield shortfalls were evaluated based on the data. Year was used as the independent variable and yield/hectare as the dependent variable to evaluate a straight relapse; the faker was set to 1 following 1996/7 and 0 before to 1996/7. The study discovered that the payback cases of small farmers in five KwaZulu-Natal zones in South Africa were evaluated using the Group Risk plan, an American yield protection scheme, and crop protection writing tactics. The arrangement demonstrated that, in areas of agriculture where individual yield protection has failed, territorial yield protection crops may be grown profitably even in the face of basic hazard. It mitigates the problems of aggressive resolve and prudent risk. The results of this study demonstrate that funded zone yield protection strategies may be modest to limited scope stick producers with suitably low inclusion levels. yet it dubious whether these inclusion levels will bring about an adequate decrease in hazard.

Kalamkar (2011) conducted a study to examine the growth of agriculture and the factors that contributed to the growth for the time period ranging from 1961-62 to 1997-98 in the state of Maharashtra. Three sub periods comprised the full research period. There were three sub-periods: Period I (Jan. 62–1970–71); Period II (Jan. 62– 1980–81); and Period III (Jan. 82–1997–98). There was revealed a blend of positive and negative trends in relation to the growth of area in the state. There was positive growth recorded for the entire crops

barring only wheat, jowar and Bajra during overall study period. All crops had favorable increase in terms of productivity and production throughout the study's second and third periods, respectively, there observed a remarkable increment in case of commercial crops. It was also revealed from the study that use of important inputs i.e.; during the research period, there was also an increase in irrigation, high-yielding variety seeds, and chemical fertilizer. In contrast to the expansion of wheat, the rise in yield served as a catalyst for the development of several kharif crops. jowar and cotton was the result of change in yield. It was due to the area expansion which caused the increase in production of the crops sugarcane, tur and gram. Except for that, growth in productivity and change in cropping pattern were amounted to the increase in the output of different crops in the state.

Niklaus (2011) investigated whether direct installment had any influence on Swiss farmers' decisions to purchase hail protection or not. Using a strategic relapse model and board data from 1990 to 2009, they discovered that larger ranches with a focus on crop creation and greater local hail hazards are certain to purchase hail protection. Clients for protection who were older, more punctual, and better educated simultaneously shown a greater propensity to recognize hail protection. Additionally, it found that the protection and abundance effects of direct installments contributed to Switzerland's declining hail appropriation rates during the considered period, following the improvement of the 1990s. Thus, the greater the percentage of direct payments for total ranch revenue, the more sponsorships would be needed to instigate hail protection appropriation. Subsequently, agricultural arrangement ought to unequivocally think about this interdependency.

PTI (2011) the Haryana government decided to reduce the size of protection units under the National Agriculture Insurance Scheme to town bunches during Kharif 2011. The reasoning behind this decision was to provide a more realistic picture of yield misfortunes in the event of regular disasters or a resurgence of diseases and vermin. The specific guaranteed yield of that region or crop would also be compared to the sporadic yield rates. A total of 5, 94,810 farmers were insured up till 2010 for a premium of Rs. 20.72 crores. 1, 18,228 farmers benefited from crop safeguards, receiving a total guarantee payment of Rs. 34.50 crore.

Rao et al. (2011) used time-series data of cereals for before and after the formation of WTO. So, the study was conducted for the time period ranging from 1985 to 2008-09. The

study was conducted in India, Andhra Pradesh, three regions of Andhra Pradesh and all districts of the state. The yield was the most contributor factor to the incremental production during pre and post WTO era as far as considered to the India and almost same results was found in the state during the same time period. From the pre-WTO to the post-WTO era, the yield effect on the production disparity was shown to be the greatest in nearly every area. In relation to the magnitude, it found to be highest in Telangana (170.07 per cent) followed by Coastal Andhra (164.41 per cent) and Rayalaseema (-306 .72 per cent). Among the districts, in 17 districts change in yield was more effective on incremental production. In order to get a fundamental understanding of farmers' discernment and awareness regarding crop protection in the Hyderabad – Kamataks Region.

Rathore et al. (2011) assessed the display of crop protection equipment for farmers who were grantees and those who were not. Selecting Salumber tehsil through purposive inspection, a random sample of ninety farmers was consulted before maize and wheat harvests were pondered over for analysis. The investigation found that (I) dominant part of test farmers (86.9 percent) requested remuneration in real money and on schedule (80%) (ii) 77.8 percent test farmers discovered pay sum was deficient. This investigation likewise proposed some idea to improve the working of crop protection.

64.4 percent recipients recommended that unit ought to be singular rancher or town level. 626% of recipient farmers proposed that crop protection ought not to be necessary for the borrowers. A thorough strategy ought to be advanced to distinguish the real misfortunes. Farmers should get a fair premium for each crop, with the town's average profitability serving as the foundation for pay adjustments.

Acharya et al. (2012) used secondary data to compound growth function in relation to area, yield and production of different crops in Karnataka. The study period was ranging from 1982-83 to 2007-08. Directorate of Economics and Statistics (DES), Bangalore, Karnataka was the main source of data. It was found that there was significant positive growth rates in case of vegetables, spices, fruits and pulses whereas the trends was observed to be negative in relation to the cereals. It was revealed that Bajra, jowar, minor millets and jowar were the crops under which area was decreased. A small increment was observed in case of rice. Except for that, there was observed insignificant negative growth in under commercial and oilseeds crops while moderate growth rates were emerged for the oilseeds productivity. In

relation to the production of the same crops, there was remained positive growth which was found to be insignificant. Significant growth was recorded in case of the yields of different fruits and cereals crops. It was also suggested by the study in case of vegetables that there was remained insignificant growth trends.

Deshmukh and Katri (2012), in their investigation fundamentally assessed the diverse agriculture conspire from 1972-78 to work date. It likewise clarified different sorts of danger and agriculture protection plans run by GOI. NAIS was one of the fruitful plans for farmers regarding inclusion both territory astute and number savvy. It offers endowment on premium to peripheral farmers. It likewise follows differential premium rates because of various dangers. The investigation proposed that rancher ought to be arranged based on credit endorse. Appropriate preparing and directing ought to be given to farmers to crop protection and the danger alleviation strategy. The investigation additionally recommended that the interaction for the PPP and private back up plans ought to be empowered so greatest inclusion accomplished. Government should eliminate the approach hurdles and give incentive to farmers to take crop protection. The examination inferred that NAIS has demonstrated better plan in comparison to until now.

Goudappa et al. (2012) considered mindfulness and degree of advantage accumulating to farmers from crop protection. The essential data was gathered from 3 areas of Hyderabad-Karnataka Region during 2010-11, an example of 90 farmers was 30 from each region. The investigations found that lion's share of respondents didn't know about crop protection, or about the degree of inclusion and premium paid. About, system of crop protection and CCEs, 84.5 percent test farmers answered that their wellspring of data was from Grameen bank. 77 (85 percent) respondents out of 90 proposed that there ought to be rustic specialists at town level like the LIC specialists. It proposed the need to define strategy in, for example, way that non-loanee farmers ought to likewise be energized by giving doorstep administration and endowment in premium installments.

Shally (2012) inspected the situation with "Climate Based Crop Insurance Scheme (WBCIS) in Haryana", as executed for Rabi and Kharif crops in 2012-13 out of 18 squares of 17 locale in the state, crops covering like wheat, paddy, bajra and cotton, with charge of Rs. 300, Rs. 297.50 and Rs. 600 for every section of land for paddy, bajra and cotton individually. It was said that from Rabi 2009-10 to Kharif 2011- 12, an aggregate of Rs.

13.18 crore was given to 19,157 farmers as remuneration; the normal case being Rs. 6,880.

Sherrick (2012) collected the data related to yield of each of the countries in Illinois for the time period from 1975- 2011. The total variation fraction as well as the impact of corrected were calculated and observed 58 per cent price risk factor contributed to the total variability where it was 42 per cent when it comes to calculate the impact of yield in variability. If there is no collaboration between yield and price and there are working independently, then the study showed 60 per cent higher variance in actual revenue but if these factor are working jointly, the results was found to be different indicating that co-variance played major role. $ 12.82 per acre average income was reduced by the co-variance.

Shrikrishna and Bobade (2012) look at the development and improvement of National Agriculture and Insurance Scheme of 19 seasons from Rabi 1999 – 2000 to 2008-09 with the assistance of optional information. The examination tracked down that under inclusion Kharif season has showed higher development rate as contrast with Rafi season. The examination additionally tracked down that after 2005-06 development of NAIS isn't good as at the beginning level this plan was obligatory for loanee farmers. Presently it made discretionary for both loanee and non-loanee farmers. Based on guarantee Maharashtra, Andra Pardesh, Gujrat, and Utter Pardesh, Karnataka and Rajasthan and overwhelming by execution of NAIS as contrast with different states. Just loanee farmers and Kisan Cridit Card holders are a lot of mindful about this plan. The examination additionally tracked down that solitary five out of 26 states have procured premium higher than guarantee. The top notch rates are higher in ANI plans as contrast with past plans yet this premium are not still enough to cover claims. The investigation recommended that Gram Panchayat ought to be made responsible for conceding guarantee of protection and dispensing of cases to farmers. Farmers should pay repayment as right on time as conceivable like inside 2 to 3 months from misfortune. The investigation additionally recommended that altered National Agriculture Insurance conspire was arranged and shipped off arranging commission. To improve crop protection all the suggestion ought to be utilized by the public authority. Private area back up plan may likewise include in crop protection for more extensive inclusion of farmers just as improving feasibility in crop protection. There item ought to be straightforward in plan so ignorant farmers can likewise see without any problem.

Varadan and Pramod (2012) analyzed the achievement of crop protection in the province of

Tamilnadu in rice development. Essential just as optional information were gathered based on the goal of the investigation. Basically the investigation has zeroed in on the information utilized, crop expansion, region under development lastly the danger inclusion in rice development. It was discovered that crop protection successfully retained creation danger and offered stimulus to crop specialization. The utilization of high-esteem contributions, thusly, contributed towards improving gets back from cultivating. Factors like admittance to credit, schooling, off-ranch pay, and so forth essentially impact the appropriation of crop protection.

Abdulmalik et al. (2013) led an investigation to discover the determinant factors that impact farmers' cooperation in agriculture protection conspire in the government capital region, Abuja Nigeria. For this reason, they gathered essential data from 120 farmers with assistance of a pre-tried survey. The gathered information from the farmers were dissected by utilizing illustrative measurements and logit relapse model. The investigation uncovered that 78.3 percent of the farmers knew about the current agriculture protection plans, however just 35% of the farmers have partaken in these plans. This examination likewise tracked down that significant difficulties looked by farmers in were delay in reimbursement installments, administrating bottlenecks, delay in appraisal of misfortunes, openness to protection staff and lacking data.

Bhattacharyya (2013) conducted a study to find out the magnitude and rate of profit accruing to marginal and small farmers by changing the cropping pattern from traditional crops to floriculture in west Bengal. It was collaboration with the National Bank for Agricultural and Rural Development that study was conducted and based on primary data. To compute the incremental income, the impute return from the crop was calculated while in case of return from flowers, the calculated income was, that was reported. The shifting of flowers showing according to the season was the important factor which helped the farmers to get more income from flower cultivation.

Karthik and Ramalingam (2013) examined the mindfulness level of farmers about different crop of protection conspire and furthermore assessed the connection between the financial characteristics of farmers and their mindfulness level. Both essential and auxiliary information were gathered for the examination. Essential information were gathered by an overview among 360 farmers from the nine squares of Madurai area with the assistance of

a meeting plan Secondary information were gathered from different reports distributed by AIC, IRDA, NABARD. The examination tracked down that every one of the respondents knew about the NAIS and 90% of loanee just as non-loanee farmers mindful about Pilot Insurance Scheme, Comprehensive crop protection conspire and trial crop protection plot. The examination additionally reasoned that solitary 22.6% if there should be an occurrence of loanee classification and 17.3% in the event of non-loanee category farmers have significant level mindfulness. The examination uncovered that the vast majority of the loanee farmers guaranteed their crops due to impulse by bank yet in the event of non-loanee farmers, the explanation "To ensure against misfortune" got the primary spot. The examination found that mindfulness level of farmers were low towards crop protection conspire. The examination proposed that necessary crop protection for the individuals who take advance from bank ought to be debilitated.

Rashidpour (2013) concentrated of the diverse powerful factors on crop protection interest in west Azarbaijan territory in 2011, utilizing overview technique and clear connection, on an example of 400 respondents. Information was gathered by utilizing poll and inside and out interviews. Utilizing spellbinding and inferential insights to examine the gathered information. It was tracked down that the most significant of successful variables on protection request might be arranged into seven components viz., Product and crude materials value vacillations, Manufacturing offices and pay, Information of protection, government approaches protection support, Risk factors, Market conditions and item interest, and farmer's position in the public eye which clarified 85.27 percent of fluctuation of viable elements on crop protection interest in west Azarbaijan region. Subsequently, the examination recommended that to support interest for crop protection these components ought to be encouraged.

Sami et al. (2013) analyzed the determinants of farmer's interest in agricultural protection in Nigeria, on an absolute example of 120 gathered in two-stage test strategy. Elucidating measurements just as logit relapse model were utilized. Out of 78.3 percent of the farmers who knew about the presence of Agricultural protection plot, just 35% of the farmers took an interest in the Agricultural protection conspire. The aftereffect of legit relapse recommended that age, instructive level, ranch size, and availability to credit were critical factors that affected the likelihood of cooperation of the farmers in agricultural protection

plot while family size, enrollment of affiliation and contacts with augmentation specialists were discovered to be immaterial in impacting the farmers investment in Agricultural protection conspire. The significant test looked by farmers throughout their cooperation in agricultural protection was delay in repayment installment. It was suggested that viable assistance conveyance by protection specialist organizations will guarantee coherence of farmers" support in agricultural protection and furthermore investment by farmers who are yet to take an interest.

Balasubramanian (2014) in his article, featured issues identified with climate based crop protection plot in Perambalur region of Tamilnadu where around 90% region is under downpour taken care of. Subsequently, WBLIS is more fitting for covering the precipitation hazards in cropping. In this locale, just loanees took crop protection on account of impulse of banks/foundation and non-loanee ranchers are generally not keen on taking up the plan because of absence of information on the plan/item. In addition, the item includes were not in the least known to locale organization and agriculture office. Despite the fact that the year 2012 was a draft year in the area, no cases were paid out to the protected farmers and no baddy knew about the explanation of non-installments of repayments, in spite of a crop misfortune in the region. It recommended the need to begin protection education programs for cultivating local area ought to be begun.

Poonia and Godara (2014) collected data related to area, production, yield and price of sugarcane crop from different yearly issues of Statistical Abstract of Haryana ranging from 1979-80 to 2008 and computed correlation between prices and area, yield, production of the crop under discussion. Regression was also fitted to examine the impact of farm harvest prices on the area, production and yield of the crop. It was revealed from the study that the value of indicated that there was observed negative correlation between price and area and production of gram. However, the relation between price and yield of Gram was remained positive during all the most of the years of the study. It was also revealed by the study that that there was strong effect of last year price on area allocation during current year, production and yield of the current year. It was also revealed from the study that with 1 per cent increase in farm harvest prices of sugarcane led the 1.07 per cent increment in area allocation under sugarcane crop while 1 per cent increase in the prices lagged by one year brought 1.00 per cent increase in the area shifting towards sugarcane. Regarding variability,

all the explanatory variables accounted for 58 per cent variables in explained variables. It was also found from the study that area allocation under sugarcane was positively influenced by the farm harvest prices of the last year although the magnitude was not noticed as per expectations.

Ayalew (2015) conducted a study for the time period starting from 1981 to 2012. The study was based on secondary data. To decompose the contribution of area, productivity and interaction in increasing output of finger millet in Nigeria, Sharma (1977) model was used. It was revealed by the study that area effect led the 52 thousand tones decline in the finger millet production during the years 1981 and 1990 in Ethiopia. However, yield was recognized as a significant positive contributor which played significant role to bring increment in the output of finger millet in Nigeria. 98 thousand tones increment took place in the production of the concerned crop in which area played major role whereas negative role was played by the yield.

Pandaraiah and Sashidar (2015) directed an examination to research the discernment and mindfulness level of farmers about crop protection in Kurampall town of Nalgonda region (Telegana), utilizing essential information gathered with assistance of a timetable from 100 example farmers. They utilized probit model to discover the view of farmers about crop protection and components influencing their mindfulness. The examination uncovered that (I) 30% of the farmers knew about hazard relief measures, (ii) 80% of respondents knew about crop protection; and that (iii) social support and schooling fundamentally influence their mindfulness level about crop protection. It subsequently, gave a couple of ideas to improve social investment, schooling level, new imaginative items and changing or working on the system of crop misfortune evaluation.

Sandeep et al (2016) conducted a study to determine the role of different factors like area and yield to the change occurred in total output for pigeon pea by using Sharma (1977) model. In order to get the stipulated objectives, secondary data were collected from western vidarbha. The study period was ranging from 1983-84 to 2012-13. The results were also conducting by splitting the entire period into three sub-periods. The relevant information for farm harvest prices and rainfall were taken from statistical information, Maharashtra, different reports of season and crop and agricultural situation in India. It was revealed by the study that during first period of the study, it was area which contributed maximum to

the incremental income of pigeon pea in Amravati division followed by yield and interaction effect. It was also found that positive interaction effect was observed for all districts except Akola. In all the districts, yield effect was also found negative only in the Akola district. During first period, it was area effect which proved most important factor to increase the production of pigeon pea in Amravati while during second period, yield was observed to be most responsible factor for increasing production of pigeonpea. In total production, the contribution of area was found to be maximum in Amravati division and the impact of yield and interaction was also remained positive.

Godara and Poonia (2017) examined the sources of the incremental income from major Rabi and Kharif crops in Haryana. Except for those, predictions regarding the future income were also made in effort to check out the possibility of income to become double in near future. The study aimed at to reveal the fact that what factor was most responsible as far as yield and price was considered. The study was based on secondary data which were for the time period ranging from 1994-95 to 2022-23. The data for the time period from 2014 to 2024 were estimated on the based of forecast. It was concluded that price effect was the most powerful factor in case of most of the crops during most the periods, but yield effect was not found to be as per the expectations in almost all crops. But a very dismal scene was emerged as far as the results related to the estimated and required income for securing double income for farmers are taken into account.

Kulshrestha (2017) based his study on the time series for the years 1956-2010. Agricultural Statistics of Rajasthan was remained the main secondary source of data. The exponential model was used to estimates growth rate of wheat crop and showed that the percentage of wheat production in total cereals had been increased during all the study years. The rate of growth of wheat production in 1956-2010 was more than the wheat area. It was also revealed by the results that share of wheat in cereals had been decreased in recent years. The reason being that rice production was much improved in north Rajasthan. It was derived that wheat production growth rate was about 4 percent per year which was also statistically significant. Wheat area growth rate was about 1.5 percent per year and irrigated area growth rate was noticed as 3 percent per year. Production growth rate had been more than double than area which showed that yield had improved over the years. Further it can be concluded that the state had doing well in wheat crops and there was need to explore

more potential in other crops.

Mech (2017) examined the factors responsible for the rice production in Assam and for that, required data related to area, production and productivity of rice for the time period ranging from 1972-73 to 2014-15 were collected from Economic Survey, Assam. It was found that the production of rice in India was observed to be moderately stable at a low level of productivity during this period. 7008.6 Thousand per hectares was remained average production with the value of C.V. of 25.40 per cent. It was also found that the average production in India was more stable in comparison to Assam. It was revealed by the study that it was the impact of yield which made rice production to increase whereas area was observed less important factor to contribute in incremental production of rice. As far as the other determinants a factor is considered, it was fertilizer which was found as a significant factor which played major role to increase the production in rice.

Bhukar et al. (2018) examined the cost of cultivation in cluster bean for seed and grain production during 2016. The survey for grain production was conducted on 125 farmers of major cluster bean growing districts of Haryana viz., Hisar, Bhiwani, Fatehabad, and Mohindergarhand Gurgaon. Results of the study showed that total cost of seed production was 17125/-which was estimated 11 % higher than grain production and gross return from the seed production was 28950/- which was 52.4 % higher than grain production. Net return estimated from seed production of cluster bean was 11825/- while in case of rain production it was 1444/- per acre. For seed production the benefit cost ratio was calculated1:1.69. So, it was concluded that the seed production is more beneficial than the crop production for the farmers.

Choudhri et al. (2018) conducted the study in Bacharach district of U. P. with a sample of 100 respondents chosen through random sampling and were categorized into three categories as marginal, small and medium size group according to the size of their farm holding. Data was collected by personal interview method with use of pre- tested interview schedule. Results of the study revealed that cultivation of maize was found. Profitable for all categories of farm. The gross income per hectare and the total costs of cultivation of maize were found to be positively related with size of farms, whereas negative relation was observed between net income and farm size which showed that in the cultivation of maize resources are not efficiently used at larger farm size group in the cultivation of maize

resources are not efficiently used at larger farm size group technical, managerial and financial problem.

Gohain (2018) examined natural disasters and shifts in market conditions are two of the most important factors that contribute to the risk of doing business in agriculture. A lack of storage facilities, transportation facilities, quality control and packaging facilities, facilities for price risk management, and cold chains are some of the issues that afflict the country's agricultural marketing sector. Haryana farmers selling rice, wheat, corn, and cotton have been studied for their challenges. There were 180 participants polled in the research, all of them were farmers in six different locations. The farmers in the sample were divided into small, semi-medium, medium, and big depending on the size of their operational holdings. Increasing grain moisture caused delays in market procurement and commission agency deductions that affected rice and wheat sales, according to a study published in the Journal of Agricultural Economics. A lack of public procurement for basmati was the result of middlemen's dishonest behavior. Due to poor pricing for maize and cotton and a lack of government procurement, most farmers have trouble selling their products to customers.

Jyani et al. (2018) studied the economics of cluster bean crop in Bikaner district of Rajasthan. The Study revealed that the cost of cultivation was highest on large farms 15676.58 followed by medium Rs 14837.42 and small R 14117.08) farms. The major component of cost incurred was utilized in sowing of seed including the cost of seed which contributed 20.26 per cent of total cost. It was found that on an average the total cost (Cost C2) per hectare of cluster bean was 14877.03 for the sample farms of the study area. The cost C2 was highest on large, farms followed by medium and small farms. On an overall basis, the cost of production per quintal was Rs. 3206.76 on sample farms. It was highest on small farms, followed by medium and large farms. On an average, gross income per hectare of cluster bean cultivation was Rs. 2 7368. This was higher on large farms as compared to the medium and small farms. On an overall basis, the net income per hectare of cluster bean cultivation was 11460.45. It was more on the large farms as compared to the medium and small farms. The return to management per hectare of cluster bean cultivation was 9869.70. The returns per rupee of investment was highest on large farms (Rs 1.75) followed by medium (Rs. 1.70) and small (Rs. 1.69) farms.

Prasannakumaran (2018) everything else in a country's economy is tied to the agriculture

industry. Rural and urban poverty may be addressed more quickly as the economy expands. Agriculture is the cornerstone of any country's economic growth strategy if it is well-managed. Farming is particularly prone to these kinds of problems because of the wide range of variables that can affect its success, including changing weather patterns, diminished water resources, declining soil quality, and a rising number of pests and illnesses. Tamil Nadu's administration is working hard to find solutions to these problems. The slow expansion of India's agricultural sector has been caused in part by the country's agricultural industry's limitations over the years. Farming has a wide range of difficulties to deal with, including concerns relating to production, marketing, and finances. As a result, it aims to bring attention to the current opposition to this practice among agricultural workers

Singh et al. (2018) conducted his study in Hisar during 2015-16 to analyze the cost of Cultivation of guar and constraints faced by the farmers in the production of guar. A total of 75farmers were selected for the study from three villages with 25 farmers per village. Results of the study revealed that the total cost of cultivation of guar was calculated to be Rs. 44246.42/ha with the total yield of 9.85 q/ha. The net returns from production of guar were estimated negative with loss of Rs.7421.22/ha with the gross returns of 36825.20. The variable cost incurred in the production of guar was found to be 20551.74/ha and the net returns over variable costs were Rs. 16273.46/ha.

Tanhampoar and Mahmoudi (2018) investigated the empirical model to evaluate the productivity growth in agriculture sector. The result has been found that average factor production growth rate is .72 percent and its share in value added is also negative -19.6 percent while it has estimated to be 33.8 percent in fourth development plan. The value added growth in agriculture sector has achieved by the effective capital role in agriculture low. Labour productivity growth does not have positive effect on the value added growth.

Vtrpeski and Cvetanoska (2018) analyzed the changes in labour productivity and its impact on important determinant which further helps to create essential condition to grow all economy. So, it is important to increase the agriculture production level in order to grow labour productivity. The study also analyzed the relationship between labour productivity and GDP and employment in agriculture sector. To analyze the data information the study used descriptive, comparative and regression analysis. The result showed that there are high correlation between GDP in agricultural and agriculture labour productivity that means

changes GDP in agriculture have a great impact on labour. Productivity rather than to impact on changes employees in agriculture sector in Madcedoian. Economy They determined that the Bengaluru urban division has the highest CAGR value 24.26 percent in productivity and the Bengaluru rural division has the highest CAGR value 22.26 percent productivity.

Agarwal et al. (2019) examined the major constraints faced by the farmers in the production of cluster bean in Hisar district. Study revealed that the major constraints observed in the production of cluster bean were lack awareness of weather forecasting/ variability in weather (90.91%) and labour scarcity during peak season of sowing (81.82%) along with crop protection, viz., and problem of weeds (79.55%), insect pests (45.45%) and diseases (22.73). Lack of farmer-industry linkage and Minimum Support Price (MSP) were the major constraints reported by all the sample farmers.

Bhupender (2019) analyzed the economic aspects related to production and marketing of cluster bean in Hanumangarh district of Rajasthan and observed that total cost, gross Income, net income of cluster bean production per farm household found increasing with increasing size of farm holding. However, cost of Production per quintal of cluster bean, found to be Rs.2056.90, Rs. 2085.16, Rs. 1932.30, and Rs.2022.30 in case of marginal farm, small farm, medium farm and large farm categories respectively. Total cost, gross income, net income of cluster bean production per farm household were found to be higher in case of large farm categories i.e., Rs. 16057.09, Rs. 64386.99 and Rs. 48329.90 respectively. The farmers earn net income of Rs. 2312.49 per quintal by spending Rs.2026.01 on the production cost and selling the produce at Rs. 4423.40. The major player's i.e., farmers, traders, millers, wholesalers, and retailer earn a profit of Rs. 2890.02, Rs. 171.77, Rs. 454.76, Rs. 192.54 and Rs.225.62, respectively. The highest value addition per quintal was done by the miller which helped him to income Rs. 454.76 which is significantly higher than the other players.

Kumar et al., (2019) India is second only to China when it comes to the overall volume of veggies grown in the world. Cauliflower, potato, radish, tomato, and onion are some of the most cultivated vegetables in Haryana. There is a lot of cauliflower growing in Haryana as well. To better understand the difficulties farmers and intermediaries in Haryana experience in the production and selling of essential vegetables, a study was conducted out in that

state. In Sonipat, Yamunanagar, Ambala, and Gurugram, scientists studied cauliflower, potatoes, onions, tomatoes, and radishes, among other things. It was vital to gather data for the 2014-2015 production year in a thorough manner because this research relies exclusively on primary sources of information. The production of vegetables is complicated by a variety of issues, including a scarcity of cold storage facilities, the high cost of fertilizer, seed, and labour, a lack of knowledge about how to grow vegetables, fraudulent plant protection agents, and a lack of financial resources. A lack of storage facilities and processing firms and units, high labour expenses and transportation costs, and delays in payments were all factors that contributed to the substantial price disparities.

Sood et al. (2019).The article deals with the instability analysis of agriculture production of various major crops such as Wheat, Rice, Bajra, Barley, Jowar, Maize, Gram, Moong, Massar, Ground Nut, Sesamum, Mustard, Cotton, Sugarcane, Potato, etc. of NCR districts of Haryana state. The Cuddy Della Valle Index (CDVI) method is used to examine the instability in percentage. By using the different issues of Economic Survey of Haryana and the Statistical Abstract the Haryana the secondary data of the major crops for the last 15 years, that is, from 2004-05 to 2018-19 is collected. In Section 1, a brief literature view of the growth and instability of major crops of various states of India is discussed. Section 2 deals with the research methodology and data collection used in the paper. Section 3 contains the main instability results of 13 NCR district of the Haryana state.

Bansal et al. (2020) elucidated the extent of diversification towards high value crops in Haryana. The authors stated that the area under high value crops has increased for the study period as most of the districts showed increasing percentage of area under these crops. Panipat, Sonipat, Kaithal, Kurukshetra and Karnal were reported as more diversified districts while that of Panchkula, Yamuna agar, Jhajjar and Rewari were comparatively low diversified districts in the state.

Deokate et al. (2020) studied the economics of soybean seed and grain production in was him district of Maharashtra during the agricultural year 2018-2019? From the analysis of the data the per hectare cost of cultivation for soybean seed and grain Production was estimated to be Rs.57901.09 and Rs. 50747.7 which is higher for soybean seed production than grain production, while per quintal cost for soybean grain was found to be Rs. 3288.03 and Rs. 3206.04for seed production, it shows that grain production has a higher per quintal

cost than seed production. The income received per hectare from soybean seed production (Rs. 77056.750) was higher, indicating that it was more. Economically viable than grain production (Rs. 56788.37).

Kumar (2020) discussed a common commercial crop in India is Allium cepa L., which is a member of the Allium genus. The Nuh area of Haryana was chosen for this inquiry because of its high onion output. One hundred thirty onion farmers from the Tauru block were selected at random for this study. During the 2017-2018 farming season, the most prevalent data gathering method was farmer- to-farmer interviews. According to a recent study of onion industry participants, transportation costs, the absence of minimum support prices, and the existence of various middlemen have impeded the selling of onions. At the very least, 80%. Most onion farmers faced issues such a shortage of technical staff, higher power, and fuel costs, as well as variations in the price of raw materials, according to research (66.67 percent)

Rathore (2020) studied the economics of Isabgol production in Barmer district of Rajasthan. The analysis of the data revealed that total cost of cultivation for isabgol. Was higher (38407.69/ha) on large farm, followed by medium farms (34132.15) and small farm (31281.96). The different per hectare costs of Isabgol cultivation were computed using the cost concept (Cost A1, A2, B1, B2, C1, C2 and C3). The cost of production was found to be lower on large farms, with a cost of 5053.64 per quintal,' followed by 5094.35 per quintal for medium farms, 5128.19 per quintal for small farms, and 5092.06 per quintal for overall farm size. Large farms have the highest farm business income, family labour income, and farm investment income from Isabgol. For overall farm size, the benefit cost ratio was determined to be 1.63, with 1.68 for large farms, 1.64 for medium farms, and 1.63 for small farms.

Ashoka et al. (2021) conducted his study in Karnataka on cluster bean to work out the economics of cluster bean production. The total cost of cultivation per acre was calculated to be Rs. 35,176. According to the research, this enterprise generates greater gross and net returns of Rs. 70,851 and 35,675 per acre, respectively, with a benefit- cost ratio of 2.01, indicating its profitability.

Pal et al. (2021) studied the "Economics of mung bean seed and grain production" in Mau

district of Uttar Pradesh during 2017–18 and concluded that the ratio of fixed and Variable cost in Mung bean seed production was 18:82. To 38547/ha was estimated to be the total cost in seed production of Mung bean. The gross and net return was calculated to be 56175 and 17628/ha with the BC ratio of 1.46. For certified seed production the total cost of cultivation in Mung bean was found to be around 31.29 per cent higher than grain production while, in seed production was about 49.80 per cent higher than gross return in grain production and the net return from seed production of Mung bean was 116.56 per cent higher than that from grain production. Mung bean grain and seed production costs are predicted to be 3915 and 4591 per quintal, respectively, according to cost C2. The return to farmers on cost C2 was 27.71 and

45.72 per cent above cost of production for Mung bean grain and seed, respectively. Similarly, according to cost A2 and FL (Family Labor) the cost of Mung bean production for grain and seed was calculated to be Rs. 3089 and Rs. 3852 per quintal. For Mung bean grain and seed, the return to farmers on cost A2 & FL was 61.86 and

73.68 percent over cost of production, respectively. Mung bean seed production has resulted in a higher profit prospect for farmers.

Patil et al. (2021) stated that, Indian agriculture can be defined as a "confrontation with weeds" because of the quotation a year's seeding is seven year's weeding". Therefore, the removal of weeds and off type plants needs to be more focused than any other activity which aids in increasing the agricultural production. In cluster bean, weed competition throughout the season causes severe yield reductions ranging from 29 to 48 per cent, with severity varying from 70 to 98 per cent depending on the weed infestation. For weed control hand weeding is a classic and effective method, but due to untimely rains, labour shortages during peak season and higher labour costs this method cannot be utilized effectively. Herbicides like pendimethalin and Imazthapyr, when used with or without weeding, have been found to be efficient in controlling weeds.

Phougat and Kumar (2021) examined the Haryana State Agricultural Marketing Board (HSAMB) and the Department of Food and Supplies of the Haryana government collaborated to create the "E-Kharid" portal (ekharid.nic.in) for giving farmers up-to-date information and prompt payment for their crops in the state of Haryana. By registering in

this portal, the Haryana government has charged the State Agricultural Marketing Board with providing farmers the Minimum Support Price (MSP) for their products. Many farmers registered on the MFMB portal to sell their crops at MSP during the Rabi season, including wheat, mustard, gram and sunflower, according to the study. However, the E-Kharid portal revealed that only wheat is the one primary crop that farmers sell at MSP. Only few farmers sell their mustard crop harvest at MSP. No farmers went to the mandis to sell their remaining produce. It occurs as a result of the extremely low MSP that the government provides for these crops. As a result, in the 2020-21 period, farmers sell their commodities to private buyers for greater prices than the as part of crop diversification, the government has launched a new programme to boost pulse and oilseed crops during Kharif 2022. In accordance with this plan, 70,000 acres will be dedicated to the promotion of pulse crops (green gram and pigeon pea) and 30,000 acres will be devoted to the promotion of oilseed crops (castor and groundnut). Farmers raising pulses and oilseeds would receive financial assistance of Rs. 4,000 per acre.

Sharma and Deshmukh (2021) studied the "Economics of seed production of chickpea in Kawardha and Lohara blocks in Kabirdham district of Chhattisgarh". The average croppingintensity and size of holding of chickpea seed growers were 189.82 per cent and 6.78 ha. The per hectare total cost of cultivation of chickpea was 36331.71. On an average rental value of owned land 23.39 per cent of the total cost. The Cost A1 was estimated to be 25331.59 because of absence of leased in case in sample household. Cost B1 and B2 were registered to be 26331.83 and 36331.71. Cost C1, C2 and C3 were amounted to 27931.83, 37931.71 and 37969.64 respectively. The family business income, gross income and net income was found to be Rs. 100923.41, 126255, 89923.29 respectively. Yield of main product was 18.5 quintal and of by-product was

11.5 quintal. Return over different costs, like A1, A2, B1, B2, C1, C2 and cost C3 were 100923.41, 100923.41, 100023.29, 91523.29, 98323.17, 98423.29, 89923.29 and

89886.96 respectively.

Kumar and Malik (2022) Studied the economics of chickpea cultivation in Haryana for different periods from 2004-05 to 2016-17. The total cost of cultivation computed for India and Haryana was .12163/- and 9241/ha for the period (2004-05 to 2007-08) and it increased

to 36036/- and 39207/ha for the period (2014-15 to 2016-17). For India and Haryana, the share of fixed and variable cost to the total cost of cultivation was found to be 59:41 and 44:56 per cent. During the study period, the net profit of chickpea in India increased by three times and in Haryana a seven times increase was observed in the net profit of chickpea. In India and Haryana, the value of B-C ratio was found to be greater than one which indicates that the cultivation of chickpea is profitable.

According to the DFI Committee and Ministry of Agriculture & Farmers Welfare 2022. In April 2016, an inter-ministerial committee (DFI Committee) was framed to look out the issues regarding DFI to recommend the strategies to attain the objectives. The committee derived three broad variables namely, enhancement of productivity, cost reduction and remunerative prices from the basic equation of economics (Net Returns= Gross Returns – Cost of Production).Optimal monetization of farmers' produce. Sustainability of production, improved resource use efficiency, Re-strengthening of extension and knowledge-based services and, Risk management

National Programme for Dairy Development Milk Producer Companies: NDDB Dairy Services (NDS), the wholly owned subsidiary 2023. The total size of dairy market was about Rs. 13.17 lakh crore in 2021. The dairy market has been growing at about 15 % per annum during last 15 years and is expected to reach a market size of about Rs. 30.84 lakh crore by 2027 as per International Market Analysis and Consulting Services Private Ltd. (IMARC) 2021 report. The liquid milk market represents about half of the total dairy market in the country. Of the total liquid milk market, the share of organized sector has increased from 32 % to 41 % in last 3 years. It is estimated that the share of organized sector would reach to 54 % by 2026.

CHAPTER-3
TRENDS OF FARM HARVEST PRICES, AREA, PRODUCTION, YIELD AND INCOME OF MAJOR CROPS

3.1   INTRODUCTION

The expectation behind establishing the guidelines of business sectors was to give an ideal market climate to the farmers however that was to a great extent bound to business crops. It was additionally in line with the agrarian construction existing around then, when the majority of the cultivating action was resource arranged, there was a little attractive excess created and the business sectors were implied mostly for the business crops.

After autonomy, the Department of Marketing was set up in the State and all the local farming business sector directing Acts were combined and brought under one Act. The Act given to foundation of sub-markets in the ward of the fundamental market. The re-examined Haryana Agricultural Produce and Marketing (Regulation) Act was established in 1966 with the twin goals viz., I. giving business sector conveniences in the market yard to dispense with the difficulty to the farmers; and ii. to kill the misuse of the farmers on account of the go between. Under this Act, a rundown of business sectors covering indicated wares were informed. The demonstration additionally given that once a market is assigned for a specific ware, covering a predefined territory, at that point the wares delivered in that space ought to be sold uniquely in those business sectors, subsequently confining the development of items. The demonstration additionally accommodated a popularity-based body called Agricultural Produce Market Committee to direct the elements of advertising with the assistance of the Secretary of the council, who was to be selected by the State Government.

Post-Independence, while Indian farming has battled, it accomplished a ton too. With present-day worries of evolving environment, it has gotten even more critical to have arrangements, which secure the food supply, yet additionally safeguard our current circumstance and characteristic assets. There are different optional data (distributed either on paper or on the Internet, individual correspondences and so on) just as casual discussions with agrarian specialists in India on the issue of APP (Agricultural Pricing

Policy) in this part. Its investigations some particular approach instruments under APP

from a versatile arrangement viewpoint. The target of the Government's value strategy for horticultural produce is to set gainful costs so as to support higher speculation and creation. Hypothetically, APP represents different financial elements, like the rate and nature of monetary development, in distinguishing and advancing the ideal harvest blend. This, thus, guaranteed suitable assignment of assets in the farming area, capital arrangement, and between sectoral terms of exchange. Application incorporates MSP (minimum support value), Procurement costs, Public appropriation framework and Zonal limitations.

The value support strategy was started by the Government to give assurance to horticultural makers against any sharp drop in ranch costs. On the off chance that there is a decent collect and market costs will in general plunge, the public authority ensures a MSP or floor cost to farmers, which takes care of the expense of creation, yet in addition guarantees sensible overall revenue for the makers. MSP is reported every year and is fixed in the wake of considering the proposals of the CACP (Commission at Agricultural Costs and Costs). Obtainment costs are the costs of kharif and rabi oats at which the grain is to be locally secured by open organizations (for instance, FCI [Food Corporation of India]) for discharge through PDS (public dispersion administrations). Ordinarily, the acquisition cost is lower than the open market cost and higher than MSP.

On account of paddy, these two authority costs were being reported with little year-to-year varieties till 2000/13. Notwithstanding, if there should be an occurrence of wheat this framework was ceased in 1969 and afterward began again in 2005/2007 for one year in particular. Because of absence of requests for expanding the MSP, in 2011/2013, the current framework was advanced in which just one bunch of costs was declared for paddy and other kharif crops. Wheat was obtained for cushion stock activities. PDS comprises of an organization of 3,50,000 reasonable value shops that are checked by state governments. Providing essential food products through PDS not just effectively reach the destitute, it additionally goes about as a control at general shopper costs. FCI is the sole store of food grains saved for PDS. The Corporation has worked successfully in giving cost support to farmers through its acquirement plot and in keeping a mind enormous cost increments by giving food grains through PDS. FCI was set up in 1965 as the public-area showcasing office answerable for carrying out government value strategy through acquirement and

public appropriation activities. It was expected to get for the public authority a solid situation in the food-grain exchange.

By 1979 the organization was working in all states as the sole specialist of the focal government in food-grain obtainment. FCI works through a countrywide organization with its Corporate Office in New Delhi, five Zonal Offices, 23 Regional Offices for all intents and purposes in all the State capitals, 168 District Offices (as on 1 January 2006) and 1452 terminals (as on 1 January 2006).

In states of shortage, a state can call for limitations on the between state development of food grains. If there should be an occurrence of excesses and within the sight of a viable support load of food grains, these limitations may, as and when justified by the circumstance, be continuously loose. Steps toward this path were taken during 1968 when a greater northern food zone was established and the development of gram and grain was made free all through the country. Development limitations on maize, bajra, and jowar were likewise lifted from Punjab, Haryana, and Rajasthan. Limitations were additionally loose in 1969 when the Northern Wheat Zone was augmented in order to cover for all intents and purposes the entire of North India.

As MSP is firmly connected with another APP instrument – acquisition costs – examinations between these two are unavoidable. The appearance of the Green Revolution in India demonstrated something else. The region under food grains expanded from 101 million ha in 1950/51 to 128 million ha in 1990/91; development of watered territory expanded from 20.9 million ha in 1950/51 to 50.2 million ha in 1995; and accessibility of brief span, high yielding assortments expanded also. Far reaching advancement of Green Revolution advances during the 1960s expanded rural yields in India for certain harvests by presenting high-yielding varieties that relied upon info like water system, substance composts, and pesticides (Goldman and Smith 1995). The Government presented huge agrarian changes, rolled out institutional improvements, and supported the advancement of significant water system projects. Besides, forceful food-grain showcasing in India started incredibly during the 1960s (Chand 2003). This was intended to make a good, impetus driven climate for the selection of this new innovation dependent on HYV (high-yielding assortments) of wheat and rice. India was then confronting extreme food deficiency and mass craving. The new innovation gave a beam of desire to handle the issue of food

deficiency and yearning.

3.2 EVOLUTION OF AGRICULTURE PRICING POLICY IN INDIA

Reception of the new innovation included the utilization of non-regular info and speculations with respect to the farmers. This made it important to establish a steady and beneficial climate for farmers embracing the new seeds. Simultaneously, it was to be guaranteed that an expansion underway profited the purchasers. The reasoning of the twin strategy of minimum support and obtainment costs is effectively justifiable. The Green Revolution required a venturing up of per hectare cost yet this was remunerated by a lot bigger yield of grain from every hectare of land. Bigger yield brings about the bringing down of market cost. To shield venturesome farmers from conceivable misfortune, MSP was presented. Simultaneously, should creation be far beneath than anticipated, be it because of helpless precipitation or some other reasons, market costs will undoubtedly rise. In such an occasion, acquirement value assists purchasers with getting to the essential food grains through a PDS. Government supplies water system water, input like composts and HYV seeds at a value lower than the expense of creation. In any event, for the piece of the yield that would be guaranteed by the public authority as acquisition, the farmers would be offered a profitable value which would be higher than its MSP yet not exactly the current market cost.

3.3 AGRICULTURAL PRICES COMMISSION WAS SET UP IN JANUARY

Agricultural prices commission was set up in January 2012 (Figure 3.1) to educate the public authority on value strategy regarding major farming items. The goal was to give due respect to the interests of the maker and the shopper, while keeping in context the general requirements of the economy. Since March 1985, the Commission has been known as CACP. The Commission comprises of a Chairman, a Member Secretary, two authority individuals, and three non-official individuals. The non- official individuals are agents of the cultivating local area. They are normally people with significant field insight and a functioning relationship with the cultivating local area. The MSP instrument of APP displayed a few highlights suggestive of versatile approaches and policymaking. In fixing the support costs, CACP depends on the expense idea, which covers all things of costs of development including the credited estimation of information possessed by farmers like

rental estimation of claimed land and interest on fixed capital. A portion of the significant expense ideas utilized by CACP are the C2 and C3 costs. C2 cost incorporates every real cost, in real money and kind, brought about during creation by the real proprietor, in addition to lease paid for rented land, in addition to ascribed estimation of family work in addition to revenue on estimation of possessed capital resources (barring land), in addition to rental estimation of claimed land (net of land income). C3 cost is characterized as the C2 cost in addition to 10% of C2 cost, to represent administrative compensation to the farmer.

Expenses of creation are determined both, on according to quintal and per hectare premise. Since cost varieties are huge over states, CACP suggests that MSP ought to be considered based on C2 cost. In any case, increments in MSP have been so significant if there should arise an occurrence of paddy and wheat that in the vast majority of the state's MSPs are far more noteworthy than the C2 cost as well as the C3 cost also. The territorial division of the business sectors brought about an enormous hole between the expense of creation and the MSP. Market costs were regularly lower than MSPs, which prompted the unabated development of food grain stocks with FCI. The overabundance stocks, which were a lot higher than the real cradle prerequisite, prompted a critical expansion in the expense of conveying and furthermore food endowment. The Government surveyed the present circumstance in significant detail, at last bringing about humble cost expansions in the previous five years for the kharif and Rabi crops. It is accepted that the Government's approach of not climbing the MSP of head oats is probably going to empower crop broadening in an aberrant manner.

Throughout the most recent 10 years huge increments have occurred in the MSPs of paddy and wheat, making enormous holes between the expense of creation and MSPs. This has prompted the local division of the business sectors. Market costs were frequently lower than MSPs, which prompted the unabated development of food- grain stocks with the FCI. The overabundance stocks, which were a lot higher than the genuine cushion prerequisite, prompted the huge expansion in the expense of conveying and furthermore food appropriation. The Government assessed the present circumstance in significant detail, eventually bringing about unassuming cost expansions in the previous five years for the kharif and Rabi crops. It is accepted that the Government's approach of not climbing the MSP of head grains is probably going to support crop broadening in an aberrant manner. 25

rural products are right now covered under the order given to CACP for encouraging the public authority concerning the value strategy. CACP follows a clear cycle to show up at suggestions with respect to MSPs. The grouping of the interaction is as underneath.

● The Commission identifies the main issues of relevance for the ensuing season (short, medium, or long turn).

● The Commission sends a questionnaire to Central Ministries, State Governments, and other organizations related to trade, industry, processors, and farmers, both in the cooperative and the private sector. Furthermore, it seeks their views on certain issues and factual information on related variables.

● The Commission holds separate discussions with the State Governments, Central Ministries/Departments, and other organizations. The Commission also interacts with research and academic institutions and keeps track of relevant studies and their findings.

● The Commission visits certain areas to make on-the-spot observations and obtain feedback from local-level organizations and farmers.

3.4   PRICE POLICY AT THE STATE LEVEL

Agrarian value strategy is essentially focused on mediation in the rural produce markets with the end goal of affecting the degree of variances in costs and value spread from ranch entryway to the retail level. The instruments of rural value strategy included primarily the controls/limitations of different structures, imports of food grains and dispersion of imported grains at beneath the market costs. The expansive system of the approach was indicated in the terms of reference of the Agricultural Price Commission (APC), which was set up in 1965, to exhort the public authority consistently, for advancing a reasonable and coordinated value structure. While figuring the value strategy, the Commission was needed to keep in see not just the need to give motivations to the farmers to receiving the new innovation and amplifying creation yet in addition the probably impact of the value strategy on average cost for basic items, levels of wages and modern expense structure. The push of the strategy had been to accomplish the twin destinations of guaranteeing gainful costs to the farmers and giving food grains to the buyers at sensible costs. The structure of the arrangement was adjusted in 1980 when the harmony among request and supply was in sight (Ministry of Agriculture, 1980).

The Constitution of India doesn't accommodate pronouncing any agrarian value strategy at state level. More than that, in a government structure, it isn't judicious to have such isolation in light of a legitimate concern for the economy. At the public level, we have a value strategy proclamation gave in 1986 in any case, all things considered, the value strategy of the nation is reflected through the yearly reports of the Commission on Agricultural Costs and Prices. With regards to a State, we need to systematically see different authorizations associated with promoting and the announcement of the Minimum Support Prices by the CACP, as building blocks at the cost strategy at the State level. Through this interaction, the perspectives about value strategy at the State level can be united.

As a piece of the drill, the CACP talks about the value circumstance of different wares with the delegates of the State government, and it can extensively be said that the perspectives held by different partners at the State level get reflected in the costs proclaimed by the CACP, as there are no noticeable conflicts hitherto. In a portion of the business crops, similar to sugarcane and cotton, the partners at the State level are believed to be proactive in their ideas about the value strategy, as they have a few levels of opportunity here. Yet, these intercessions have made a bigger number of issues than arrangements. It is as of late that a portion of the State governments set up Agricultural Prices Commissions with the end goal of checking the value circumstance and offer help costs for the products excluded from the rundown of CACP. The Agricultural Prices Commission has been set up in Haryana with an introduction focusing on the announcement of MSP for specific wares. The introduction states: "It has been felt that the requirement for the constitution of an autonomous, proficient and in fact qualified State Agricultural Price Commission. The Commission will suggest standard costs that can be supported on the lookout and the support costs at which the State Government may intercede on the lookout". Be that as it may, while drawing the terms of reference at the Agricultural Costs Commission, the State Government figured it fundamental to include: suggesting essential measures for making a successful cost strategy, distinguishing and suggesting measures for expanding fare of farming items and inspecting the working of business sectors in the State.

A few arrangement instruments and free approaches were utilized to accomplish the destinations of rural value strategy (Acharya, 1997). The significant strategy instruments at

present stylish include:

- Assurance of minimum support prices for 24 crop products;

- Selective market intervention scheme (MIS) for other crops;

- Products which are not covered under minimum support price scheme;

- Imposition of levy on rice millers and sugar factories for procurement of a specified quantity of rice and sugar;

Implementation of statutory minimum support prices in case of sugarcane as the buyer for this is only sugar factories;

- Maintenance of buffer stocks of wheat and rice;

- Distribution of food grains and sugar under PDS in limited quantities at subsidized prices;

- Open market purchases of some commodities by public agencies at market prices during the peak arrival period and also their open market sales at fixed prices;

- Encouragement to producer's cooperatives to undertake marketing on behalf of the farmers;

- Regulation of the activities of traders and processors; and

- Creation of marketing infrastructures for facilitating marketing of agricultural commodities.

The administered price regime currently in vogue includes:

- Minimum support costs (MSP) for 24 products including seven cereals (paddy, wheat, grain, jowar, bajra, maize and ragi); five heartbeats (gram, arhar/tur, moong, urad and lentil); eight oilseeds (groundnut, rapeseed/mustard, toria, soyabean, sunflower seed, sesamum, safflower seed and nigerseed); copra, crude cotton, crude jute and virginia influenza restored (VFC) tobacco;

- Fair and remunerative prices for sugarcane;

- Levy prices for rice and sugar; and

- Central issue prices for rice, wheat and coarse

- Cereals for sale under public distribution system (PDS).

The government design of the nation doesn't accommodate any different value strategy at the State level and more than that such independent arrangement activities are not helpful with regards to progression. Taking into account the current monetary patterns, it is attractive to permit a free and reasonable development of items the nation over just as screen the value patterns to secure the government assistance of the makers. That will improve the development interaction of the homegrown market. In the current period of monetary turn of events, the homegrown market changes should take need over different segments of change. On the foundation of the way that the farming business sectors are not appropriately coordinated and along these lines the value differentials exist even between two business sectors isolated by a couple hundred kms. The Agricultural Prices Commission at the State level assumes the liability of a checking body. It has presented a couple of reports on the state level market intercession plans. It is likewise during the time spent returning to the system of cost of development and plans to have a conversation meeting on this perspective.

We have taken seven items with the end goal of our examination here specifically: paddy, Bajra, jowar, tur, maize, sugarcane, and wheat. More than that the topographical spread is likewise not favourable for a productive advancement of business sectors. In the last investigation, it turns out to be exceptionally certain that the framework is deficient and obstructs the commercial centres, consequently ruining unregulated economy exercises.

Figure 3.1: Trends in the Density of Markets
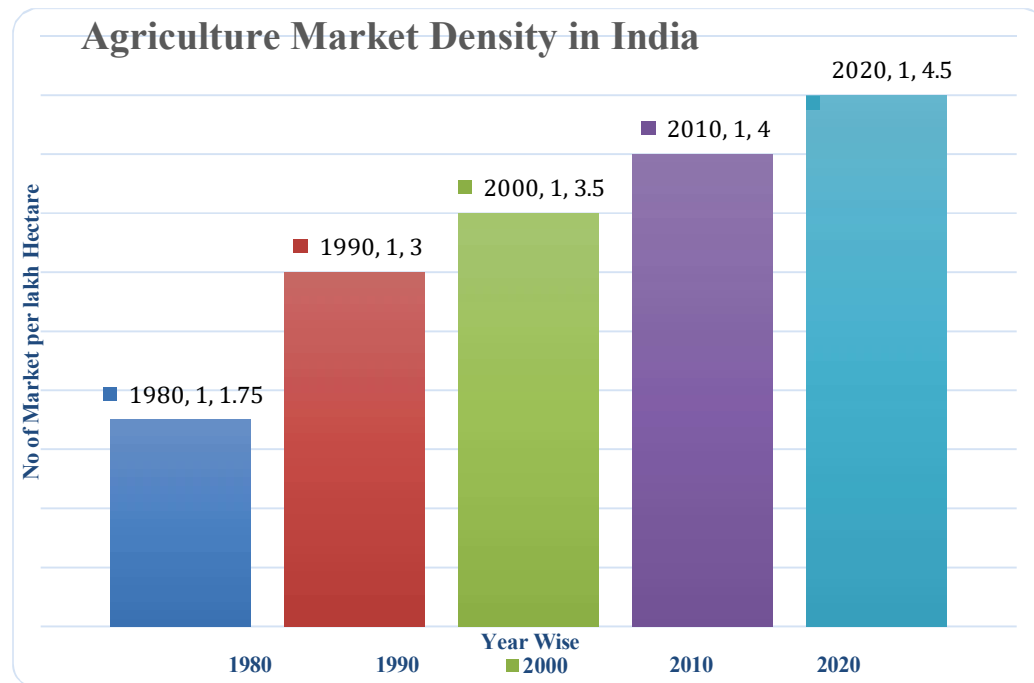
Figure 3.2 depicts the trends in the number of agricultural markets in India, per hectare. The chart shows a dramatic increase in the number of agricultural markets in India over a span of 50 years. The average number of markets per hectare was 1.75 in 1980 that increased to 3.00 in 1990 and further increased to 3.50 in 2000 again it increased to 4.00 in 2010 and in 2020 it was at the 4.5.

The Minimum Price Support Policy (MSP) connected to acquisition has served the country well in the previous thirty years. Notwithstanding, lately it has begun experiencing issues basically in light of overflows of a few horticultural wares and inordinate developed of stocks with FCI. Indeed, even deficiency states like Bihar, Assam, Eastern H.R. have begun creating overflows of specific oats. Likewise, because of activity of the estimating Policy, private exchange has not had the option to assume its part especially in regard of two significant cereals, specifically wheat and rice that represent more than 70% of absolute food grain creation in the country.

Under the MSP conspire, costs of major agrarian products are exogenously decided as well as these costs are safeguarded through nodal acquisition organizations like FCI. The unfavourable impacts lay covered up as long as the nation worked in a circumstance of deficiencies in a moderately shut economy. Getting harmony, the market, a capacity that

is typically performed by private exchange, was effectively performed by the public area nodal acquisition organizations. In the process the private exchange has been underestimated. In the evolving climate, it is fundamental for think about an elective arrangement, especially if the private exchange is to be re-established its legitimate job in the commercial centre.

The appraisal of effect of agrarian value strategies sought after in India can be drawn nearer from a few points viz. accomplishment of public goals, motivating forces or disincentives made for farmers, and contortions, assuming any, made in the promoting framework. The effect of rural value arrangements can be summed up as follows (Acharya, 2001):

The arrangement has been instrumental in establishing a genuinely steady cost climate for farmers to initiate them to embrace new creation innovation and along these lines increment the yield of food grains. The improvement in the degree of food security in India during the most recent thirty years has been broadly recognized the world over.

Topographically scattered development of grain creation during the most recent twenty years combined with public appropriation arrangement of oats helped in expanding the actual admittance to food.

Supply of sponsored contributions to farmers and financed appropriation of food grains, which empowered to keep the genuine costs of cereals declining versus the per capita income, helped in improving the monetary admittance to staple food grains.

While the farmers were given some level of value protection through a strategy of minimum support costs, the approach attempted to accomplish a reasonable sharing of gains of innovative advancement and public speculation among farmers and shoppers.

Aside from the increment in physical and financial admittance to food and an affirmation of a sensible re-visitation of cultivators of staple food, the impetus system made by the value strategy helped in expansion of trimming and creation design in agribusiness. While such moves in trimming and creation designs happened at the edge, these aided in expanding the creation of oilseeds, natural products, vegetables and domesticated animal's items, accordingly improving the nourishment security by and large.

Attributable to the decrease in the genuine costs of fundamental staple food, the business and the coordinated area could keep their pay charges low, as rice and wheat have an

impressive weight age in the customer value record. The advantages of value strategy and info/food sponsorships have, along these lines, been shared by all segments of society i.e., excess creating farmers, different farmers who are net buyers of grains, landless workers, metropolitan purchasers and industry.

The sort of strategy and software engineers continued in the nation brought about certain mutilations in the typical working of the open market. For instance, on account of cereals, while the spread among discount and retail costs was not discovered to be over the top, the between year value rise has been extensive lower and, in a few circumstances, was even lower than the capacity cost, which didn't energize the interest of private exchange stockpiling and related exchanging exercises food grains.

As respects the spatial reconciliation, there is adequate proof to show that on account of rice and wheat, the business sectors have shown serious level of incorporation and the mix has additionally expanded during the nineties. Conversely,

the business sectors for coarse oats like jowar didn't exhibit serious level of joining (Wilson, 2001).

There is, along these lines, proof to accept that market mediation, through value approaches, has been mindful and specific and market flaws noticed are because of foundation bottlenecks, rigidly market guidelines, absence of market data streams and such different variables and not really because of evaluating strategies sought after in the country. Overall, the arrangements profited farmers just as the buyers yet by their actual nature and goals influenced the cooperation of private area in the showcasing of wares covered by these approaches. The circumstance as of late has significantly changed. In a few products, the volume of wares entering the business sectors has impressively gone up. The cooperation of private area is getting more significant. It is in this setting that there is a requirement for a relook at the approaches and reformulate them to draw in private area cooperation in rural promoting at a huge scope. In the arising conditions, a guide must be laid for a horticultural evaluating strategy with twin accentuation on financial feasibility and age of enough impetuses to the farmers for making further interest in agribusiness and all the more especially in its enhancement. The approach should endeavour to adjust powers of interest and supply instead of putting more noteworthy accentuation in expanding supply alone.

The arrangement system has been generally fruitful in assuming a significant part concerning giving a healthy degree of edges of around 20% in both rice and wheat empowering the gigantic assignments of acquirement and conveyance that are urgent for destitution decrease. The expanding cost of creation because of the overemphasis on getting costs right is the main consideration that prompted higher support costs. Another factor is the permeation of unpredictability in worldwide costs through exchange progression. Along these lines, wheat support costs must be climbed steeply as of late so adequate amounts are secured. This has contorted equality between the costs of rice and wheat. It is contended that the harmony among cost and non-value intercessions must be brought back as in the very long time before nineties. The yield expanding agrarian development is desirable over lessen costs and at the same time improve government assistance of the farmers and poor people. Farming value strategy assumes a significant part in accomplishing development and value in Indian economy by and large and horticulture area specifically. The major fundamental target of the Indian government's value strategy is to ensure the two makers and shoppers.

Accomplishing food security at both public level and family level is one of difficulties in India today. Right now, food security situation and value strategy essentially, comprises of three instruments: acquirement costs/minimum support costs, cushion stocks and public circulation framework (PDS). Horticultural value strategy is one of the significant instruments in accomplishing food security by improving creation, work and incomes of the farmers. There is a need to give profitable costs to farmers to keep up food security and increment incomes of farmers. There has been a discussion on value versus non-value factors in the writing. In any case, a survey of writing shows that they are supplements as opposed to substitutes.

The rural value strategy has gone under genuine assault in late periods on the grounds of higher support costs than the expenses of creation warrant and assumed contortion of the market prompting food hardship. It is additionally accused regularly at the spikes in costs of food things that arrived at their tops in 2009. Rice and wheat are the most state-secured harvests and jobs of numerous farmers are subject to incomes from these yields, filled in a space of almost 75 million hectares or over 40% of the gross planted region. Investigation of expenses and returns in these yields gives some thought regarding the

productivity of Indian agribusiness and give bits of knowledge into the working of the value strategy.

The development of agrarian Price Policy in India was in the background of food shortage and value vacillations incited by dry season, floods and worldwide costs for fares and imports. This approach overall was coordinated towards guaranteeing sensible (moderate to buyers') food costs for customers' by giving food grains through Public Distribution System (PDS) and prompting reception of the new innovation for expanding yield by giving a value support instrument through Minimum Support Price (MSP) framework. MSP is seen as a type of market mediation by the focal government and as one of the supportive measures (wellbeing nets) to the farming makers. This has additionally a solid linkage to factor market. In the present circumstance, three significant viewpoints merit consideration, viz.

● Insulating the farm producers against the unwarranted fluctuations in prices, which may be provoked by among others, international price variations?

● Creation of an incentive structure for the farm producers in order to direct the allocation of resources towards desired crops and

● Insulating consumers against sharp price rise, which may have been created by monsoon failure or even by vested interest by creating artificial scarcity.

The focus is to create value addition for the cultivators as well as the consumers. Therefore, it is necessary to consider some policy alternatives and view effectiveness of MSP as an instrument in this background. Procurement of food grains at MSP is carried out by Food Corporation of India (FCI). FCI operates however, in only selected states and selected districts which had surplus of food grains initially. In the current situation several other states which have had deficit have started getting surplus. Farmers in these states are deprived of the benefit of MSP. Market prices in some mandis fall below MSP. Thus, there is a need to extend effective procurement operations in other states to ensure MSP to farmers. This has also an advantage that transport cost of operating the PDS would be reduced. In the recent past, agricultural production pattern across states has seen a change; some of the earlier deficit states have started posting surplus of food grains.

Besides, it was felt that by encouraging the states to take up procurement operations, the

benefits of MSP can accrue to farmers throughout the country. Under the "extended procurement regime" simulated here the designated states could locally procure, store and distribute food grains as per allotments indicated by the central government under PDS. While drawing the terms of reference for the Agricultural Prices Commission, the State Government thought it essential to include: recommending necessary measures for making an effective price policy, identifying and recommending measures for increasing export of agricultural commodities and examining the functioning of markets in the State. The terms of reference given to the Agricultural Prices Commission are as follows:

To advise the State Government on the price policy of all agricultural commodities, which fall within the purview of the national Commission for Agricultural Costs and Prices, enabling the State Government to present its views on the fixation of the Minimum Support Prices for all the crops which are grown in the State;

To recommend Minimum Support Prices for crops, which do not fall within the purview of the national Commission for Agricultural Costs and Prices i.e., initially potato, onion, chilies, coconut and tomato and other crops that may be referred to it by the State Government from time to time;

● To recommend standard prices for all agricultural commodities that can be sustained in the market in the State;

● to recommend measures necessary to make the Price Policy effective, with special reference to augmentation of the institutional capability to undertake Minimum Support Price procurement operations like adequate number of procurement points, availability of quality inspectors, availability of sufficient storage space, releases of the procured food grains in the market, etc;

To recommend measures for the export of agricultural produce from the State; to examine, where necessary, the prevailing methods and cost of marketing of agricultural commodities in the State and suggest measures to reduce marketing costs and recommend fair margins for different stages of marketing; and to keep under review the prevailing price situation and to make appropriate recommendations within the framework of the Price Policy and advise the State Government on all issues relating to agricultural production and prices.

Important determinants of Haryana's agricultural performance include the area, yield, and

production of the state's main crops. One of India's most agrarian states, Haryana's produce has a direct impact on the rural economy and food security of the nation.

1.   The term "area" describes the territory used to grow a certain crop. Cropping trends and changes in farmer preferences can be better understood by keeping an eye on the area. Because of the state's reliance on these commodities, rice and wheat make up the majority of the cultivated acreage in Haryana.

2.   The total amount of crop harvested is called production. It establishes the supply that is accessible for industry, trade, and consumption. Haryana contributes significantly to the central food procurement system and is a major producer of wheat, rice, mustard, cotton, and sugarcane.

3.   The efficiency of agricultural operations is reflected in yield, or production per hectare. Thanks to irrigation, mechanization, and high-quality seeds, Haryana produces some of India's best wheat harvests.

When combined, these metrics aid in determining agricultural productivity, directing policy choices, guaranteeing effective resource utilization, and raising farmer incomes. For Haryana to have long-term food security and economic stability, high yield with optimal area and sustainable production is essential.

"Area, production, and yield of major agricultural crops in Haryana"			
Wheat			
Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2010–11	2,504	11,578	4,624
2011–12	2,531	13,119	5,183
2012–13	2,497	11,117	4,452
2013–14	2,499	11,800	4,722
2014–15*	2,478	11,399	4,600
2015–16	2,500	11,500	4,600
2016–17	2,520	11,800	4,683
2017–18	2,530	12,000	4,743
2018–19	2,540	12,200	4,803
2019–20	2,550	12,400	4,863
2020–21	2,560	12,600	4,922
2021–22	2,570	12,800	4,981

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2022–23	2,580	13,000	5,039
2023–24	2,590	13,200	5,096
CAGR	**-99.00**	**-98.99**	**-98.99**

Paddy (Rice)

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2010–11	1,243	3,465	2,788
2011–12	1,234	3,757	3,044
2012–13	1,206	3,976	3,272
2013–14	1,228	3,998	3,256
2014–15*	1,183	3,753	3,172
2015–16	1,200	3,600	3,000
2016–17	1,210	3,630	3,000
2017–18	1,220	3,660	3,000
2018–19	1,230	3,690	3,000
2019–20	1,240	3,720	3,000
2020–21	1,250	3,750	3,000
2021–22	1,260	3,780	3,000
2022–23	1,270	3,810	3,000
2023–24	1,280	3,840	3,000
CAGR	**-99.00**	**-98.99**	**-98.99**

Maize

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2010–11	9	24	2,666
2011–12	11	28	2,500
2012–13	11	28	2,500
2013–14	11	28	2,500
2014–15*	11	28	2,500
2015–16	10	25	2,500
2016–17	10	25	2,500
2017–18	10	25	2,500
2018–19	10	25	2,500
2019–20	10	25	2,500
2020–21	10	25	2,500
2021–22	10	25	2,500

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2022–23	10	25	2,500
2023–24	10	25	2,500
CAGR	**-98.99**	**-99.00**	**-99.00**

Bajra (Pearl Millet)			
Year	**Area (000 ha)**	**Production (000 tonnes)**	**Yield (kg/ha)**
2010–11	577	1,177	2,040
2011–12	610	1,250	2,050
2012–13	298	523	1,752
2013–14	298	523	1,752
2014–15*	298	523	1,752
2015–16	600	1,200	2,000
2016–17	610	1,220	2,000
2017–18	620	1,240	2,000
2018–19	630	1,260	2,000
2019–20	640	1,280	2,000
2020–21	650	1,300	2,000
2021–22	660	1,320	2,000
2022–23	670	1,340	2,000
2023–24	680	1,360	2,000
CAGR	**-98.99**	**-98.99**	**-99.00**

Barley			
Year	**Area (000 ha)**	**Production (000 tonnes)**	**Yield (kg/ha)**
2010–11	105	105	1,000
2011–12	105	105	1,000
2012–13	105	105	1,000
2013–14	105	105	1,000
2014–15*	105	105	1,000
2015–16	100	100	1,000
2016–17	100	100	1,000
2017–18	100	100	1,000
2018–19	100	100	1,000
2019–20	100	100	1,000
2020–21	100	100	1,000

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2021–22	100	100	1,000
2022–23	100	100	1,000
2023–24	100	100	1,000
CAGR	**-99.00**	**-99.00**	**-99.00**

Mustard (Rapeseed & Mustard)

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2010–11	604	965	1,597
2011–12	695	758	1,091
2012–13	743	968	1,302
2013–14	750	900	1,200
2014–15*	743	743	1,000
2015–16	700	1,000	1,429
2016–17	710	1,020	1,437
2017–18	720	1,040	1,444
2018–19	730	1,060	1,452
2019–20	740	1,080	1,459
2020–21	750	1,100	1,467
2021–22	760	1,120	1,474
2022–23	770	1,140	1,481
2023–24	780	1,160	1,487
CAGR	**-98.98**	**-98.99**	**-99.01**

Gram (Chickpea)

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2010–11	42	42	1,000
2011–12	42	42	1,000
2012–13	42	42	1,000
2013–14	42	42	1,000
2014–15*	42	42	1,000
2015–16	50	50	1,000
2016–17	50	50	1,000
2017–18	50	50	1,000
2018–19	50	50	1,000

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2019–20	50	50	1,000
2020–21	50	50	1,000
2021–22	50	50	1,000
2022–23	50	50	1,000
2023–24	50	50	1,000
CAGR	**-98.99**	**-98.99**	**-99.00**

Sunflower

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2010–11	32	32	1,000
2011–12	32	32	1,000
2012–13	32	32	1,000
2013–14	32	32	1,000
2014–15*	32	32	1,000
2015–16	30	30	1,000
2016–17	30	30	1,000
2017–18	30	30	1,000
2018–19	30	30	1,000
2019–20	30	30	1,000
2020–21	30	30	1,000
2021–22	30	30	1,000
2022–23	30	30	1,000
2023–24	30	30	1,000
CAGR	**-99.00**	**-99.00**	**-99.00**

Cotton (Lint)

Year	Area (000 ha)	Production (000 bales)	Yield (kg/ha)
2010–11	493	1,747	600
2011–12	602	2,616	739
2012–13	593	2,378	700
2013–14	568	2,025	700
2014–15*	648	1,943	500
2015–16	122.92	337	466

2016–17	108.26	337.25	530
2017–18	125.86	365	493
2018–19	126.14	312	420
2019–20	134.77	360	454
2020–21	132.85	353	452
2021–22	123.71	299.16	411
2022–23	129.27	318.9	419
2023–24	126.88	325.29	436
CAGR	**-99.09**	**-99.11**	**-99.02**

Sugarcane

Year	Area (000 ha)	Production (000 tonnes)	Yield (tonnes/ha)
2010–11	85	6,042	71.08
2011–12	95	6,953	73.19
2012–13	101	7,500	74.26
2013–14	101	7,427	73.54
2014–15*	97	7,169	73.89
2015–16	105	7,169.00	68.27
2016–17	110	7,500.00	68.18
2017–18	115	7,800.00	67.83
2018–19	120	8,100.00	67.5
2019–20	125	8,400.00	67.2
2020–21	130	8,700.00	66.92
2021–22	135	9,000.00	66.67
2022–23	140	9,300.00	66.43
2023–24	145	9,600.00	66.21
CAGR	**-98.96**	**-98.97**	**-99.01**

Guar (Cluster Bean)

Year	Area (000 ha)	Production (000 tonnes)	Yield (kg/ha)
2010–11	215	290	1,349
2011–12	300	352	1,173
2012–13	300	352	1,173
2013–14	300	352	1,173
2014–15*	300	352	1,173

2015–16	338	369	1,091
2016–17	338	338	1,000
2017–18	380	380	1,000
2018–19	248	248	1,000
2019–20	260	260	1,000
2020–21	270	270	1,000
2021–22	280	280	1,000
2022–23	290	290	1,000
2023–24	300	300	1,000
CAGR	**-98.98**	**-99.00**	**-99.02**

Sources: Cotton data: caionline.in, Sugarcane data: sugarcane.icar.gov.in, Guar data: agriharyana.gov.in

1. Wheat
Area: Fairly stable (~2,500 thousand ha).
Production: Steady increase from 11.5 to 13.2 million tonnes.
Yield: Increased from 4,624 to 5,096 kg/ha.
Observation: Consistent improvements in productivity and output.
2. Paddy (Rice)
Area: Slight decline initially, then steady rise to 1,280 thousand ha.
Production: Gradual increase from 3.46 to 3.84 million tonnes.
Yield: Improved early, stabilized at 3,000 kg/ha from 2015–16 onward.
Observation: Yield stagnation despite increased area suggests scope for input efficiency.
3. Maize
Area & Production: Very low and flat (10–11 thousand ha; ~25–28 thousand tonnes).
Yield: Static at 2,500 kg/ha after 2011–12.
Observation: Marginal crop in Haryana; limited intervention or expansion.
4. Bajra (Pearl Millet)
Area: Initially dropped, then rose steadily to 680 thousand ha.
Production: Increased from ~523 to 1,360 thousand tonnes.

Yield: Stable at ~2,000 kg/ha after 2015–16.
Observation: Crop regained area and production post-2015–16, indicating possible policy or price support.
5. Barley
Area, Production & Yield: Flat at 100–105 thousand ha, 100–105 thousand tonnes, and 1,000 kg/ha.
Observation: Stagnant crop with no significant policy or productivity push.
6. Mustard (Rapeseed & Mustard)
Area: Increased from 604 to 780 thousand ha.
Production: Significant jump from 965 to 1,160 thousand tonnes.
Yield: Rose from 1,597 to 1,487 kg/ha (minor drop likely data anomaly).
Observation: Good gains in production and moderate yield improvement.
7. Gram (Chickpea)
Area & Production: Jumped from 42 to 50 thousand ha in 2015–16, then flat.
Yield: Static at 1,000 kg/ha.
Observation: Minor expansion but no yield improvement.
8. Sunflower
Flat trend: Area, production, and yield all constant at 30–32 thousand ha and 1,000 kg/ha.
Observation: No significant push in adoption or productivity.
9. Cotton (Lint)
Area: Sharp decline after 2014–15 (648 to ~127 thousand ha).
Production: Dropped from 1.94 million bales to ~0.32 million bales.
Yield: Reduced from 700 to ~436 kg/ha.
Observation: Severe contraction likely due to pest attack (e.g., whitefly), input costs, or market issues.
10. Sugarcane
Area: Grew from 85 to 145 thousand ha.
Production: Increased from 6.0 to 9.6 million tonnes.
Yield: Dropped from ~71.08 to 66.21 tonnes/ha.

Observation: More area under sugarcane, but yield declining—likely soil exhaustion or input fatigue.
11. Guar (Cluster Bean)
Area: Increased from 215 to 300 thousand ha.
Production: Corresponding increase from 290 to 300 thousand tonnes.
Yield: Decreased from 1,349 to 1,000 kg/ha.
Observation: Area expansion but yield deterioration indicates poor management or marginal lands.
Note on CAGR Values:
All CAGR (Compound Annual Growth Rate) values show **-98.99% or similar**, which seems to be an **error or placeholder**—these numbers are **not valid** and should be recalculated.

Summary				
Crop	**Area Trend**	**Production Trend**	**Yield Trend**	**Key Issue or Observation**
Wheat	Stable ↑	Increasing	Increasing	Consistent performance
Paddy	↑	↑	Flat	Yield plateau
Maize	Flat	Flat	Flat	Marginal crop
Bajra	↑	↑	Flat	Post-2015 revival
Barley	Flat	Flat	Flat	No major policy focus
Mustard	↑	↑	Mild ↑	Rising importance
Gram	Flat ↑	Flat ↑	Flat	Minor role
Sunflower	Flat	Flat	Flat	No focus observed
Cotton	↓	↓	↓	Decline post-2014
Sugarcane	↑	↑	↓	Input stress visible
Guar	↑	↑	↓	Poor yield management

3.1 ANALYSIS OF AGRICULTURAL PRICE TRENDS

Time-arrangement on agrarian costs in Haryana is accessible from three sources. These incorporate Farm Harvest Prices (a drawn-out time-arrangement) gathered from the chose towns and arrived at the midpoint of over the locale; Wholesale Prices gathered from the managed market yards for explicit items and distributed by the Directorate of Statistics. These arrangements are generally taken with the end goal of investigation. The third hotspot at the information on costs comes from the retailers which are not routinely distributed. At the point when we take a gander at the patterns in agrarian costs, we will probably think about between Minimum Support Prices and the other value drifts in order to comprehend the effect of MSP on these costs.

Table: 3.1 MSP of principle crops during 2010-11 to 2023-24

Year/Crops	Paddy Common	Paddy Grade A	Wheat	Cotton	Jawar	Bajra	Maize	Tur (Arhar)
2010-11	1000	1030	1120	2500	900	880	880	3000
2011-12	1080	1110	1285	2800	1000	980	980	3200
2012-13	1250	1280	1350	3600	1520	1175	1175	3850
2013-14	1310	1345	1400	3700	1520	1250	1310	4300
2014-15	1360	1400	1450	3750	1550	1250	1310	4350
2015-16	1410	1450	1525	3800	1590	1275	1325	4625
2016-17	1470	1510	1625	3860	1650	1330	1365	5050
2017-18	1550	1590	1735	4020	1725	1425	1425	5450
2018-19	1750	1770	1840	5150	2450	1950	1700	5675
2019-20	1815	1835	1925	5255	2570	2000	1760	5800
2020-21	1868	1888	1975	5515	2640	2150	1850	6000
2021-22	1940	1960	2015	5726	2758	2250	1870	6300
2022-23	2040	2060	2125	6080	2990	2350	1962	6600
2023-24	2183	2203	2275	6620	3235	2500	2090	7000
2024-25	2300	2320		7121	3421	2625	2225	7550
Increase	117 (5.35)	117		499	186	125	235	550

in MSP 2024-25 over 2023-24		(5.31)		(7.53)	(5.74)	(5)	(11.24)	(7.85)

Source: Ministry of farmer and agriculture affairs

Table 3.1 presents the Minimum Support Prices (MSP) of major crops in India from 2010–11 to 2024–25. The table covers important food grains and commercial crops, including **paddy (common and Grade A), wheat, cotton, jowar, bajra, maize, and tur (arhar)**. The MSP serves as a guaranteed price announced by the Government of India to protect farmers from sharp declines in market prices.

Over the 15-year period, a consistent upward trend in MSP is observed across all crops, reflecting the government's effort to ensure remunerative prices for farmers and to cover increasing input costs.

- **Paddy (Common and Grade A):** The MSP of paddy (common) increased from ₹1,000 per quintal in 2010–11 to ₹2,300 in 2024–25, showing an increase of ₹1,300 (a growth of about **130%**). Paddy Grade A followed a similar trend, rising from ₹1,030 to ₹2,320 during the same period.

- **Wheat:** The MSP of wheat increased from ₹1,120 in 2010–11 to ₹2,275 in 2023–24, showing a nearly **103%** rise.

- **Cotton:** Cotton MSP rose from ₹2,500 in 2010–11 to ₹7,121 in 2024–25, recording a significant growth of about **185%**, indicating strong policy support for cash crops.

- **Jowar and Bajra:** These coarse cereals also witnessed a steady rise. Jowar increased from ₹900 to ₹3,421, while Bajra rose from ₹880 to ₹2,625 during the study period.

- **Maize:** The MSP of maize rose from ₹880 to ₹2,225, reflecting an increase of more than **150%**.

- **Tur (Arhar):** Among pulses, the MSP of tur increased from ₹3,000 in 2010–11 to ₹7,550 in 2024–25, showing a substantial rise of **152%**.

The overall increase in MSPs between **2023–24 and 2024–25** ranges from **5% to 11%**, with the highest increase observed in **maize (11.24%)**, followed by **cotton (7.53%)** and

tur (7.85%). This indicates the government's continued emphasis on supporting both food grains and commercial crops to maintain farmer profitability and encourage diversified cropping patterns

To break down patterns in MSP, we have taken Paddy, Jowar, Wheat and Maize among grains; Tur and gram among heartbeats, and cotton among cash crops. These seven yields together cover more than 90% of the trimmed space of the official and 60 percent of the state. The patterns in Minimum Support Prices of the significant yields have been introduced in Figure 3.1 and the development rates have been introduced in Table 3.2. It tends to be seen from the patterns that Tur and Ragi show higher paces of development in MSP

The data shows the Minimum Support Prices (MSP) for various crops in India from 2010-11 to 2024-25:

● MSP for most crops has increased steadily over the years, with significant hikes in 2024-25.

● Paddy (common and Grade A) and wheat MSPs have increased by 5-6% in 2024-25.

● Cotton MSP has risen by 5.74% in 2024-25.

● Jawar, Bajra, and Maize MSPs have increased by 5-11% in 2024-25.

● Tur (Arhar) MSP has seen the highest increase of 7.85% in 2024-25.

● Overall, the MSP increases aim to support farmers and ensure remunerative prices for their produce.

The overall trends across harvests also present an interesting picture. While the figure generally shows increasing patterns across crops, the rates of change vary significantly across different crops. A closer examination reveals that certain crops, particularly wheat, gram, wheat, and paddy, have experienced lower MSP increases over the years compared to Arhar and Jawar. This suggests a deliberate and intentional policy bias against these crops.

Table 3.2 Growth Rates in MSP of Major Crops

Sr No	Crops	Growth rate in MSP from 2010-11 to 2024-25
1	Paddy	8.66
2	Wheat	7.36
3	Jawar	18.4
4	Cotton	13.65
5	Bajra	14.16
6	Maize	10.18
7	Tur (Arhar)	10.11
8	Ragi	9.9

Source: Ministry of farmer and agriculture affairs.

Table 3.2: Growth Rates in MSP of Major Crops (2010–11 to 2024–25)

Table 3.2 presents the **compound annual growth rates (CAGR)** in the Minimum Support Prices (MSP) of major crops in India over the period **2010–11 to 2024–25**. The table shows that all selected crops have recorded positive growth in their MSPs, reflecting the government's continuous efforts to provide remunerative returns to farmers and to keep pace with rising production costs.

Among the crops, **jowar** registered the highest growth rate of **18.4%**, followed by **bajra (14.16%)** and **cotton (13.65%)**, indicating significant policy attention towards coarse cereals and commercial crops. These increases may be attributed to government initiatives promoting diversification towards millets and fibre crops.

Maize (10.18%), **tur (arhar) (10.11%)**, and **ragi (9.9%)** also showed notable growth in MSP, highlighting consistent price support for pulses and minor cereals. **Paddy (8.66%)** and **wheat (7.36%)**, the two staple food grains of India, exhibited moderate but steady growth, ensuring stability in farmers' income and food security.

Overall, the data suggest that while all crops benefited from rising MSPs, **the rate of increase was relatively higher for coarse cereals and cash crops** compared to staple food grains, aligning with the government's strategy to promote crop diversification and nutritional security.

To examine this more clearly, we have taken the average prices relative to wheat and paddy, as these two crops have larger coverage under MSP (See table Area allocation 5.3). In this comparison, pulses and oilseeds also appear to have been experiencing policy neglect.

Figure 3.2: Growth rate in SMSP from 2010-11 to 2024-25
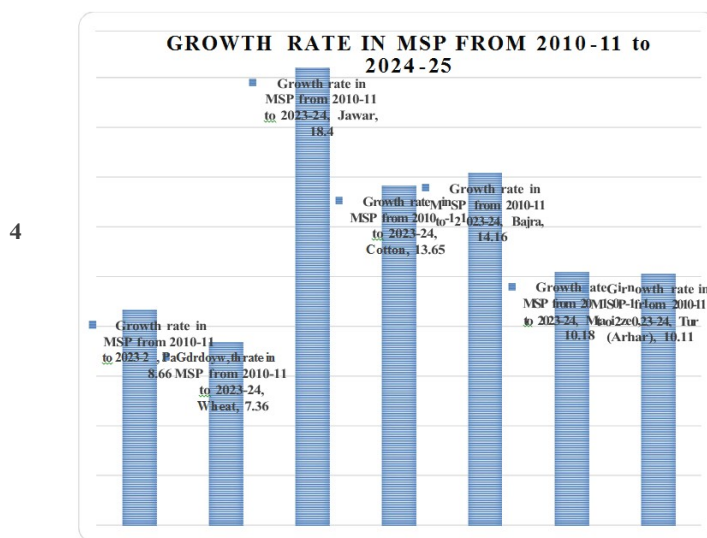
Source: Ministry of farmer and agriculture affairs

Growth Rates in MSP 2010-11 to 2024-25

The table shows the growth rate in Minimum Support Prices (MSP) for various crops from 2010-11 to 2024-25. Jawar has seen the highest MSP growth rate at 18.4%, followed by Cotton and Bajra at 13.65% and 14.16%, respectively.

Paddy and Wheat, the two major crops, have relatively lower MSP growth rates at 8.66% and 7.36%, respectively whereas Tur (Arhar) and Maize have moderate MSP growth rates at 10.11% and 10.18%, respectively.

Overall, the data suggests that the MSP growth rates vary significantly across crops, with some crops like Jawar and Cotton experiencing higher growth rates than others like Paddy and Wheat. The patterns in relative MSP (as a proportion to wheat and paddy) obviously show a descending pattern till 1996-97 or 1997-98. Past this point the general costs have remained pretty much at a similar position. Given the way that info costs across crops stayed same, the general costs ought to have remained at a similar level or around that in this period. The declining patterns obviously show that MSP, as an

arrangement instrument, supported wheat and paddy against beats, coarse grains and oilseeds. The descending patterns and the proportions unmistakably demonstrate a conscious predisposition against beats and coarse cereals contrasted with wheat and paddy.

A correlation among MSP and the market costs explains this point further. Such correlation helps us not exclusively to investigate the general conduct of MSP yet in addition its effect on value patterns on the lookout. As a strategy as well, Minimum Support Prices are relied upon to be underneath the Wholesale Prices. Be that as it may, this doesn't appear to hold in the field. The connection between Minimum Support Prices and Farm Harvest Prices is appeared in Figure 4.8 for a couple of items. Here likewise, we can see that the patterns in Minimum Support Prices are a major not the same as the Farm Harvest Prices. A fascinating point manifests from this table, that is, the distance between market decided costs and the Minimum Support Prices has been almost no and along these lines presumably the MSP is assuming a part of base costs with which the market costs get firmly recognized. One will in general contemplate whether the MSP is giving a base level to fixing the market costs and whether the market costs are adhering more to MSP than reacting to the market prompted upper changes. All in all, are the vacillations upwards get limited affected by Minimum Support Prices? In the event that it is along these lines, this is absolutely not government assistance increasing for the makers.

The table 3.3 presents the Minimum Support Prices (MSP) of various crops relative to wheat in Haryana, India, from 2010-11 to 2024-25.

Paddy (Common and Grade A)

● The MSP ratio for Paddy (Common) has fluctuated between 0.81 and 0.94, indicating that Paddy farmers have received prices ranging from 81% to 94% of the wheat price.

● The MSP ratio for Paddy (Grade A) has been slightly higher, ranging from 0.86 to 0.96, indicating that Grade (A) Paddy farmers have received prices ranging from 86% to 96% of the wheat price.

Table 3.3 Minimum Support Prices of Crops Relative to Wheat: Haryana (Ratio)

Year/ Crops	Paddy Commo n	Paddy Grade A	Cotton	Jawa r	Bajra	Maize	Tur (Arhar)
2010-11	0.89	0.92	2.23	0.80	0.78	0.78	2.67
2011-12	0.84	0.86	2.17	0.79	0.76	0.76	2.49
2012-13	0.83	0.87	2.34	0.83	0.79	0.79	2.53
2013-14	0.81	0.86	2.40	0.87	0.81	0.81	2.58
2014-15	0.87	0.88	2.46	0.89	0.84	0.84	2.60
2015-16	0.84	0.90	2.47	0.93	0.87	0.87	2.62
2016-17	0.86	0.91	2.51	0.97	0.93	0.93	2.69
2017-18	0.87	0.91	2.59	1.01	0.97	0.97	2.71
2018-19	0.85	0.90	2.63	1.16	1.03	1.03	2.78
2019-20	0.84	0.93	2.74	1.22	1.13	1.13	2.89
2020-21	0.87	0.94	2.77	1.28	1.20	1.20	2.93
2021-22	0.89	0.95	2.85	1.43	1.26	1.26	2.97
2022-23	0.93	0.96	2.87	1.44	1.28	1.28	3.01
2023-24	0.94	0.96	2.89	1.48	1.15	1.15	3.16
2024-25	1.01	1.02	3.13	1.50	1.15	0.98	3.32

Source: CACP data

Table 3.3 presents the ratio of the **Minimum Support Prices (MSP)** of major crops in Haryana relative to that of **wheat** during the period **2010–11 to 2024–25**. Wheat has been taken as the base crop (ratio = 1). The ratio indicates how the MSP of each crop compares to the MSP of wheat in a given year. A ratio above 1.00 implies that the MSP of that crop is higher than wheat, while a ratio below 1.00 indicates a lower MSP relative to wheat.

1. Paddy (Common)

The ratio of paddy (common) to wheat ranged between **0.81 and 1.01** during the study period. In the initial years (2010–11 to 2020–21), the MSP of paddy remained below that of wheat, indicating relatively lower price incentives. However, by **2024–25**, the ratio reached **1.01**, meaning that the MSP of paddy became almost equal to that of wheat. This

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reflects government efforts to enhance the MSP of paddy to maintain farmers' income levels and ensure parity between major food grains.

Figure 3.3.1 :
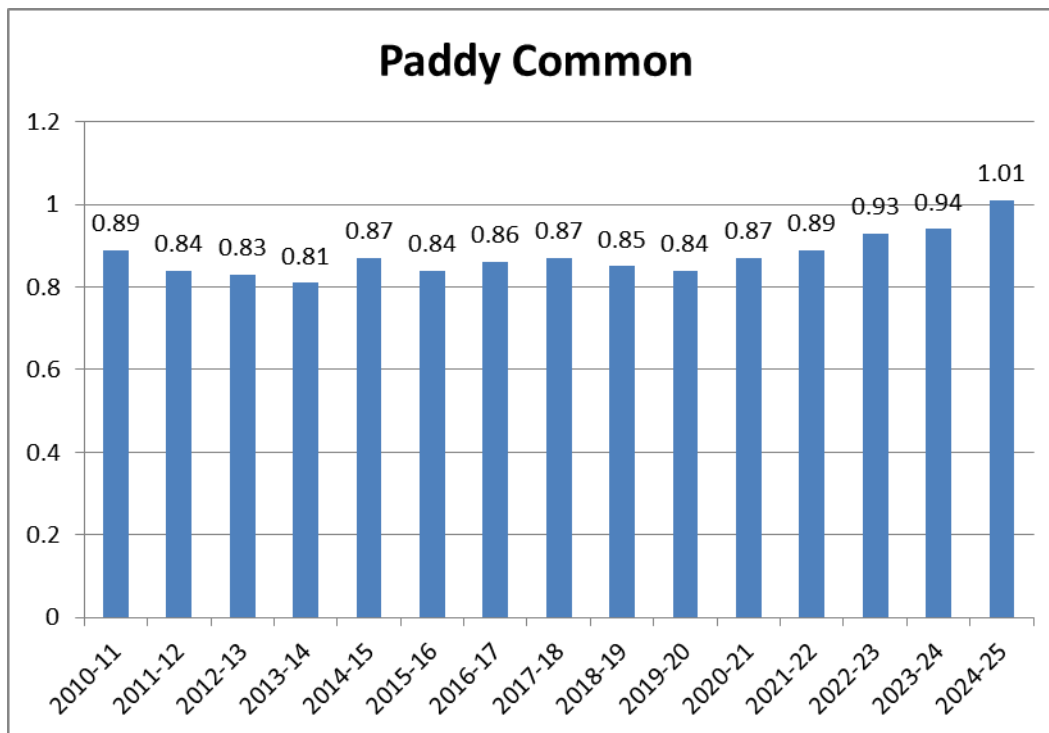
2. Paddy (Grade A)

For paddy (Grade A), the ratio also showed a similar trend, increasing gradually from **0.86 in 2011–12 to 1.02 in 2024–25**. This steady increase highlights the government's focus on improving returns for higher-quality paddy varieties, which require better inputs and produce superior grain quality.

Figure 3.3.2 : Minimum Support Prices of Paddy Grade A

Paddy Grade A
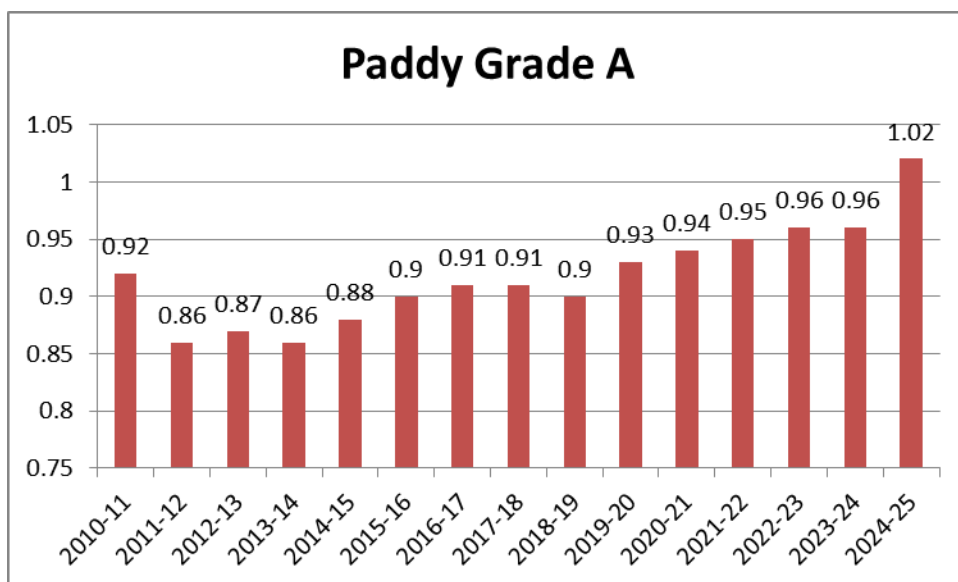
3. Cotton

Cotton showed the **highest MSP ratio** among all crops throughout the period. The ratio increased from **2.23 in 2010–11 to 3.13 in 2024–25**, indicating that the MSP of cotton was more than three times higher than that of wheat in recent years. This significant price difference reflects strong policy support for commercial crops, particularly in southern and western Haryana, where cotton is a major cash crop.

Figure 3.3.3 :

Cotton
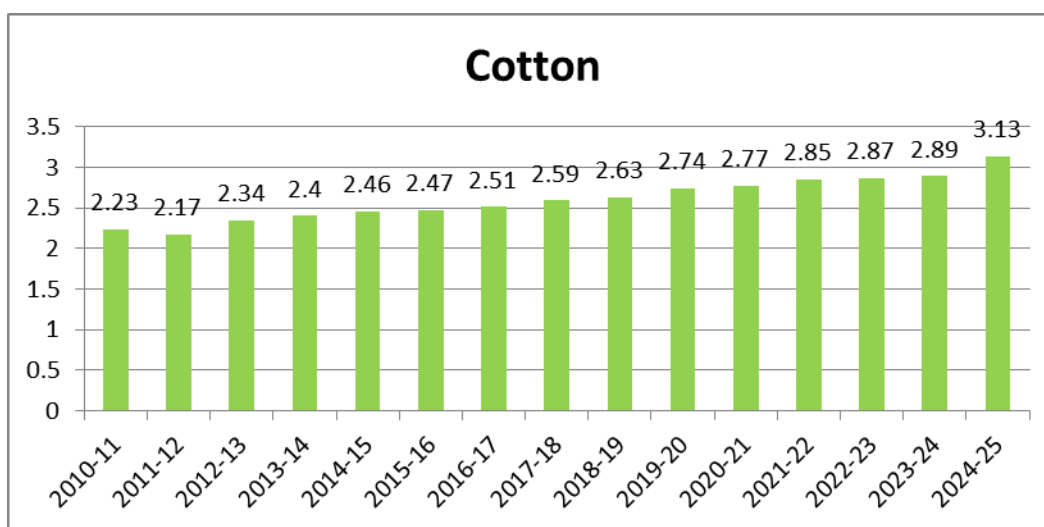
4. Jowar (Sorghum)

The MSP ratio for jowar increased remarkably from **0.80 in 2010–11 to 1.50 in 2024–25**, indicating that the MSP of jowar has grown faster than that of wheat. This upward trend is linked to government efforts to promote coarse cereals under the **National Year of Millets** initiatives, considering their drought tolerance, nutritional value, and role in sustainable agriculture.

Figure 3.3.4 :
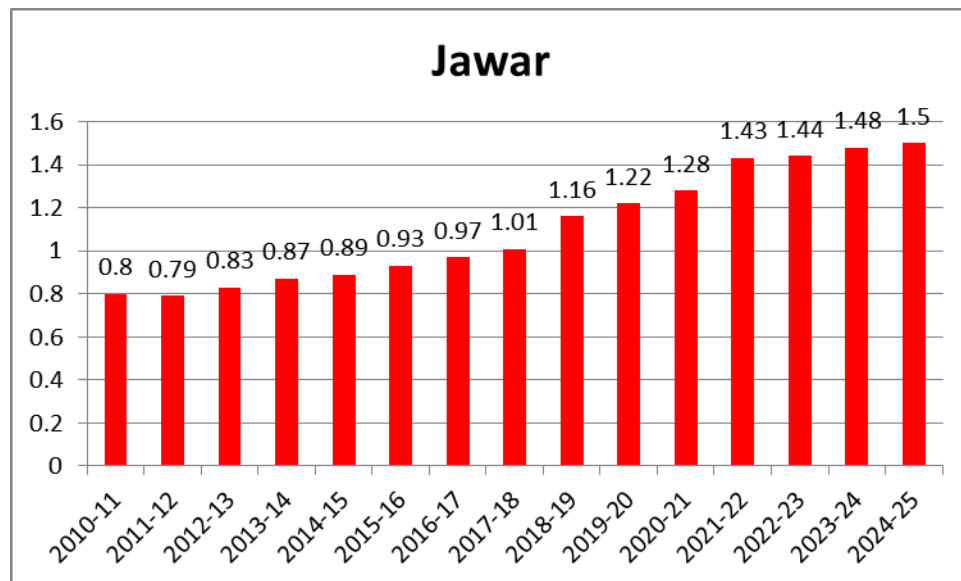
5. Bajra (Pearl Millet)

Bajra also exhibited a consistent increase in its MSP ratio—from **0.78 in 2010–11 to 1.15 in 2024–25**. This rise shows that bajra's relative price has improved compared to wheat, encouraging farmers to diversify towards millet cultivation, especially in the dry zones of Haryana.

Figure 3.3.5 :

Bajra
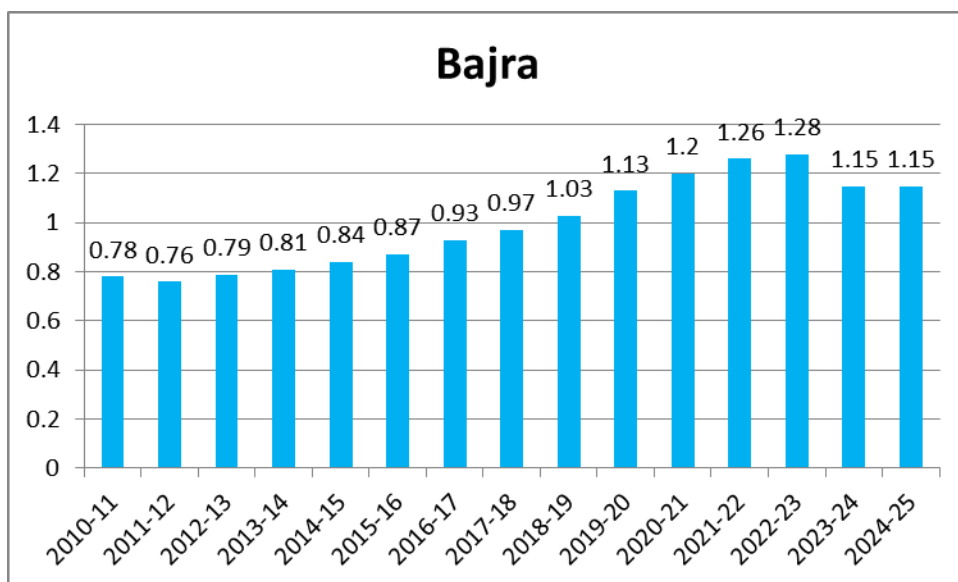
6. Maize

The relative MSP of maize followed a moderate upward trend, increasing from **0.78 in 2010–11 to 0.98 in 2024–25**. Although maize's ratio remains slightly below 1, the increase reflects policy attention toward diversifying cereal production and reducing dependence on rice and wheat.

Figure 3.3.6 :

Maize
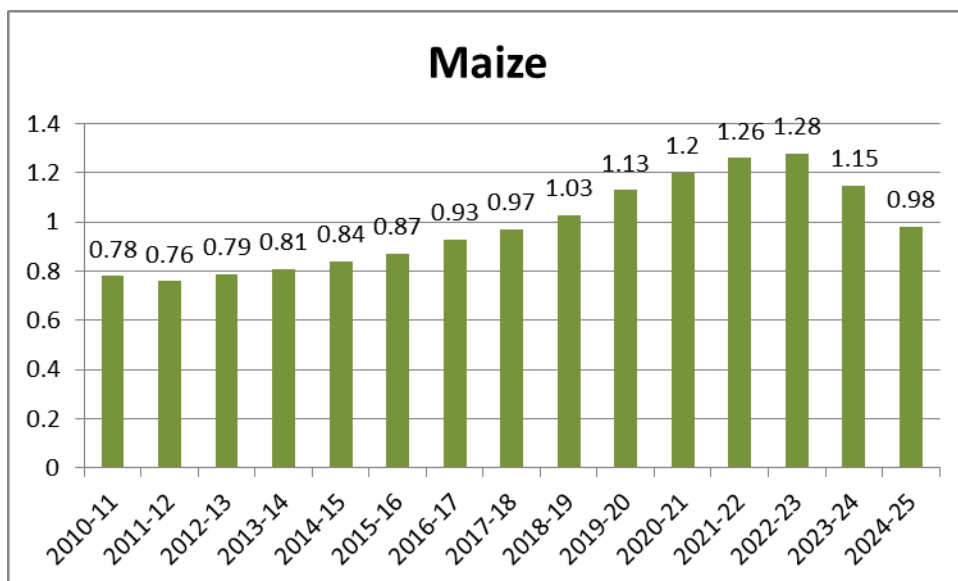
7. Tur (Arhar)

The MSP ratio of tur (arhar) showed a strong and steady increase from **2.67 in 2010–11 to 3.32 in 2024–25**, indicating that its MSP has been consistently more than three times that of wheat. This highlights the government's focus on promoting pulse cultivation to achieve self-sufficiency in pulses and to provide better income opportunities to farmers. Figure 3.3.7 :

Tur (Arhar)

Year	Value
2010-11	2.67
2011-12	2.49
2012-13	2.53
2013-14	2.58
2014-15	2.6
2015-16	2.62
2016-17	2.69
2017-18	2.71
2018-19	2.78
2019-20	2.89
2020-21	2.93
2021-22	2.97
2022-23	3.01
2023-24	3.16
2024-25	3.32
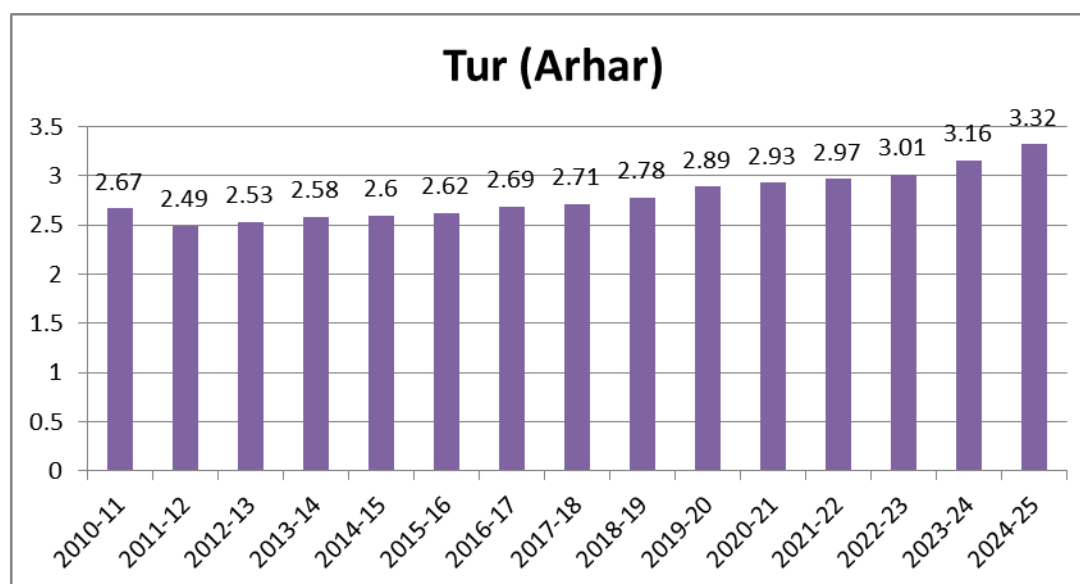
Overall Interpretation

Overall, the data show that the relative MSPs of **cotton, pulses (tur), and coarse cereals (jowar, bajra)** have increased more rapidly compared to wheat and paddy. This shift demonstrates a policy move towards **crop diversification**, encouraging farmers in Haryana to reduce dependence on traditional water-intensive crops and adopt more profitable and sustainable alternatives.

Table 3.4 Minimum Support Prices of Crops Relative to Paddy: Haryana (Ratio)

Year/Crops	Wheat	Cotton	Jawar	Bajra	Maize	Tur (Arhar)
2010-11	0.92	2.23	0.80	0.78	0.78	2.67
2011-12	0.86	2.17	0.79	0.76	0.76	2.49
2012-13	0.87	2.34	0.83	0.79	0.79	2.53
2013-14	0.86	2.40	0.87	0.81	0.81	2.58
2014-15	0.88	2.46	0.89	0.84	0.84	2.60
2015-16	0.90	2.47	0.93	0.87	0.87	2.62
2016-17	0.91	2.51	0.97	0.93	0.93	2.69
2017-18	0.91	2.59	1.01	0.97	0.97	2.71
2018-19	0.90	2.63	1.16	1.03	1.03	2.78
2019-20	0.93	2.74	1.22	1.13	1.13	2.89
2020-21	0.94	2.77	1.28	1.20	1.20	2.93
2021-22	0.95	2.85	1.43	1.26	1.26	2.97
2022-23	0.96	2.87	1.44	1.28	1.28	3.01
2023-24	0.96	2.89	1.48	1.15	1.15	3.16
2024-25	0.99	3.10	1.49	1.14	0.97	3.28

Source: CACP data

The table 3.4 presents the Minimum Support Prices (MSP) of various crops relative to Paddy in Haryana, India, from 2010-11 to 2024-25.

● Paddy, Bajra, and Maize farmers have received relatively lower prices compared to wheat farmers.

These trends and patterns can have implications for agricultural production, farmer welfare, and food security in Haryana.

Wheat

● The MSP ratio for Wheat has fluctuated between 0.86 and 0.96, indicating that Wheat farmers have received prices ranging from 86% to 96% of the Paddy price.

● The ratio has generally been around 0.90, suggesting that Wheat farmers have received prices close to 90% of the Paddy price.

Cotton

The MSP ratio for Cotton has consistently been higher than 2.0, indicating that Cotton farmers have received prices at least twice that of Paddy farmers.

The ratio has increased over time, reaching 2.89 in 2023-24, suggesting that Cotton farmers have received increasingly higher prices relative to Paddy farmers.

Figure: 3.4.1 : Minimum Support Prices of Wheat & Cotton
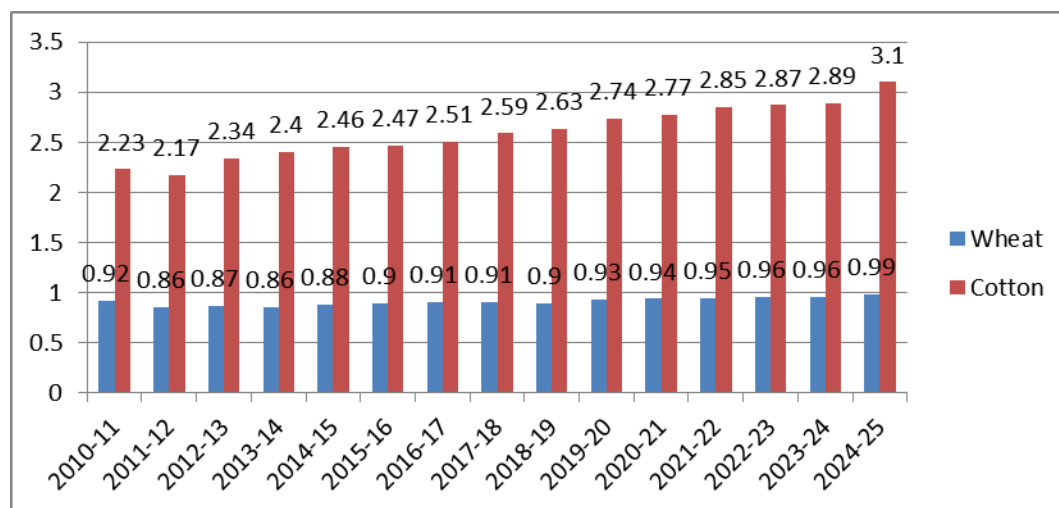
Jawar

●   The MSP ratio for Jawar has increased significantly over time, from 0.80 in 2010-11 to 1.48 in 2023-24.

●   Jawar farmers have received prices ranging from 80% to 148% of the Paddy price, indicating a substantial increase in relative prices.

Bajra and Maize

●   The MSP ratios for Bajra and Maize have been relatively stable, ranging from 0.76 to 1.28.

●   Bajra and Maize farmers have received prices ranging from 76% to 128% of the Paddy price.

Figure: 3.4.2: Minimum Support Prices of Jawar

Jawar

Values by year:
- 2010-11: 0.8
- 2011-12: 0.79
- 2012-13: 0.83
- 2013-14: 0.87
- 2014-15: 0.89
- 2015-16: 0.93
- 2016-17: 0.97
- 2017-18: 1.01
- 2018-19: 1.16
- 2019-20: 1.22
- 2020-21: 1.28
- 2021-22: 1.43
- 2022-23: 1.44
- 2023-24: 1.48
- 2024-25: 1.49
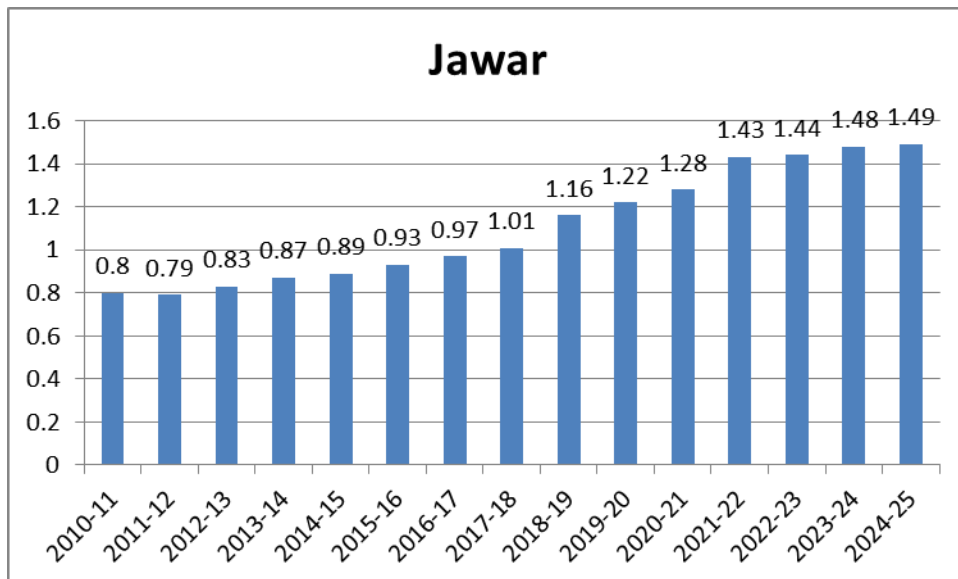
Figure 3.4.2.1 : Minimum Support Prices of Bajra

Bajra

Values by year:
- 2010-11: 0.78
- 2011-12: 0.76
- 2012-13: 0.79
- 2013-14: 0.81
- 2014-15: 0.84
- 2015-16: 0.87
- 2016-17: 0.93
- 2017-18: 0.97
- 2018-19: 1.03
- 2019-20: 1.13
- 2020-21: 1.2
- 2021-22: 1.26
- 2022-23: 1.28
- 2023-24: 1.15
- 2024-25: 1.14
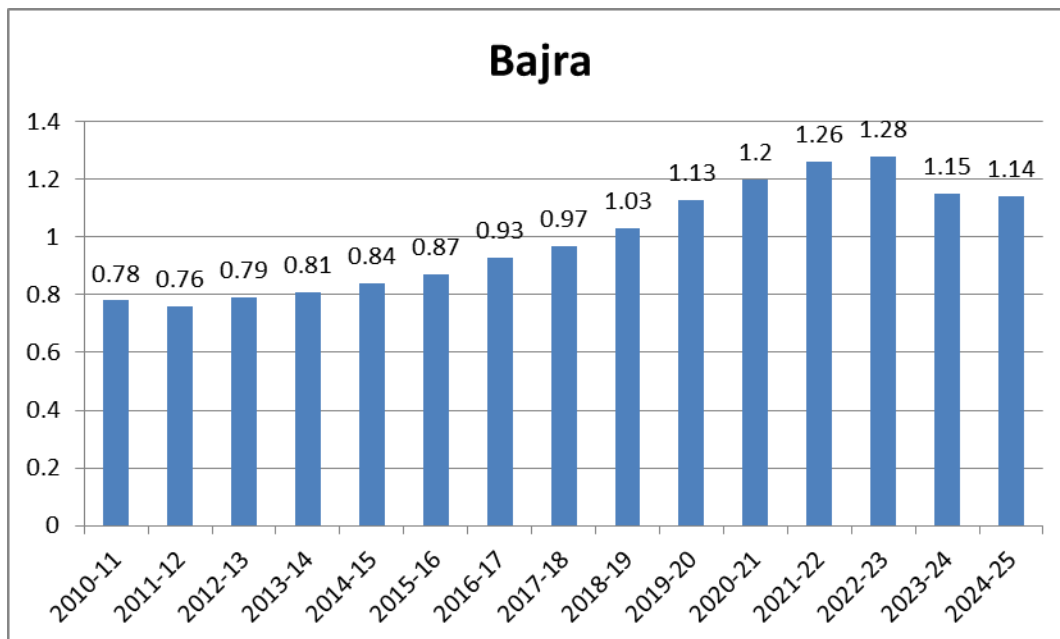
Tur (Arhar)

● The MSP ratio for Tur (Arhar) has consistently been higher than 2.0, indicating that Tur farmers have received prices at least twice that of Paddy farmers.

● The ratio has increased over time, reaching 3.16 in 2023-24, suggesting that

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Tur farmers have received increasingly higher prices relative to Paddy farmers.

Figure: 3.4.3 : Minimum Support Prices of Maize & Tur (Arhar)
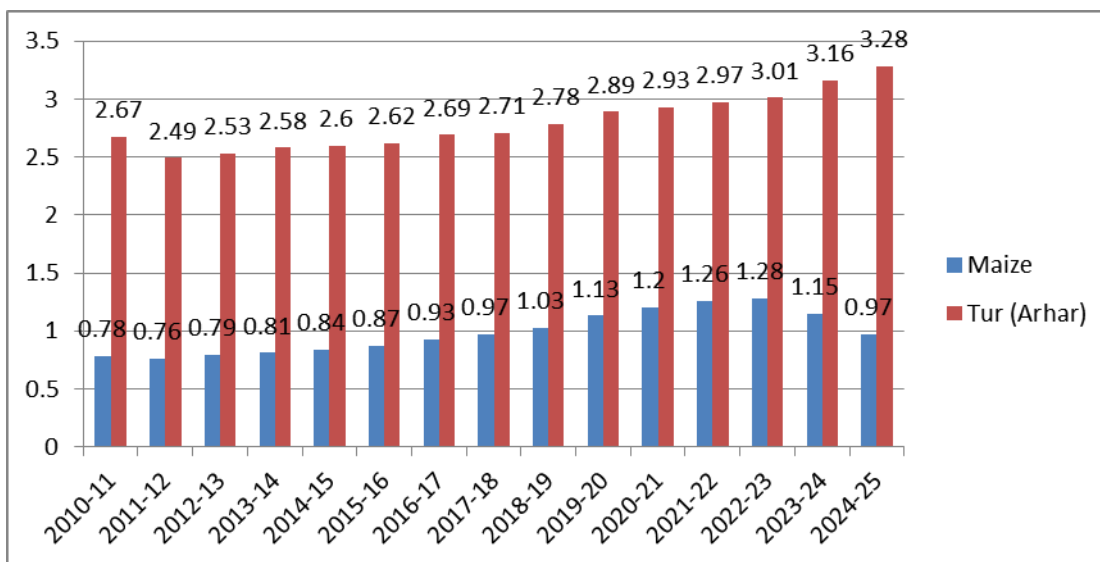
Table 3.5 Farm Harvest Prices of Crops Relative to MSP: H.R (Ratio)

Year	Paddy	Ragi	Jawar	Tur	Wheat
2004-05	1.30	1.25	1.60	1.30	1.30
2005-06	1.20	1.15	1.20	1.30	1.05
2006-07	1.05	1.45	1.15	1.34	1.17
2007-08	1.17	1.27	1.30	1.38	1.13
2008-09	1.13	1.15	1.85	1.41	1.20
2009-10	1.20	1.35	1.40	1.53	1.26
2010-11	1.26	1.27	1.68	1.73	1.30
2011-12	1.30	1.06	1.85	1.77	1.10
2012-13	1.10	1.40	1.40	1.80	1.14
2013-14	1.14	1.23	1.10	1.85	1.13
2014-15	1.13	1.28	1.38	1.72	1.05
2015-16	1.20	1.20	1.32	1.94	0.96

2016-17	1.07	1.21	1.16	1.50	1.01
2017-18	1.13	1.13	0.92	1.20	1.06
2018-19	0.96	1.28	1.07	1.31	1.13
2019-20	1.01	1.05	0.91	1.36	0.97
2020-21	1.06	0.96	1.31	1.16	0.94
2021-22	1.13	1.03	1.24	1.07	0.94
2022-23	0.97	0.94	1.31	1.39	0.90
2023-24	0.94	0.90	0.85	1.30	0.86

Source: Directorate of Economics and Statistics

Table: Farm Harvest Prices of Crops Relative to MSP — Haryana (Ratio)

Table3.5, presents the ratio of **Farm Harvest Prices (FHP)** of major crops to their respective **Minimum Support Prices (MSP)** in Haryana from **2004–05 to 2023–24**. A ratio above **1.00** indicates that the farm harvest price was **higher than the MSP**, meaning farmers received prices above the government's guaranteed rate. A ratio below **1.00** shows that the actual market price was **lower than the MSP**, suggesting that farmers sold their produce at a loss or below the official support level.

1. Paddy

The ratio for **paddy** fluctuated between **0.94 and 1.30** during the study period. From **2004–05 to 2011–12**, the FHP remained above the MSP, peaking at **1.30**, indicating that farmers were receiving 30% higher prices than MSP. However, after **2012–13**, the ratio showed a gradual decline, falling below 1.0 from **2018–19 onwards**, and reaching **0.94 in 2023–24**. This decline implies that in recent years, the market price of paddy has often been lower than the MSP, reflecting market saturation and government procurement dependency.

Figure 3.5.1:

Paddy
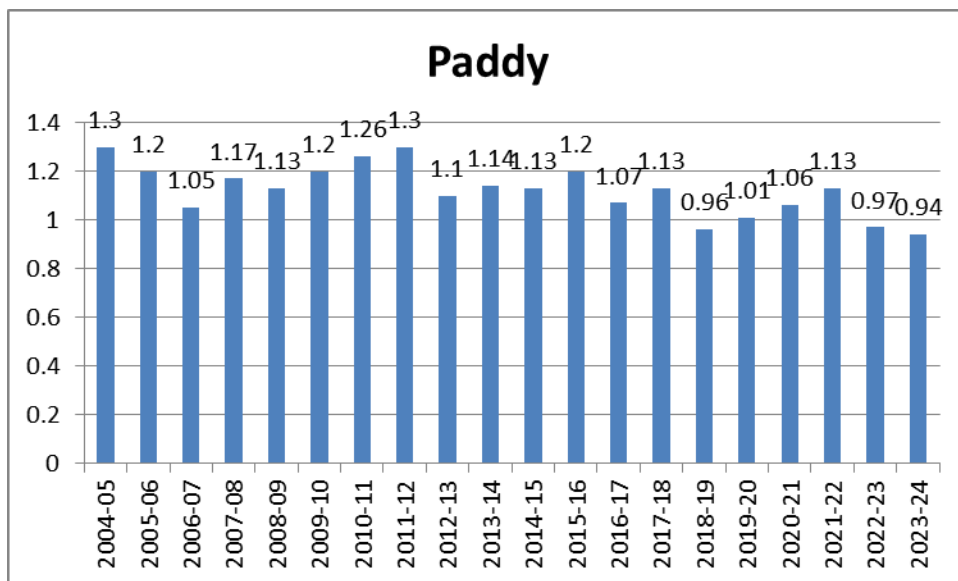
2. Ragi

For **ragi**, the ratio ranged from **0.90 to 1.45**, showing wide fluctuations. During **2006–07**, farmers received 45% more than the MSP, indicating strong demand and favorable market conditions. However, after **2020–21**, the ratio consistently dropped below 1.0, reaching **0.90 in 2023–24**, suggesting reduced profitability and weaker market prices for this coarse cereal in Haryana.

Figure 3.5.2:

Ragi
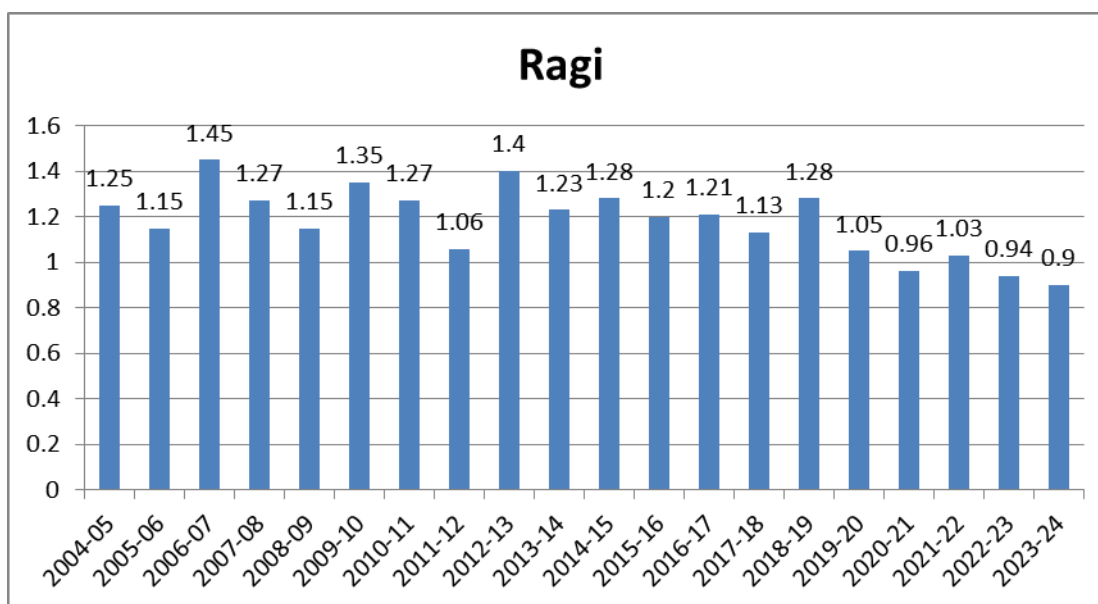
3. Jowar (Sorghum)

The ratio for **jowar** remained mostly above 1.0 until **2014–15**, peaking at **1.85 in 2008–09**, meaning the market price was 85% higher than the MSP. After **2015–16**, however, the ratio began to fluctuate and declined below 1.0 in some years (e.g., **0.85 in 2023–24**). This shows that the relative advantage of jowar prices in the market weakened over time, possibly due to limited procurement and lower consumer demand in Haryana.

Figure 3.5.3:
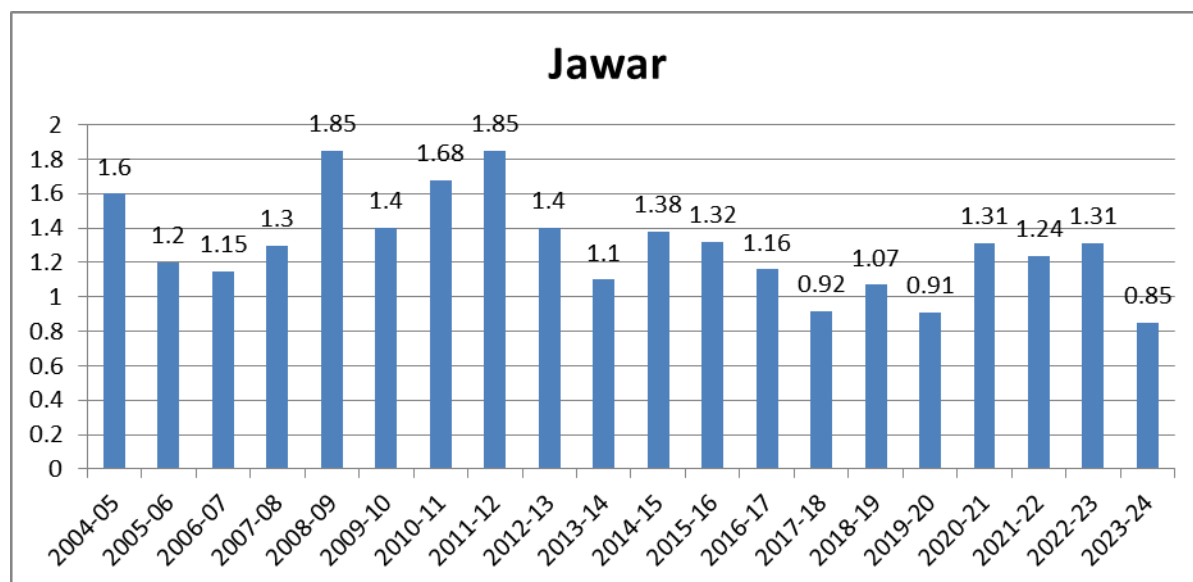
4. Tur (Arhar)

The **tur (arhar)** crop consistently showed the highest FHP-to-MSP ratios among all crops, ranging between **1.07 and 1.94**. The highest ratio (1.94) was recorded in **2015–16**, indicating nearly double the MSP. This reflects high market demand and the short supply of pulses in those years. However, the ratio declined gradually after **2016–17**, reaching **1.30 in 2023–24**, though it still remained above 1.0, showing that pulse cultivation continued to provide remunerative prices to farmers compared to cereals.

Figure 3.5.4:

Tur

Year	Value
2004-05	1.3
2005-06	1.3
2006-07	1.34
2007-08	1.38
2008-09	1.41
2009-10	1.53
2010-11	1.73
2011-12	1.77
2012-13	1.8
2013-14	1.85
2014-15	1.72
2015-16	1.94
2016-17	1.5
2017-18	1.2
2018-19	1.31
2019-20	1.36
2020-21	1.16
2021-22	1.07
2022-23	1.39
2023-24	1.3
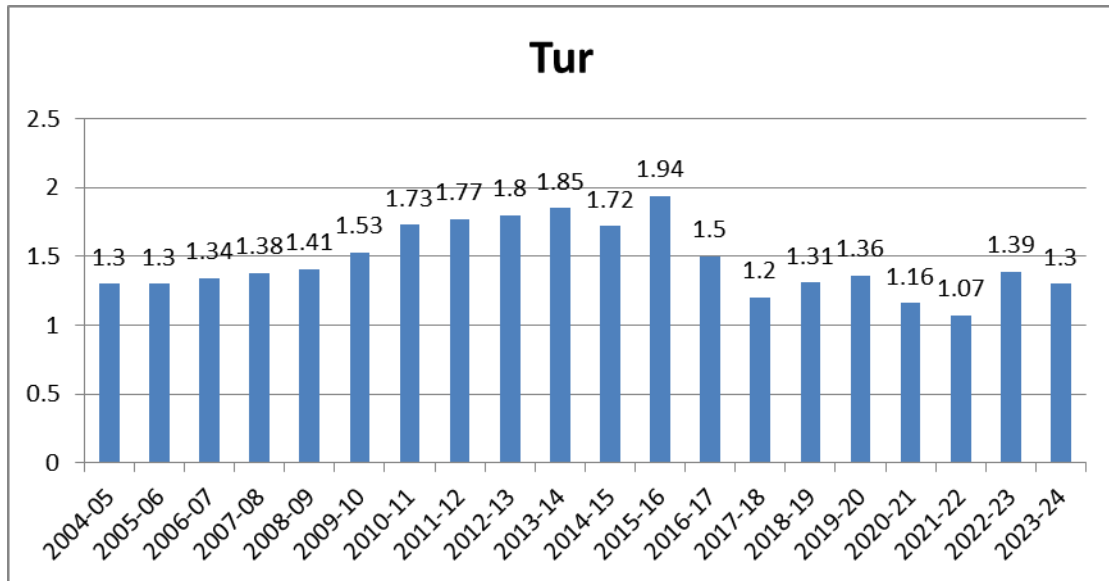
5. Wheat

For **wheat**, the ratio was relatively stable and mostly close to 1.0 throughout the study period. In earlier years (2004–05 to 2010–11), the FHP ranged between **1.13 and 1.30**, slightly above the MSP, showing stable market performance. However, from **2015–16 onwards**, the ratio fell below 1.0, reaching **0.86 in 2023–24**, indicating that farmers often sold wheat at prices lower than the MSP due to market constraints or limited procurement outside government agencies.

Figure 3.5.5:

Wheat

Year	Value
2004-05	1.3
2005-06	1.05
2006-07	1.17
2007-08	1.13
2008-09	1.2
2009-10	1.26
2010-11	1.3
2011-12	1.1
2012-13	1.14
2013-14	1.13
2014-15	1.05
2015-16	0.96
2016-17	1.01
2017-18	1.06
2018-19	1.13
2019-20	0.97
2020-21	0.94
2021-22	0.94
2022-23	0.9
2023-24	0.86
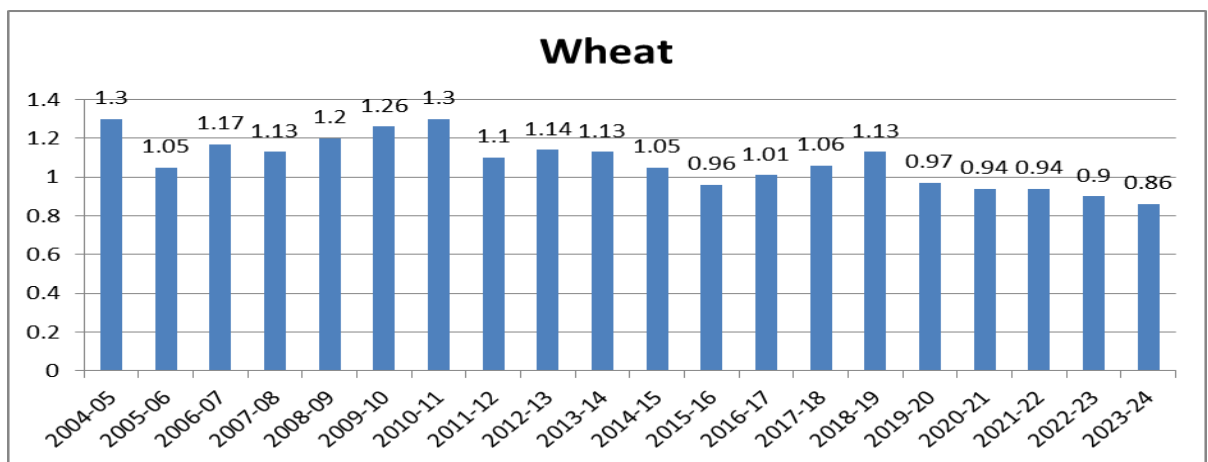
Overall Interpretation

The analysis of the ratios reveals that:

- **Tur (Arhar)** remained the most profitable crop, with FHP consistently exceeding MSP.

- **Paddy and wheat**, the dominant crops of Haryana, showed declining ratios in recent years, indicating growing dependence on government procurement.

- **Coarse cereals** such as **jowar and ragi** showed fluctuating but overall declining trends, suggesting weak market support.

Overall, the data imply that while the **MSP policy ensures price stability**, actual market prices (FHP) often vary due to regional demand, procurement efficiency, and changing cropping patterns in Haryana

Overall, the data suggests that:

- Cotton and Tur farmers have received relatively higher prices compared to Paddy farmers.

- Jawar farmers have seen a significant increase in relative prices over time.

- Wheat, Bajra, and Maize farmers have received relatively lower prices compared to Paddy farmers.

These trends and patterns can have implications for agricultural production, farmer welfare, and food security in Haryana. The data can be used to analyze the impact of MSP policies on different crops and farmers, and to inform decisions on crop selection, pricing, and support mechanisms.

The table and chart present the farm harvest prices of various crops relative to their Minimum Support Prices (MSP) in Haryana, India, from 2004-05 to 2017-18.

Paddy

- The ratio has fluctuated between 1.05 and 1.30, indicating that farm harvest prices for Paddy have been 5-30% higher than MSP.

- The ratio has generally been above 1.0, suggesting that farmers have received prices higher than MSP.

Ragi

- The ratio has fluctuated between 0.90 and 1.38, indicating that farm harvest prices for Ragi have been 10% lower to 38% higher than MSP.

● The ratio has generally been around 1.0, suggesting that farmers have received prices close to MSP.

Jowar

● The ratio has fluctuated between 0.98 and 1.85, indicating that farm harvest prices for Jowar have been 2% lower to 85% higher than MSP.

● The ratio has generally been above 1.0, suggesting that farmers have received prices higher than MSP.

Tur

● The ratio has fluctuated between 1.20 and 1.94, indicating that farm harvest prices for Tur have been 20-94% higher than MSP.

● The ratio has generally been above 1.0, suggesting that farmers have received prices higher than MSP.

Overall, the data suggests that:

● Farm harvest prices for most crops have been higher than MSP, indicating that farmers have received remunerative prices.

● Prices for Tur have consistently been higher than MSP, indicating a strong market demand.

● Prices for Ragi have been closer to MSP, indicating a relatively stable market.

● Prices for Paddy and Jowar have fluctuated, indicating market volatility.

These trends and patterns have implications for agricultural production, farmer welfare, and food security in Haryana. The data can be used to analyze the impact of MSP policies on farm harvest prices and to inform decisions on crop selection, pricing, and support mechanisms.

Table 3.6 Recent Trends in FHP /MSP in District Ambala.

Year/Crops	FHP of Paddy	MSP of Paddy	FHP of Wheat	MSP of Wheat
2010-11	678	1000	787	1120
2011-12	718	1080	823	1285
2012-13	789	1250	914	1350
2013-14	1178	1310	1087	1400
2014-15	1168	1360	1113	1450
2015-16	1678	1410	1289	1525
2016-17	1337	1470	1300	1625
2017-18	1486	1550	1607	1735
2018-19	1681	1750	1719	1840
2019-20	1728	1815	1817	1925
2020-21	1840	1868	1885	1975
2021-22	1887	1940	1907	2015
2022-23	1910	2040	2000	2125
2023-24	2078	2183	2140	2275
2024-25	2183	2300	2275	2650

Source: Directorate of Economics and Statistics

Table 3.6 presents the recent trends in Farm Harvest Prices (FHP) and Minimum Support Prices (MSP) for Paddy and Wheat in District Ambala, India, from 2010-11 to 2024-25. Here's a detailed interpretation of the data:

Paddy

- FHP has consistently been lower than MSP, indicating that farmers have received prices lower than the government-supported price.

- FHP has increased over time, from ₹678 in 2010-11 to ₹2183 in 2024-25, indicating a growth rate of 222%.

- MSP has also increased over time, from ₹1000 in 2010-11 to ₹2300 in 2024-25, indicating a growth rate of 130%.

- The gap between FHP and MSP has narrowed over time, indicating that farmers are receiving prices closer to the government-supported price.

- **Wheat**

- FHP has consistently been lower than MSP, indicating that farmers have received prices lower than the government-supported price.

- FHP has increased over time, from ₹787 in 2010-11 to ₹2140 in 2024-25, indicating a growth rate of 172%.

- MSP has also increased over time, from ₹1120 in 2010-11 to ₹2275 in 2024-25, indicating a growth rate of 103%.

- The gap between FHP and MSP has narrowed over time, indicating that farmers are receiving prices closer to the government-supported price.

- Overall, the data suggests that:

- Farmers in District Ambala have received prices lower than MSP for both Paddy and Wheat.

- However, the gap between FHP and MSP has narrowed over time, indicating that farmers are receiving better prices.

- The growth rate of FHP has been higher than MSP for both crops, indicating that market prices are increasing faster than government-supported prices.

Table 3.7 Relationships between the Farm Harvest Price and Minimum Support Price in District Bhiwani

Year/Crops	FHP of Paddy	MSP of Paddy	FHP of Wheat	MSP of Wheat
2010-11	719	1000	587	1120
2011-12	827	1080	623	1285
2012-13	912	1250	714	1350
2013-14	1120	1310	987	1400
2014-15	1207	1360	1013	1450
2015-16	1290	1410	1089	1525
2016-17	1327	1470	1300	1625
2017-18	1440	1550	1607	1735
2018-19	1526	1750	1720	1840
2019-20	1628	1815	1811	1925
2020-21	1700	1868	1835	1975
2021-22	1789	1940	1817	2015
2022-23	1819	2040	1900	2125
2023-24	2026	2183	2040	2275
2024-25	2100	2300	2275	2425

Source: Based on the Haryana data

The table presents the relationships between Farm Harvest Prices (FHP) and Minimum Support Prices (MSP) for Paddy and Wheat in District Bhiwani, India, from 2010-11 to 2024-25. Here are some key observations:

1.   **FHP of Paddy:**

●   Consistently lower than MSP, except in 2024-25 when it surpassed MSP.

●   Increased by 192% from 719 in 2010-11 to 2100 in 2024-25.

2.   **MSP of Paddy:**

●   Increased by 130% from 1000 in 2010-11 to 2300 in 2024-25.

3.   **FHP of Wheat:**

●   Consistently lower than MSP, except in 2023-24 and 2024-25 when it was close to MSP.

●   Increased by 247% from 587 in 2010-11 to 2040 in 2024-25.

**4.	MSP of Wheat:**

●	Increased by 103% from 1120 in 2010-11 to 2275 in 2024-25.

Key relationships:

●	FHP of Paddy and Wheat have consistently been lower than MSP, indicating that farmers receive prices lower than the government-supported price.

●	The gap between FHP and MSP has narrowed over time, indicating that farmers are receiving better prices.

●	FHP of Wheat has increased at a faster rate than MSP, indicating that market prices are increasing faster than government-supported prices.

●	In 2024-25, FHP of Paddy surpassed MSP, indicating that market prices are stronger than government-supported prices.

Table 3.8 Relationships between the Farm Harvest Price and Minimum Support Price in District Charkhi Dadri

Year/Crops	FHP of Paddy	MSP of Paddy	FHP of Wheat	MSP of Wheat
2010-11	719	1000	587	1120
2011-12	827	1080	623	1285
2012-13	912	1250	714	1350
2013-14	1120	1310	987	1400
2014-15	1207	1360	1013	1450
2015-16	1290	1410	1089	1525
2016-17	1327	1470	1300	1625
2017-18	1440	1550	1607	1735
2018-19	1526	1750	1720	1840
2019-20	1628	1815	1811	1925
2020-21	1700	1868	1835	1975
2021-22	1789	1940	1917	2015
2022-23	1819	2040	2000	2125
2023-24	2026	2183	2140	2275
2024-25	2100	2300	2150	2275

The figures present the relationships between Farm Harvest Prices (FHP) and Minimum Support Prices (MSP) for Paddy and Wheat in District Charkhi Dadri, India, from 2010-11 to 2024-25. Here are some key observations:

Paddy:

1.   FHP has consistently been lower than MSP, except in 2023-24 and 2024-25 when it was close to or surpassed MSP.

2.   FHP increased by 192% from 719 in 2010-11 to 2100 in 2024-25.

3.   MSP increased by 130% from 1000 in 2010-11 to 2300 in 2024-25.

Wheat:

1.   FHP has consistently been lower than MSP, except in 2022-23 and 2023-24 when it was close to MSP.

2.   FHP increased by 263% from 587 in 2010-11 to 2140 in 2024-25.

3.   MSP increased by 103% from 1120 in 2010-11 to 2275 in 2024-25.

Figure 3.6: Relationships between the Farm Harvest Price and Minimum Support Price in District Charkhi Dadri
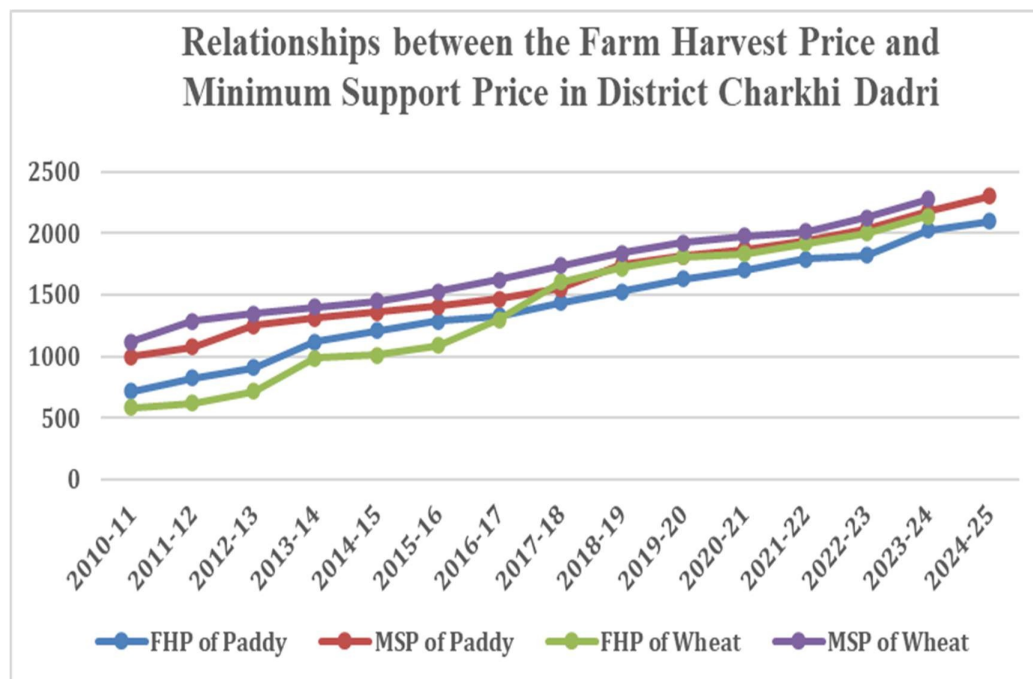
Key relationships:

1.   FHP of Paddy and Wheat have generally been lower than MSP, indicating that farmers receive prices lower than the government-supported price.

2.   The gap between FHP and MSP has narrowed over time, indicating that farmers are receiving better prices.

3.   FHP of Wheat has increased at a faster rate than MSP, indicating that market prices are increasing faster than government-supported prices.

4.   In 2023-24 and 2024-25, FHP of Paddy and Wheat were close to or surpassed MSP, indicating that market prices are stronger than government-supported price by and large portrayal is that there is a propensity that FHP is higher than the MSP in all locale. An unavoidable issue is that this propensity started after crop collecting and contains up to next harvesting? Examination of market shows that at first FHP is not exactly MSP however when the maker for example farmer sold their yields then following not many months FHP begin rising gradually correlation of MSP. The speed of rising FHP constant and it ascend from MSP with incredible edge and benefit of yield goes into the pocket of center man and financial specialist rather than farmers. In spite of the fact that the cost of yield is high in market however the farmer cannot acquire that benefit as they ordinarily sell their harvests after harvesting at MSP while center man and finance manager store the creation and sell them when cost is high. Also, it is obvious from the table that there is serious level positive connection a men's FHP and MSP of wheat in area Charkhi Dadri.

The Minimum Support Price (MSP) and the income of farmers

An essential part of India's agricultural policy is the Minimum Support Price (MSP), which serves as a safety net to guarantee that farmers get paid fairly for their produce. MSP is essential to maintaining agricultural income stability and bolstering rural lives in Haryana, a largely agrarian state with a robust cropping pattern focused on wheat, rice, sugarcane, and cotton. The Commission for Agricultural Costs and Prices' (CACP) recommendations serve as the basis for the Government of India's annual announcement of MSP, which is applicable throughout the country. However, in states like Haryana,

where procurement infrastructure is well-established and actively utilized, its effects are more noticeable.

Particularly for wheat and paddy, Haryana has continuously been one of the top contributors to India's central grain pool. As a result, the state's agricultural sector now depends heavily on the MSP system. During the rabi and kharif seasons, the Food Corporation of India (FCI) actively buys wheat and paddy from farmers at MSP in collaboration with state procurement organizations like HAFED and the Food and Supplies Department. This protects farmers from market price instability by guaranteeing a return on investment. While the MSP for paddy (common variety) rose from 1,000 per quintal in 2010–11 to 2,183 in 2023–24, the MSP for wheat grew from 1,120 per quintal in 2010–11 to 2,125 in 2023–24. Policy initiatives to raise farmer incomes and address growing input costs are reflected in these steady rises.

In Haryana, the MSP mechanism covers more than just wheat and paddy; it also covers crops including cotton, bajra, maize, gram, mustard, and barley. These crops, however, have weaker procurement, and many farmers still sell them on the open market, where prices can drop below the MSP. This draws attention to a significant issue: although MSP is announced for 23 crops nationwide, Haryana's efficient procurement is still focused on a small number of important crops. For instance, many cotton growers experience delays and reduced realization because of inadequate market intervention mechanisms, even though medium staple cotton had a high MSP of 5,925 per quintal in 2023–2024.

Although sugarcane is not on the MSP list, its price is set by the State Advised Price (SAP), which in Haryana has frequently exceeded the Fair and Remunerative Price (FRP) set by the Center. This helps farmers in areas where sugarcane is a major cash crop, such as Karnal, Panipat, and Yamunanagar.

The state's well-functioning mandi system, digital payment infrastructure, and governmental emphasis on food security are all factors in Haryana's MSP success. Critics counter that by favoring wheat and paddy over water-efficient alternatives, the MSP system skews cropping patterns. With the goal of balancing economic, environmental, and social goals, the government has responded to this by launching programs like direct

income transfers (such as PM-KISAN), pulse and oilseed promotion, and crop diversification schemes.

To sum up, MSP has played a significant role in guaranteeing Haryana farmers' economic security. Although it has been a lifeline for millions, its continued viability hinges on increasing the number of crops it purchases, enhancing market accessibility, and coordinating incentives with ecological objectives such as crop rotation and water conservation.

● The Minimum Support Price (MSP) framework for 11 important crops—wheat, paddy, bajra, maize, cotton, sugarcane, oilseeds, barley, gram, sunflower, and guar—was used to estimate farmers' income in Haryana between 2010–11 and 2023–24.

● A straightforward formula is used in the calculating method: After converting production from metric tonnes to quintals (1 MT = 10 quintals), the estimated income is equal to (production in quintals × MSP per quintal) minus 10. Under the MSP regime, this method offers a consistent means of evaluating the prospective gross income from agricultural output. Leading agrarian state Haryana is largely dependent on MSP procurement, particularly for the crops that dominate its kharif and Rabi cropping patterns: wheat and rice.

● Due to its stable yields and high procurement, wheat continuously generated a significant amount of revenue between 2010–11 and 2015–16. Cotton and sugarcane also made significant contributions because of their strong market demand and MSP per unit. In the meantime, crops like gram, oilseeds, bajra, and maize increased the resilience of small and marginal farmers and diversified their sources of income. Farmer earnings exhibited an upward trend as MSPs climbed progressively over time while production stayed largely unchanged. The MSP of wheat, for instance, rose from ₹1,120 a quintal in 2010–11 to

₹1,525 in 2015–16, which significantly increased revenue. Similarly, significant increases in sugarcane rates and cotton MSPs, particularly after 2013–14, helped counteract input cost pressures.

● From 2016–17 to 2023–24, government programs and policy changes reinforced MSP-based returns even more. Diversification initiatives, enhanced irrigation under PMKSY, and income assistance programs like PM-KISAN promoted the transition to oilseeds, pulses, and coarse grains. During this time, MSP hikes were more severe, especially for crops like mustard, sunflower, and gram. Better procurement and increased production resulted in strong revenue statistics in 2018–19 and 2020–21. MSP remained a safety net in spite of obstacles like insect outbreaks, market disruptions, and climate instability, particularly in Haryana's wheat and paddy-dominant areas.

● In general, this MSP-based estimation approach emphasizes the need of policy support in maintaining farm incomes and the economic value of crop production. To guarantee long-term financial stability for Haryana's farming community, it provides policymakers with information on how to improve procurement, combat cost inflation, and encourage balanced planting.

Estimated Farmers' Income in Haryana (2010–11 to 2023–24) Income Estimation Formula

Estimated Income= (Production in quintals×MSP per quintal) −10

Subtracting 10 units (or other) is assumed here to be a fixed adjustment (e.g., for marginal costs, estimation correction, etc.)—please clarify if it represents something else like handling charges or an averaging method.

Step-by-Step Example: Wheat in 2020–21 Let's say:

● Production = 12 million tonnes = 1,20,00,000 quintals MSP for Wheat (2020–21) = 1,925 per quintal

Apply the Formula:

● Estimated Income=(1,20,00

● Estimated Income=(1,20,00,000×1,925)−10=

● =2,31,00,00,000−10=2,30,99,99,990

Farmers' estimated income from wheat in Haryana for 2020–21 ≈ 2,310 crore Crore

Year	Crop	Production (MT)	MSP (/qtl)	Estimated Income (crore)
2010–11	Wheat	11,578	1,120	13,007.36
	Paddy	3,465	1,000	3,464.99
	Bajra	1,200	880	1,055.99
	Maize	800	880	703.99
	Cotton	1,747	2,500	4,367.49
	Sugarcane	7,000	129.84	9,088.79
	Oilseeds	965	1,850	1,785.24
	Barley	500	750	374.99
	Gram	600	2,100	1,259.99
	Sunflower	400	2,350	939.99
	Guar	300	1,800	539.99
2011–12	Wheat	13,119	1,285	16,846.42
	Paddy	3,757	1,080	4,057.55
	Bajra	1,250	980	1,224.99
	Maize	850	980	833.99
	Cotton	2,616	2,800	7,324.79
	Sugarcane	7,500	139.12	10,433.99
	Oilseeds	758	1,850	1,402.29
	Barley	520	780	405.59
	Gram	650	2,800	1,819.99
	Sunflower	420	2,800	1,175.99
	Guar	320	1,900	607.99
2012–13	Wheat	11,117	1,285	14,285.34
	Paddy	3,941	1,250	4,926.24

	Bajra	1,300	1,175	1,527.49
	Maize	900	1,175	1,057.49
	Cotton	2,378	3,700	8,798.59
	Sugarcane	7,800	145	11,309.99
	Oilseeds	968	1,850	1,789.79
	Barley	540	980	529.19
	Gram	700	3,000	2,099.99
	Sunflower	440	3,700	1,627.99
	Guar	340	2,000	679.99
2013–14	Wheat	11,800	1,350	15,930.00
	Paddy	4,010	1,310	5,253.10
	Bajra	1,350	1,250	1,687.49
	Maize	950	1,310	1,244.49
	Cotton	2,025	3,700	7,492.49
	Sugarcane	8,000	210	16,799.99
	Oilseeds	900	1,850	1,664.99
	Barley	560	980	548.39
	Gram	750	3,100	2,324.99
	Sunflower	460	3,700	1,701.99
	Guar	360	2,100	755.99
2014–15	Wheat	10,354	1,450	15,019.30
	Paddy	4,006	1,360	5,448.15
	Bajra	1,400	1,250	1,749.99
	Maize	1,000	1,310	1,309.99
	Cotton	1,943	3,750	7,285.62
	Sugarcane	8,200	220	18,039.99

	Oilseeds	743	1,850	1,372.54
	Barley	580	980	568.39
	Gram	800	3,175	2,539.99
	Sunflower	480	3,700	1,775.99
	Guar	380	2,200	835.99
2015–16	Wheat	11,352	1,525	17,321.80
	Paddy	4,145	1,410	5,844.45
	Bajra	1,450	1,275	1,848.74
	Maize	1,050	1,325	1,391.24
	Cotton	993	3,800	3,773.39
	Sugarcane	8,500	230	19,549.99
	Oilseeds	855	1,850	1,579.74
	Barley	600	980	589.99
	Gram	850	3,500	2,974.99
	Sunflower	500	3,700	1,849.99
	Guar	400	2,300	919.99
2016–17	Wheat	11,500	1,625	18,687.40
	Paddy	4,000	1,470	5,879.99
	Bajra	1,300	1,330	1,728.99
	Maize	900	1,365	1,228.49
	Cotton	1,800	4,160	7,487.99
	Sugarcane	8,000	230	18,399.99
	Oilseeds	950	3,700	3,514.99
	Barley	550	1,325	728.74
	Gram	700	4,000	2,799.99
	Sunflower	450	3,950	1,777.49

	Guar	320	2,500	799.99
2017–18	Wheat	11,800	1,735	20,471.80
	Paddy	4,200	1,550	6,509.99
	Bajra	1,350	1,425	1,923.74
	Maize	950	1,425	1,353.74
	Cotton	1,900	4,320	8,207.99
	Sugarcane	8,200	240	19,679.99
	Oilseeds	980	3,900	3,821.99
	Barley	580	1,350	782.89
	Gram	750	4,200	3,149.99
	Sunflower	470	4,100	1,926.99
	Guar	340	2,600	883.99
2018–19	Wheat	12,000	1,840	22,079.99
	Paddy	4,300	1,600	6,879.99
	Bajra	1,400	1,500	2,099.99
	Maize	1,000	1,500	1,499.99
	Cotton	2,000	4,400	8,799.99
	Sugarcane	8,500	250	21,249.99
	Oilseeds	1,000	4,100	4,099.99
	Barley	600	1,400	839.99
	Gram	800	4,400	3,519.99
	Sunflower	500	4,200	2,099.99
	Guar	360	2,700	971.99
2019–20	Wheat	12,200	1,925	23,489.99
	Paddy	4,400	1,650	7,259.99
	Bajra	1,450	1,550	2,244.99

	Maize	1,050	1,550	1,627.49
	Cotton	2,100	4,500	9,449.99
	Sugarcane	8,700	260	22,619.99
	Oilseeds	1,020	4,200	4,283.99
	Barley	620	1,450	899.99
	Gram	850	4,600	3,909.99
	Sunflower	520	4,300	2,235.99
	Guar	380	2,800	1,063.99
2020–21	Wheat	12,400	1,975	24,509.99
	Paddy	4,500	1,700	7,649.99
	Bajra	1,500	1,600	2,399.99
	Maize	1,100	1,600	1,759.99
	Cotton	2,200	4,600	10,119.99
	Sugarcane	8,900	270	24,029.99
	Oilseeds	1,050	4,300	4,514.99
	Barley	640	1,500	959.99
	Gram	900	4,800	4,319.99
	Sunflower	540	4,400	2,375.99
	Guar	400	2,900	1,159.99
2021–22	Wheat	12,600	2,015	25,379.99
	Paddy	4,600	1,750	8,049.99
	Bajra	1,550	1,650	2,554.99
	Maize	1,150	1,650	1,899.99
	Cotton	2,300	4,700	10,809.99
	Sugarcane	9,000	280	25,199.99
	Oilseeds	1,080	4,400	4,751.99

	Barley	660	1,550	1,019.99
	Gram	950	5,000	4,749.99
	Sunflower	560	4,500	2,519.99
	Guar	420	3,000	1,259.99
2022–23	Wheat	12,800	2,125	27,199.99
	Paddy	4,700	1,800	8,459.99
	Bajra	1,600	1,700	2,719.99
	Maize	1,200	1,700	2,039.99
	Cotton	2,400	4,800	11,519.99
	Sugarcane	9,100	290	26,389.99
	Oilseeds	1,100	4,500	4,939.99
	Barley	680	1,600	1,089.99
	Gram	1,000	5,200	5,199.99
	Sunflower	580	4,600	2,669.99
	Guar	440	3,100	1,359.99
2023–24	Wheat	13,000	2,200	28,599.99
	Paddy	4,800	1,850	8,879.99
	Bajra	1,650	1,750	2,884.99
	Maize	1,250	1,750	12500

Source: Haryana Economic Survey 2023-24

3.6   IMPACT ON INPUT USE

One of the significant goals of the value intercession conspire is to improve reception of innovation by giving a wedge against the vacillations in anticipated costs. At the point when farmers are guaranteed of value level ahead of the following harvest, they have a sense of safety to utilize appropriate blend of information sources and innovation which requires somewhat more venture. Basically, the farmers won't be 'venture modest' with regards to such confirmation and they become wary daring individuals. They likely offer thought to the MSP drill and thusly, the announcement of MSP ought to be before the planting season for the concerned harvest.

The experience of most recent thirty years discloses to us that this happens more as a special case than training and treating MSP either as impetus cost or examining its effect on input use may just fill in as a hypothetical conversation. The patterns in input use versus Minimum Support Prices have been examined here to follow the effect of MSP on input patterns.

Show that the info use in the state develops comparably as that of MSP. Be that as it may, would we be able to call this as circumstances and logical results relationship? We hurry to add that this relationship may simply be because of time pattern as opposed to a deterministic relationship. In addition, we have utilized here normal MSP and normal Farm Harvest Prices, which serve just as intermediaries for the patterns and don't tell the value impact on an individual yield. The condition clarifying detrended

input use arrangement with detrended MSP neglected to turn out with any genuinely critical coefficients. With this proof one will in general infer that MSP scarcely has any effect on territory allotment or information use.

One more perspective on effect of MSP on input use is through the connection among MSP and yield of harvests per hectare. For this situation the yield of harvest remains as a final product of the utilization of new innovation which basically incorporates inputs. The patterns have been introduced in Figure 2.8 and we track down that no solid connection between yield per hectare and MSP could be recognized from these figures. We are presently defied with the proof that keeps us away from presuming that MSP gives motivations to selection of the new innovation and supports the danger taking mentality

of the farmers during the nineties. However, we likewise keep in see the way that during the mid-seventies, MSP assumed this part successfully. In any case, by the nineties even the patterns in mechanical development in rural area had eased back down and along these lines, it won't be reasonable to finish up hastily about the innovation actuating job of MSP. This should be checked uniquely with the assistance of the ranch level information.

3.7 FACTORS DICTATING FAILURE OR SUCCESS OF MSP

Minimum Support Prices as in instrument of the value strategy has recorded an underlying achievement however in the changed monetary situation, it is important to rethink this instrument. As an approach device, MSP has filled the need during the seventies and eighties to get, fabricate cradle stocks, give a base cost to the farmers and initiate selection of the new innovation. In the early long stretches of the Green Revolution stage, MSP and Procurement or Levy Prices had this meaning and strategy plan. During those years the formation of impetuses for the selection of new innovation and giving food security were the main parts of the value strategy. Likewise, obtainment for supporting the Public Distribution System was fundamental and this was to be accomplished through market mediations. The job of MSP as a motivating force to receive innovation during those years comes out unmistakably in the composition of Prof. Dantwala, who was one of the central planners of our value strategy. He expressed that "However no inflexible equation has been acknowledged to decide the degrees of floor costs, the standard followed is that reformist farmers should discover these levels satisfactory to urge endeavor and speculation to expand creation through the selection of improved innovation with all its danger and vulnerability (accentuation added)" (Dantwala 1996: 213, initially distributed in 1967).

In the current setting, the variables impacting the adequacy of MSP expect more significance. Among the variables that direct the viability of MSP the most significant are:

- Process of implementation of the policy,

- Dependence on the State for intervention so that the markets function effectively and freely in long run,

- Weeding out the information asymmetry prevailing in the agricultural markets

and providing farmers with the required information at proper time,

● Monitoring the prices without intervention and assess the situation in the place of suo motto intervention.

● Long term policy steps to replace the present ad hoc arrangements.

Throughout the most recent thirty years huge changes have occurred with regards to value strategy. The field of value strategy has changed from motivator costs to profitable costs and now the issues should be presented in an entirely unexpected point of view. The cycle of advancement embraced during nineties hence gives another implication to the value strategy. Aside from being an instrument for making impetus, it is likewise expected to assume a lot more extensive part of completely cooperating with the market influences. Farmers are as of now communicating worry about the 'profitable part of MSP' however the worry rather focuses a blaming finger towards disappointment for the market system to give financially suitable costs to them. In the wake of bigger stocks, presently the value strategy must be dealt with cautiously. After an encounter of a fourth of century, in the execution of the market intercession plot Prof Dantwala composed again during mid nineties perceiving the changing part of MSP and mediations. He composed that: "Moreover, mediation must be specific. Its need should be obviously settled and its adequacy ought to be continually under audit (accentuation added). The genuine issue isn't just to set up the authenticity of mediation, however that of guaranteeing it's successful and wise execution." (Dantwala 1996) initially distributed in suitably he proposed observing changing conditions and having a consistent audit of the mediations. He likewise underscores the execution interaction which requires a critical examination in the evolving conditions. We can just see the value in his vision even in the small long periods of progression.

3.8 TOWARDS A SUSTAINABLE POLICY

The setting of value strategy has gone through an ocean change during the most recent forty years. In the current interaction of progression and opening up of the global exchange, we need to ponder the setting of the approach. Indeed, even past this, it has come into strong alleviation that the value mediation conspire has not been adequately executed and subsequently bombing in guaranteeing the targets it has outlined to serve. The value strategy has been awry regarding crops also as areas and subsequently, can

exact imbalance even through an all around proposed mediation.

The externality perpetrated by the intentional approach predisposition on coarse oats and heartbeats area just as on the locale's developing these yields can be found in their development rates and income inescapable all the while. In this specific circumstance, Krishna composed that "On account of coarse cereals, notwithstanding, in light of the value rule, the execution of the value strategy has not been effective (Krishna 1991: 1998).

It is notable that a fragment of the farmers' hall affects the value strategy and at the large scale level it favors a couple of harvests and areas. This, thusly, influences the total government assistance. Likewise, input showcases also have little impact of the conduct of MSP. In item market, the assumption for support costs gives ready circumstance to the mediators to accomplish more noteworthy benefit. The execution interaction itself gives delay between the revelation of the expectation to obtain under MSP and the real acquirement.

This gives sufficient space for the brokers to step in and purchase the wares from the farmers to sell it under market intercession plan to the State Government. This unmistakably invalidates the point of the plan. Government officials, all things considered, might want to be in acceptable books of the farmers by praising the MSP and contending for higher MSP yet little understanding that the entire interaction bombs the farmers. It is vital subsequently, that reasonable advances are taken to unmistakably zero in the value strategy on guaranteeing that the frail and negligible farmers/crops don't endure in the process through trouble deal or purposeful arrangement inclination.

A drawn-out clear arrangement point of view is needed for this reason where every one of the hazy situations in the value strategy should be taken care of.

CONCLUSION:

From 2010 to 2024-25, the Minimum Support Prices (MSP) for seven major crops in Haryana's districts—Ambala, Bhiwani, and Charkhi Dadri—have shown a steady increase. This upward trend reflects a deliberate policy shift aimed at bolstering farmer incomes and enhancing agricultural stability.

Policy Implications:

The consistent rise in MSP underscores the effectiveness of this policy tool in supporting

farmers. For policymakers, this trend signifies a successful strategy that should be sustained and refined to adapt to evolving economic conditions and inflationary pressures.

Practical Implications:

For farmers, the growing MSP offers a more stable financial outlook, reducing their exposure to market volatility. It is crucial for local agencies to ensure streamlined MSP procurement and timely payments, enhancing the practical benefits of these price increases.

Opportunities for Stakeholders:

The increase in MSP creates opportunities for agricultural businesses, cooperatives, and financial institutions to align their services with the new economic realities. Farmers are better positioned to invest in modern technologies and practices, while stakeholders can develop tailored financial products to support this transition.

Welfare of Farmers:

Overall, the rising MSP directly contributes to the improved welfare of farmers by providing a more secure and predictable income. This fosters a more sustainable and resilient agricultural sector, ultimately benefiting the broader rural economy. In essence, the MSP trend from 2010 to 2024-25 highlights significant progress in agricultural policy, promising continued growth and stability for Haryana's farming community.

CHAPTER-4

CONTRIBUTION OF PRICE AND YIELD IN THE INCREMENTAL INCOME

4.1 INTRODUCTION

Horticultural costs are significant financial factors in a market economy. Value connections affect choices identifying with the kind and volume or farming creation movement. They give an action to arriving at judgment on arrangement definition and managerial and leader activity. Being essential for reasons for dynamic in the circle of financial exercises, value information obtains extensive significance. Their assortment and assemblage, accordingly, merit consideration no not exactly that given to getting data on other financial attributes. The frameworks to be embraced in the arrangement of value insights must, along these lines, be definitively decided in relations to their end employments. The evaluation of effect of agrarian value strategies sought after in India can be drawn closer from a few points viz. accomplishment of public destinations, motivations or disincentives made for farmers, and twists, assuming any, made in the showcasing framework. The effect of horticultural value strategies can be summed up as follows (Acharya, 2001):

The arrangement has been instrumental in establishing a genuinely steady cost climate for farmers to instigate them to embrace new creation innovation and accordingly increment the yield of food grain. The improvement in the degree of food security in India during the most recent thirty years has been broadly recognized the world over. Topographically scattered development of oat creation during the most recent twenty years combined with public appropriation arrangement of grains helped in expanding the actual admittance to food,

Supply of sponsored contributions to farmers and financed conveyance of foodgrain, which empowered to keep the genuine costs of oats declining opposite the per capita income, helped in improving the monetary admittance to staple food grains. While the farmers were given some level of value protection through an approach of minimum support costs, the arrangement attempted to accomplish a reasonable sharing of gains of mechanical advancement and public speculation among farmers and shoppers.

Aside from the increment in physical and financial admittance to food and a confirmation

of a sensible re-visitation of cultivators of staple food, the impetus system made by the value strategy helped in expansion of editing and creation design in horticulture. While such moves in editing and creation designs happened at the edge, these aided in expanding the creation of oilseeds, natural products, vegetables and animals' items, hence improving the sustenance security by and large.

Attributable to the decrease in the genuine costs of fundamental staple food, the business and the coordinated area could keep their compensation charges low, as rice and wheat have an impressive weight age in the shopper value record. The advantages of value strategy and information/food sponsorships have, subsequently, been shared by all segments of society i.e., excess delivering farmers, different farmers who are net buyers of cereals, landless workers, metropolitan buyers and industry.

The sort of strategy and developers continued in the nation brought about certain twists in the ordinary working of the open market. For instance, on account of oats, while the spread among discount and retail costs was not discovered to be unreasonable, the between year value rise has been impressive lower and, in a few circumstances, was even lower than the capacity cost, which didn't support the cooperation of private exchange stockpiling and related exchanging exercises food grains.

As respects the spatial joining, there is adequate proof to show that on account of rice and wheat, the business sectors have demonstrated serious level of reconciliation and the coordination has additionally expanded during the nineties. Interestingly, the business sectors for coarse cereals like to war didn't exhibit serious level of mix (Wilson, 2001).

There is, consequently, proof to accept that market mediation, through value arrangements, has been careful and particular and market defects noticed are because of foundation bottlenecks, severely market guidelines, absence of market data streams and such different elements and not really because of evaluating approaches sought after in the country. All things considered, the strategies profited farmers just as the shoppers yet by their actual nature and goals influenced the interest of private area in the promoting of products covered by these arrangements. The circumstance lately has extensively changed. In a few wares, the volume of wares entering the business sectors has impressively gone up. The support of private area is getting more significant. It is in this setting that there is a requirement for a relook at the approaches and reformulate them to

pull in private area support in farming showcasing at a huge scope. In the arising conditions, a guide must be laid for an agrarian estimating strategy with twin accentuation on financial suitability and age of enough motivators to the farmers for making further interest in agribusiness and all the more especially in its enhancement.

The strategy should endeavor to adjust powers of interest and supply as opposed to setting more prominent accentuation in expanding supply alone.

In this section, we expect to investigate the adjustments in the trimming design. These progressions can't be credited to MSP/Prices alone however mirror a joined impact of numerous such factors. This is considered through the information trimming design before 10 years and the present editing design. Hypothetically, it could be contended that the memory breaches may go about as imperative to review a circumstance decade back however it didn't demonstrate troublesome during our hands on work. We likewise expect to examine the effect on the utilization of data sources and land and different assets other than reception of socially alluring editing design. Working with the selection of new innovation is one of the significant elements of the MSP strategy. Accordingly, reception of improved innovation and their overall commitment in expanding the creation and productivity of the predetermined harvests turns into a fundamental backup of the value strategy, and subsequently analyzing appropriation of innovation was taken as a significant perspective with the end goal of our examination.

4.2   LAND USE AND CROP PATTERN

Land Use: The reformist discontinuity of land possessions, debasing normal asset base and arising worries of environmental change are heightening tension ashore and water. Land and water assets being limited, expanded agrarian creation and a broadened food crate to meet the necessity of the expanding populace with higher per capita income, needs to radiate from a similar restricted net planted territory by expanding productivity with an ideal utilization of accessible water and land assets. Regular assets viz. arable land, water, soil, biodiversity (plant, creature and microbial hereditary assets) is quickly contracting because of segment and financial pressing factors, rainstorm aggravations, expanding frequencies of floods and dry spells. Abuse of peripheral terrains, imbalanced fustigation, crumbling soil wellbeing, redirection of rural land to Non rural uses, draining springs and water system sources, Stalinization of prolific grounds and water-logging are

squeezing difficulties requiring pressing consideration.

For making horticulture practical to meet the country's food prerequisite, a judicious land use strategy, water accessibility and soil wellbeing must be kept up at levels that are helpful for with more significant level of productivity. The land changes plan has not gone past the inconvenience of land roofs despite the fact that the rates of tenure are too high in many pieces of the country. Significant lumps of scant land stay untilled due to landowners' hesitance to rent out land inspired by a paranoid fear of losing its possession. A huge percent of the occupants are landless and peripheral farmers. These occupants would profit by renting in since it would assist them with extending their miniscule possessions and permit better utilization of their work assets. The ownership of the land holdings plays a significant role in determining cropping pattern and crop rotation. The farming households may be grouped into two categories, own cultivation and tenant cultivation, on the basis of ownership of the land holdings. A household, having ownership of land holdings and engaged in self- cultivation is regarded as own cultivation households while a household engaged in cultivation without any ownership of land holdings is defined as tenant cultivator. However, operational holding is defined as own land holding plus leased in land minus leased out land. Distribution of operational land holdings in Haryana are presented in

Table

Table 4.1 Distribution of Number of Holdings and Area Operated in India as per Agriculture Census 2010-11 (Hectare)

Sr. No.	Size Group	Number Of Holdings (in million)	Area operated (in Million ha.)	Average operated area per holding (ha.)	Percentage of holdings to total Holdings	Percentage of area operated to total area
1	Marginal (Below 1 ha.)	92.4	35.4	0.38	67.04	22.25
2	Small (1.00-2.00 ha.)	24.7	35.1	1.42	17.93	22.07
3	Semi-Medium	13.8	37.5	2.71	10.05	23.59

	(2.00-4.00 ha.)					
4	Medium (4.00-10.00 ha.)	5.9	33.7	5.76	4.25	21.18
5	Large (Above	1.0	17.4	17.38	0.73	10.92
All holdings		137.8	159.2	1.16	100.00	100.00

Source: Agricultural Statistics, 2020

The table 4.1 reveals that there is:

1. **Land fragmentation**: A large number of small and marginal farmers (92.4 million) hold a small portion of the total land (35.4 million ha), indicating fragmentation of landholdings.

2. **Concentration of land**: A small number of large farmers (1 million) hold a significant portion of the total land (17.4 million ha), indicating concentration of land among larger farmers.

3. **Inequality**: There is a significant disparity in land distribution, with smaller farmers holding smaller areas and larger farmers holding larger areas, indicating inequality in land ownership.

4. **Small farmers dominate**: Small farmers (Marginal + Small) account for 85% of total holdings but operate only 44% of the total area, indicating that small farmers dominate in terms of numbers but not in terms of land area.

5. **Larger farmers control more land**: Larger farmers (Semi-Medium + Medium + Large) account for 15% of holdings but operate 56% of the total area, indicating that larger farmers control a significant portion of the land.

6. **Need for policy interventions**: The data suggests that policy interventions are needed to address land fragmentation, inequality, and access to resources for small farmers.

Table 4.2: Operational Holdings (Hectare)

Category	Numbers	Number (%age)	Area	Area (%age)	Average Size
Marginal (below 1.0 ha)	7,78,142	48.11	3,60,474	09.89	0.46
Small (1.0 to 2.0 ha)	3,14,818	19.47	4,62,703	12.69	1.47
Semi-medium (2.0 to 4.0 ha)	2,83,828	17.55	8,14,473	22.34	2.87
Medium (4.0 to 10. ha)	1,94,694	12.04	11,85,399	32.52	6.09
Large (10.0 ha and above)	45,829	02.83	8,22,519	22.56	17.95
Total	**16,17,311**	**100.00**	**36,45,568**	**100.00**	**2.25**

Source: Agricultural Census in Haryana (2010-11)

The table 4.2 shows the distribution of operational holdings in Haryana (2010-11).

Key points:

● Marginal farmers (below 1 ha) account for 48% of holdings but only 10% of area.

● Small and semi-medium farmers account for 37% of holdings and 35% of area.

● Medium farmers account for 12% of holdings and 33% of area.

● Large farmers account for 3% of holdings but 23% of area.

● Average holding size is 2.25 ha.

The data shows a significant number of small and marginal farmers in Haryana, with a small average holding size. There is a concentration of land among larger farmers, indicating inequality in land distribution.

Land Utilization in Haryana:

The land utilization in Haryana, as reflected in the data, reveals a stark contrast between the majority of small and marginal farmers and the minority of large farmers. While the former accounts for nearly 70% of the total holdings, they operate only about 22% of the total area, with an average holding size of less than 1 hectare. In contrast, the large farmers, constituting merely 3% of the total holdings, control a substantial 23% of the total area, with an average holding size of nearly 18 hectares.

This skewed distribution of land raises critical concerns about the equity and efficiency of land utilization in Haryana. The small and marginal farmers, who are the backbone of agriculture in the state, are constrained by tiny landholdings, making it difficult for them to achieve economies of scale, adopt modern technologies, and improve their livelihoods. On the other hand, the large farmers, with their extensive landholdings, have a disproportionate advantage in terms of access to resources, markets, and government support. This perpetuates a cycle of inequality, where the small farmers are relegated to subsistence farming, while the large farmers dominate the agricultural landscape.

Furthermore, the data suggests that the fragmentation of landholdings among small farmers leads to inefficient use of land, with a significant portion of the total area being underutilized. This not only affects agricultural productivity but also hampers the overall economic development of the state.

To address these issues, there is a need for policy interventions that promote land consolidation, provide support to small farmers, and encourage equitable distribution of resources. Additionally, initiatives aimed at improving agricultural productivity, such as crop diversification, irrigation development, and technology adoption, can help optimize land utilization in Haryana.

Table 4.3: Land Utilization Pattern in the State (2017-18) (000 hectare)

Geographical Area	4, 371 (100)
Forest	36 (0.85)
Not available for Cultivation	
A. Land put to non-agricultural uses	445 (10.18)
B. Barren and uncultivable land	117 (2.68)
Total	**562 (12.86)**
Other Uncultivated land excluding Fallow Land	
A. Permanent pastures & other grazing lands	24 (0.55)
B. Land under misc. Tree crops & groves	6 (0.14)
C. Cultivable but barren land	49 (1.12)
Total	**79 (1.81)**
Fallow Land	

A. Current follows	111 (2.54)
B. Old follows	75 (1.72)
Total	**186 (4.25)**
Cropped Area	
A. Net area sown	3,508 (80.26)
B. Area sown more than once	3,041 (69.57)
C. Gross cropped area	**6, 549 (149.82)**
Cropping intensity in percentage	186.7

Source: Statistical Abstract, Haryana (2018-19)

Haryana has been considered as the food bowl of India as it enjoys a surplus in food grain production and contributes about 15 per cent of the central pool of food grains, despite constituting only 1.34 per cent of the national landmass. In 2018-19, Haryana produced 3,981 kg food grain per hectare as compared to the national food grain productivity of 2,299 kg per hectare. Since 1970-71 Haryana has witnessed an increase of 2.47 per cent in food grain productivity as compared to a 2.04 per cent increase at national level. While, the average annual fish production is 7000 kg per hectare as against the national average of 2900 kg. The state has also achieved self- sufficiency in fish seed production of Indian major carp and common carp. The total fish production from all resources was 600 metric tons during the year 1966-67 which has now increased to 1,57,503.10 metric tons in 2019-20 in spite of depletion of fish population in natural water bodies. Similar patterns are witnessed in the availability of milk (1087 gm. of milk per capita per day) and eggs (224 eggs per capita per annum) in Haryana as compared to India (394 g of milk per capita per day and 79 eggs per capita per annum). Source: Statistical Abstract of Haryana 2018-19, Department of Economic and Statistical Analysis, Haryana

The Table 4.3 presents composition of total land available in Haryana. Total geographical area in Haryana is 4, 371 thousand hectares out of which about 80 per cent is cultivable area and remaining 20 per cent is uncultivable area. It may be noted that the share of the area under forests is less than one per cent of the total geographical area in the state of Haryana.

The gross cropped area comes out to be 6, 549 thousand hectares which constitutes149.82 per cent of the total geographical area of the state. Consequently, the cropping intensity

(gross cropped area/ net area sown) happens to be 186.7 per cent which is very high. It indicates the high level of pressure on the available cultivable land in the state. Scope for bringing more area under cultivation is limited. Only way out is to increase productivity of land.

CROPPING PATTERN

The gross area sown in the state was 45.99 lakh hectare in 1966-67 which increased to 65.49 lakh hectare in 2017-18. The contribution of area under wheat and paddy crops to the total gross area sown in the state was 60.35 per cent during 2017-18. The area under wheat crop was 25.30 lakh hectare during 2017-18. The area under paddy crop was 14.22 lakh hectare in 2017-18. The area under commercial crops i.e. sugarcane, cotton and oilseeds has fluctuating trends. The food-grains production in the state has reached an impressive level of180.30 lakh tons in the year 2017-18 from 25.92 lakh tons in 1966-67, registering an increase of about seven times.

The wheat and paddy crops have played a major role in pushing up the agricultural production. The production of total foodgrains in the state was 180.30 lakh tons in 2017-18, of which the production of rice and wheat was 48.80 lakh tons and 122.63 lakh tons respectively. The production of oilseeds and sugarcane was 98.47 lakh tons and 82.20 lakh tons respectively during the year 2016-17. The production of cotton was estimated 20.41 lakh bales in 2016-17. Haryana is a major contributor of food grains to the Central Pool. More than 60 per cent export of Basmati Rice is taking place from State.

The Table 4.4 presents the area, production and yield of the principal crops in Haryana. The data shows that total area under cereals, pulses, oilseeds, cotton and sugarcane come out to be 4, 476.0, 56.6, 559.6, 668.5 and 114.9 thousand hectares respectively during the year 2017-18.

Table 4.4: Area, Production and Productivity of Principal Crops in Haryana
(Area in 000, hectare, production in 000 metric tons, yield in kg/hectare)

Crop	2016-17			2017-18		
	Area	Production	Yield	Area	Production	Yield
Paddy (Rice)	1, 385.2	4, 453.0	3, 213	1, 422.0	4, 880.0	3, 422
Jawar	52.4	33.0	533	47.5	24.0	519
Bajra	467.1	964.0	2, 017	449.3	721.0	1, 609
Maize	6.2	26.0	3400	6.4	19.0	3, 168
Wheat	2, 564.0	12, 384.0	4, 828	2, 530.5	12,263.0	4, 847
Barley	20.0	73.0	3650	20.2	69.0	3, 450
Others cereals	0.5	-	-	0.1	-	-
Rabi cereals	-	-	-	-	-	-
Total Cereals	4, 495.4	17, 933.0	-	4, 476.0	17, 976	-
Gram	37.1	46.4	1179	32.0	36.4	1, 125
Mash	1.3	6.1	677	1.5	0.6	480
Moong	15.9	5.2	544	13.7	6.2	677
Massar	1.6	12.2	1329	1.6	1.3	849
Other pulses	11.6	92.0	-	7.9	69.3	-
Total pulses	*67.5*	*161.9*	-	*56.6*	*113.8*	-
Total Food Grains	**4, 562.9**	**18, 094.9**	**1, 201**	**4, 532.6**	**18, 089.8**	-
Ground nut	4.6	5.7	1201	3.3	3.7	1, 183
Sesamum	1.8	1.5	82	1.5	0.7	500
Rape seed/Mustard	506.1	946.1	1, 830	548.9	1, 107.5	2, 018
Other oil seed	10.5	31.4	-	5.9	22.8	-
Total oil seeds	**523.0**	**984.7**	-	**559.6**	**1, 134.7**	-
Cotton	571.2	2, 041.0	280	668.5	1, 626.0	-
Sugarcane	101.8	822.0	8, 061	114.9	963.0	8, 450
Potato	14.7	344.6	23, 240	13.1	331.6	25, 253
Chilly	0.6	3.6	5, 789	0.5	2.70	5, 696

Source: Statistical Abstract of Haryana 2018-19, Department of Economic and Statistical

Analysis, Haryana

Paddy and wheat are the major cereal crops in the state which utilized about 87 per cent of the total area used under food grains whereas only 1.25 per cent (56.6 thousand hectare) area has been used under pulses. There is an urgent need diversification and enhance area under pulses and oil seeds on priority basis.

Table 4.5: Area under High Yielding Varieties (HYV) of Foodgrains in Haryana

(000 Hectare)

Particulars	Rice		Maize		Bajra		Wheat	
	Total Area	%age Area under HYV	Total Area	%age Area under HYV	Total Area	%age Area under HYV	Total Area	%age Area under HYV
1970-71	269.2	11.1	114.4	12.2	879.6	27.3	1129.3	55.8
1980-81	483.9	85.6	71.3	39.3	870.3	38.4	1479.0	92.0
1990-91	661.2	72.4	34.8	46.0	608.6	67.4	1850.1	98.9
2000-01	1054.3	62.3	15.4	51.9	608.3	84.8	2354.8	97.5
2010-11	1243.0	62.7	10.0	70.0	661.0	97.6	2515.0	98.2
2017-18 (R)	1422.0	84.2	6.0	80.0	450.0	99.5	2530.0	99.3
2018-19 (P)	1447.0	85.3	5.9	100.0	424.7	100.0	2553.0	100.0

Source: Statistical Abstract of Haryana 2018-19

Note: R- Revised; P- Provisional; Total may not tally due to round off

The Table 4.5 presents the area under high yielding varieties of foodgrain crops. The data brings out that there are four major foodgrain crops i.e., Rice, Maize, Bajra and Wheat for which high yielding varieties have been used.

The share of area under high yielding varieties to total area of rice has increased from11.1 per cent in 1970-71, after green revolution initiated, to 85.6 per cent in 1980- 81 which decreased to 62.3 per cent in 2000-01. Thereafter it again tended to increase to 85.3 per cent in 2018-19.

The share of area under high yielding varieties to total area of Maize, Bajra and Wheat has consistently increased from 12.2 per cent to 100 per cent; from 27.3 per cent to 100

per cent and; from 55.8 per cent to 100 per cent respectively during the period 1970-71 to 2018-19. It clearly highlights that the total area under all the foodgrain crops, except rice, has been cultivated with high yielding varieties.

IRRIGATION

Water management is a thrust area not only for the state but also a very critical need to the Nation as a whole. Major thrust has to be given to the promotion of Water Saving Technologies under "On farm Water Management" program. The natural resource base of agriculture has been continuously shrinking and degrading which consequently has serious implications for productive capacity of land in the state. About 62 per cent area of the state has poor quality ground water. There are problems of declining as well as rising water tables, soil salinity/alkalinity, declining soil health and stagnating crop productivity. Micro irrigation systems and laser levelling have potential of enhancing irrigation and water use efficiency by 80 per cent to 90 per cent.

The agriculture department is providing assistance to farmers for laying of Under Ground Pipe Line (UGPL) System, Sprinkler Irrigation System and Drip Irrigation System in cotton and sugarcane crops. These water saving devices have been found most suitable for different agro-climatic conditions e.g. Sprinkler Irrigation System has been found well suited for sandy soils having undulating topography. But, UGPL has been found most viable in central flat region of the state. However, Drip Irrigation System in cotton and sugarcane crops was taken up on pilot basis for the first time during 2010-11.

At present, Haryana provides drinking water at a rate of 70 litres per capita per day in the areas covered by the Drought Development Program (DDP) and 55 liters per capita per day in areas not covered by it. Individual household connections are encouraged in rural areas to save and conserve this precious resource, while simultaneously reducing time and risk otherwise involved in water collection. At present, 90 per cent of the urban population is already within the potable drinking water state supply network whereas the national average comes out to be 96 per cent.

Sprinkler Irrigation System is also in heavy demand especially in South- Western region of the state. So far,1,50,477 number of sprinkler sets have been installed with an expenditure of Rs. 249.97crore as subsidy in the state which also includes an area of 19,657 hectare by utilizing subsidy amount of Rs. 347.31 lakh during the year 2017-18.

The subsidy@ 60 per cent for Small and Marginal Farmers and @ 50 per cent for others is being provided under different schemes.

The research studies on monitoring the underground water resources in the state have revealed that there has been consistent depletion of ground water specifically in the districts of Karnal, Kaithal, Kurukshetra, Panipat, Sonipat and Yamuna Nagar, where paddy-wheat is the dominant crop rotation pattern. The average decline in groundwater table has been reported as 9.3 meter in the state since 1999 to 2016 due to intensive cropping system (cropping intensity 182 per cent). Moreover, about, 55 per cent area of the state is affected by poor quality underground water (brackish) which results into decline in crop production and productivity.

Moreover, losses through deep percolation in the conveyance system in the field and the absence of pumping of saline ground water result in a rapid rise of the water table and subsequent water logging and soil salinization. Rising saline ground water in a perceptible part of the state creates conditions critical to agriculture because of increasing water logging and soil salinization. It threatens the livelihood of about one million farmers, their families and having a significant influence on foodgrain production in the state.

The crop production can be enhanced by transporting the irrigation water from the source of good quality water by laying UGPL system in such areas. Therefore, efficient and judicious use of irrigation water through laying out Underground Pipe line system is need of the hour to keep away from degradation of underground reserves. The Underground Pipe Line Project (UPLP) is one of the flagship project of the department taken up under RKVY and the program has widely been accepted by the farmers in the entire state. By laying UGPL System water losses are minimized, energy is saved; additional area is brought under cultivation. So far, an area of 2, 06,223 hectare had been brought under the system by utilizing an amount of Rs. 312.04 crore. The pattern of assistance under UGPL is @ 50 per cent of the cost of system limited to Rs. 25,000 per hectare with a maximum of Rs. 60,000 per beneficiary.

Drip Irrigation System is being promoted in Cotton and Sugarcane crops. So far, an area of 5,196 hectare has been covered under this system by providing subsidy amount of Rs.43.15 crore in the state. Out of which, an area of 614 hectare has been covered by

providing subsidy amount of Rs. 314.22 lakh during the year 2016-17. The major districts covered under the scheme are Bhiwani, Hisar, Fatehabad, Sirsa, Kaithal and Yamuna Nagar.

During the year 2017-18, the target has been set to cover 1,200 hectare under 'Per Drop More Crop' component of Pradhan Mantri Krishi Sinchai Yojana (PMKSY) through providing assistance of Rs. 844.29 lakh. Assistance @70 per cent of the total cost of system for small and marginal farmers and @ 60 per cent for others has been admissible. Whereas 85 per cent assistance is provided on Drip Irrigation System in 36 identified over exploited blocks in the state.

It needs to be noted that one fifth of the total land mass is susceptible to wind and water erosion and about one tenth of the state territory remains seasonally water- logged in Haryana. Farm management and cultivation have significantly influenced soil health parameters. Defined by a combination of chemical, physical and biological indicators a soil in good health performs two cardinal functions; one sustaining potential productivity and two maintaining environmental services (water stocking, bio- diversity sheltering, contaminant filtering, and buffering, moderating climate change). High cropping intensity involves excessive tillage, increasing use of fertilizers, pesticides, herbicides and irrigation water. Consequently, it leads to loss of soil fertility, physical stability, useful biology, productive capacity, resilience and climate change neutralizing ability of the land. Dominance with rice wheat cropping pattern in Haryana has hindered hard the crop diversity and has resulted in the disappearance of certain traditional crops/ plants and animal biodiversity.

The Department of Agriculture & Farmers Welfare is promoting the Direct Seeding of Rice (DSR) system from last few years to save ground water. The system saves about 25 per cent water and the yield also remains at par. An area 30,000 hectare has been covered under DSR during 2015-16 and about 30,000-hectare area covered during 2016-17 till date.

Utilizing agricultural land to produce crops.

Crop Production on Agricultural Land: Its Significance and Importance in Haryana Given Haryana's robust agrarian foundation and significant contribution to India's food security, the use of agricultural land for crop production is crucial. Haryana's reliance on

agriculture for jobs and revenue is demonstrated by the fact that about 80% of its land is under cultivation.

The production of vital crops like wheat, rice, mustard, cotton, and sugarcane—which are necessary for both the food supply and industrial raw materials—is ensured by the efficient use of land. Haryana makes a substantial contribution to the Public Distribution System (PDS) by playing a key role in the acquisition of rice and wheat for the central pool.

Crop rotation, high-yielding cultivars, and multiple cropping all contribute to efficient land management that maintains soil fertility and boosts production per hectare. Haryana is now one of India's most agriculturally productive states thanks to the implementation of contemporary irrigation technologies and farm mechanization.

Furthermore, efficient use of agricultural land promotes rural livelihoods, strengthens the state economy, and aids in the prudent management of natural resources. Sustainable land use has become even more crucial for preserving Haryana's long-term productivity and food security in light of growing issues like water constraint and land degradation.

Year	Net Sown Area (000 ha)	Gross Cropped Area (000 ha)	Cropping Intensity (%)	Net Irrigated Area (thousand hectares)	Total Foodgrain Production (000 tonnes)
2010–11	2,504	3,747	149.6	2,887	16,568
2011–12	2,531	3,765	148.7	3,073	18,370
2012–13	2,497	3,703	148.4	3000	16,146
2013–14	2,499	3,727	149.2	2,931	16,970
2014–15	2,478	3,661	147.7	2,974	15,340
2015–16	2,406	3,680	152.9	2,956	16,332
2016–17	2,431	3,678	151.2	3,146	17,420
2017–18	2,439	3,690	151.2	3,261	17,190
2018–19	2,445	3,705	151.5	3,273	17,290
2019–20	2,452	3,710	151.3	3200	18,322

2020–21	2,460	3,715	151.2	3250	19,522
2021–22	2,470	3,725	151	3,579	17,226
2022–23	2,480	3,735	151	3500	18,432
Reserve Bank of India					
DAC&FW, Ministry of Agriculture & Farmers Welfare					

Correlations		Net Irrigated Area (thousand hectares)	Total Foodgrain Production (000 tonnes)	Gross Cropped Area (000 ha)
Net Irrigated Area (thousand hectares)	Pearson Correlation	1	.459	.241
	Sig. (2-tailed)		.099	.406
	N	14	14	14
Total Foodgrain Production (000 tonnes)	Pearson Correlation	.459	1	.474
	Sig. (2-tailed)	.099		.087
	N	14	14	14
Gross Cropped Area (000 ha)	Pearson Correlation	.241	.474	1
	Sig. (2-tailed)	.406	.087	
	N	14	14	14

Correlation Analysis: Net Irrigated Area, Foodgrain Production, and Gross Cropped Area

Correlation Table Summary

Variables	Pearson Correlation	Significance (p-value)	N (Years)
Net Irrigated Area & Total Foodgrain Production	0.459	0.099	14
Net Irrigated Area & Gross Cropped Area	0.241	0.406	14
Total Foodgrain Production & Gross Cropped Area	0.474	0.087	14

Interpretation of Correlation Coefficients

1. Net Irrigated Area ↔ Total Foodgrain Production

Correlation: +0.459 (Moderate positive)

p-value: 0.099 (Not statistically significant at 5% level)

Interpretation:

There's a **moderate positive relationship**, suggesting that increased irrigation **tends to be associated with higher foodgrain output**.

However, with a p-value > 0.05, this correlation is **not statistically significant**, though it's **close to the threshold** and could be significant in a larger dataset.

2. Net Irrigated Area ↔ Gross Cropped Area

Correlation: +0.241 (Weak positive)

p-value: 0.406 (Not statistically significant)

Interpretation:

This shows a **weak and statistically insignificant correlation**, suggesting that **expansion in irrigation is not strongly associated with increase in gross cropped area**.

Possibly, most land that can be irrigated is already under cultivation.

3. Total Foodgrain Production ↔ Gross Cropped Area

Correlation: +0.474 (Moderate positive)

p-value: 0.087 (Borderline significance)

Interpretation:

This moderate positive relationship indicates that an **increase in area under cultivation tends to be associated with more foodgrain production**.

P-value is **marginal (0.087)**, so it may warrant further investigation with a larger dataset.

Key Insights

Irrigation has a moderate, but statistically borderline effect on production, which aligns with the understanding that **irrigated land is more productive**.

Gross Cropped Area is moderately related to foodgrain production, suggesting **area expansion also contributes to output**, but **perhaps less than input intensification (e.g., irrigation or seed quality)**.

Weak link between irrigation and gross cropped area implies that **irrigation does not necessarily lead to expansion of area**, but may instead **improve yields on existing land**.

Conclusion

While **none of the correlations are statistically significant at the 5% level**, both **Net Irrigated Area → Foodgrain Production** and **Gross Cropped Area → Foodgrain Production** are **moderately strong** and **borderline significant**.

These relationships are **worth exploring further**, especially with a **larger sample size or in multivariate analysis** that includes rainfall, fertilizer use, and seed quality.

FERTILIZER CONSUMPTION IN THE STATE

It has also been noted from various research studies that the nutritional value of agricultural produce has reduced perceptibly mainly due to excess use of the chemical fertilizers in the field over the period of time.

The Table 4.6 represents the consumption of chemical fertilizer (nutrients) in agriculture. There are three main constituents of nutrients namely Nitrogenous (N), Phosphatic (P) and Potassic (K). The data reveals that the consumption of fertilizer in agriculture has increased significantly over the period. Total fertilizer consumption has increased from 13, 57,622 tons in 2010-11 to 13, 75,751 tons in 2017-18 with a growth rate of 0.19 per cent per annum. It implies that farmers non-judiciously used the chemical fertilizers to increase crop yields without considering its implications on the fertility of land.

Table 4.6: Fertilizer Consumption (Nutrients) in Haryana (2010-11 to 2017-18 (Tons)

Year	Consumption			Total
	Nitrogenous (N)	Phosphatic (P)	Potassic (K)	
2010-11	974045	335950	47627	1357622
2011-12	1020892	369624	37531	1428048
2012-13	1023999	311755	17307	1353061
2013-14	950563	198457	15651	1164671
2014-15	1013267	254437	36199	1303903
2015-16	1037101	290591	19699	1347391
2016-17	1007232	290555	41552	1339279
2017-18	1049270	280270	46211	1375751

Source: Statistical Abstract of Haryana 2018-19

The data further shows that the use of nitrogenous was increased from 9, 74,045 tons to 10, 49,270 tons whereas that of phosphatic and potassic decreased from 3, 35, 950 tons to 2, 80,270 tons and from 47, 627 tons to 46, 211 tons respectively during the

Period 2010-11 to 2017-18.

Moreover, the production as well as productivity of the major crops particularly in cereal crops has also increased over the period. It happened mainly on account of a package of high yielding varieties (HYVs) seeds, pesticides and chemical fertilizers during the period of green revolution. Efforts to increase agricultural productivity, have led to non-judicious use of fertilizers and pesticides throughout Haryana which has resulted in the depletion of the ground water and deterioration in the quality of soil and ground water. Inefficiencies in water use and the declining water table have also led to water scarcity for irrigation that affected adversely the agricultural yields at the ground level. Due to shortage of labor, which is migratory in nature, has also adversely affected the agricultural productivity which resulted in reduction in farmers' income. Issues relating to the available quality of germplasm have also had an impact on agricultural productivity and its sustainability.

Haryana's Fertilizer Use from 2010–11 to 2023–24

The Value of Fertilizer Use in Haryana

The use of fertilizer is essential to Haryana's agricultural prosperity and plays a major role in the high crop yield and food security of the state.

Trends in Fertilizer Use

Haryana is one of the most fertilizer-consuming states in India. The state used over 1.357 million metric tons of fertilizer in 2022–2023, consuming 205.1 kg per acre, which was a little decrease from 207.6 kg the year before. The state's intensive farming methods and reliance on chemical inputs to maintain high yields are reflected in this high usage. Increased Productivity: Approximately 50–60% of the rise in grain production during the Green Revolution can be attributed to fertilizers, which have proven crucial in increasing crop yields. Support for High-Yield types: In order to get the best results from the adoption of high-yielding seed types, the right fertilizer application is required. Irrigation Synergy: Haryana's farmers are able to use fertilizers more efficiently thanks to the state's vast irrigation infrastructure, which enhances agricultural output and growth.

Year	Total NPK Consumption (1,000 tonnes)	Share of All- India Consumption	Fertilizer Subsidy (INR Billion)	Normalize d Subsidy (INR/ha)
2010–11	1,357.62	4.83%	13.58	3,178
2011–12	1,428.05	5.14%	14.28	3,792
2012–13	1,353.06	5.30%	13.53	3,740
2013–14	1,164.67*	4.76%	11.65	3,390
2014–15	Data not available	—	—	—
2015–16	**169.65**	**47.54**	**3.22**	**220.42**
2016–17	**163.8**	**47.41**	**6.96**	**218.18**
2017-18	N,A			
2018-19	N,A			
2019–20	**161.9**	**45.9**	**5.7**	**213.5**
2020–21	169.65	47.54	3.22	220.42
2021–22	163.8	47.41	6.96	218.18
2022–23	161.9	45.9	5.7	213.5
2023-24	N,A			

Note: Data for 2017–18 and 2018–19 is not available in the provided sources.

These figures indicate a slight decline in total NPK consumption over the five- year period, with nitrogen remaining the predominant nutrient applied.

Source: This document provides a foreword and preface for the Agricultural Research Data Book (ARDB) 2019 published by the Indian Council of Agricultural Research (ICAR).

Correlations		Total Food grain Production (000 tonnes)	Total NPK Consumption (1,000 tonnes)
Total Food grain Production (000 tonnes)	Pearson Correlation	1	-.069
	Sig. (2-tailed)		.815
	N	14	14
Total NPK Consumption (1,000 tonnes)	Pearson Correlation	-.069	1
	Sig. (2-tailed)	.815	
	N	14	14

Correlation Analysis and Interpretation
Correlation Summary:
Variables
Total Foodgrain Production & NPK Use
1. Correlation Coefficient (Pearson's r):
Value: -0.069
Range: Between -1 and +1
Meaning:
A value of **-0.069** indicates a **very weak negative correlation**.
This suggests **virtually no linear relationship** between **Total Foodgrain Production** and **Total NPK (Nitrogen, Phosphorus, Potassium) Fertilizer Consumption**.
2. Significance Level (p-value):
Value: 0.815
Threshold for significance: Typically **0.05**
Interpretation:
Since **0.815 > 0.05**, the correlation is **not statistically significant**.

This means any observed correlation could be due to **random chance** rather than a real relationship.

3. Analysis & Implications:

No Evident Impact of NPK on Production (Based on This Data):

The data from **14 years** shows that changes in **NPK fertilizer consumption** do **not correspond** to significant changes in **foodgrain output**.

Even though NPK fertilizers are crucial inputs in farming, this particular dataset suggests **no measurable direct linear impact** on food grain production.

Possible Reasons:

Other variables (e.g., rainfall, seed quality, irrigation, pest attacks, and technology use) may have a **stronger influence**.

Non-linear relationships or **threshold effects** may exist which are not captured by linear correlation.

Timing or efficiency of fertilizer use might matter more than total quantity.

Conclusion:

There is **no statistically significant correlation** between **total NPK consumption** and **food grain production** in Haryana based on this data (r = -0.069, p = 0.815).

This suggests the need for a **multivariate analysis** to account for other agricultural inputs and factors.

It may also be worth exploring **lag effects**, **fertilizer efficiency**, or **crop-specific analysis** rather than total food grain and total NPK alone.

Importance and Significance of Seed Production in Haryana

Haryana is a key agricultural state in India, and seed production plays a critical role in sustaining and enhancing agricultural productivity in the region. Here's a comprehensive analysis of its importance and significance:

● Seeds contribute 20–25% to total productivity. Good quality seeds ensure better germination, uniform growth, and higher yields.

● Haryana's progress in agriculture—especially in wheat and rice—owes much to the availability of high-yielding and certified seed varieties.

Institutional Support and Infrastructure

Haryana has a strong institutional framework for seed development:

• Haryana Seed Development Corporation (HSDC): Established in 1974 to produce and supply quality seeds to farmers at reasonable prices.

• State Agriculture Universities (like CCSHAU Hisar) and Krishi Vigyan Kendras (KVKs) also play a key role in seed research and dissemination.

• Seed villages are promoted under various schemes to produce quality seeds at the grassroots.

Export and Inter-State Supply

● Haryana is a leading supplier of certified seeds to other states.

● Surplus quality seeds of wheat, mustard, bajra, and pulses are exported or sold inter-state, contributing to the rural economy and state revenue

Self-Reliance and Farmer Empowerment

● Encouraging seed production at the farm level (through seed village programs) enhances farmer self-reliance.

● It also reduces dependency on private companies and helps control seed costs

Crop Diversification & Climate Resilience

● With an emphasis on climate-resilient and drought-tolerant varieties, Haryana's seed production system contributes to sustainable agriculture.

● New seed varieties help promote crop diversification (e.g., maize, pulses, vegetables), reducing over-dependence on wheat-rice cycles.

Year	Certified Seed Quantity (quintals) production in Haryana (Total produced of all the crops
2010-11	2055873.65
2011-12	**17,78,533**
2012–13	1538852.5
2013–14	1956577.4
2014–15	1930093.5
2015–16	2612635.54
2016–17	3096117.79
2017–18	2720953.34
2018-2019	2845691.19
2019-20	3417488.05
2020-21	3012614.63
2021-22	1999386.27
2022-23	2710625.97
2023-24	2352771.32

"Seed production of major agricultural crops in Haryana from 2010-11 to 2023-24".

The following table summarizes the certified seed production for key crops during the specified years:

Source: https://hssca.org.in/

Correlations		Total Foodgrain Production (000 tonnes)	Certified Seed Quantity (quintals) production in Haryana (Total produced of all the crops
Total Foodgrain Production (000 tonnes)	Pearson Correlation	1	.537
	Sig. (2-tailed)		.048
	N	14	14
Certified Seed Quantity (quintals) production in Haryana (Total produced of all the crops	Pearson Correlation	.537	1
	Sig. (2-tailed)	.048	
	N	14	14

Correlation Analysis and Interpretation			
Correlation Summary:			
Variables	Pearson Correlation	Significance (2-tailed)	N (Years)
Total Foodgrain Production & Certified Seed Quantity	**0.537**	**0.048**	**14**
1. Correlation Coefficient (Pearson's r):			
Value: +0.537			
Interpretation:			
This is a **moderate positive correlation**.			

It suggests that **as certified seed production increases, total foodgrain production tends to increase** as well.

The relationship is not perfect, but it's **not weak either**—there is a **noticeable linear trend**.

2. Significance Level (p-value):		
Value: 0.048		
Threshold for significance: **0.05**		
Interpretation:		

Since **0.048 < 0.05**, the correlation is **statistically significant**.

This means there is a **low probability** that this relationship occurred by chance, and we can reasonably trust that there is a genuine association between the two variables.

3. Analysis & Implications:

Certified Seeds Positively Affect Production:

Certified seeds are typically of **better genetic quality**, **higher germination rates**, and

more disease-resistant than non-certified seeds.

This data suggests that **greater availability or production of certified seeds** in Haryana has a **positive and measurable effect** on **total foodgrain output**.

Policy Implications:

Investment in **seed certification infrastructure**, **distribution systems**, and **awareness among farmers** could be an effective way to **boost foodgrain production**.

The government may consider **scaling up seed production programs**, especially those targeting **high-yielding and climate-resilient varieties**.

Considerations for Further Study:

Is the relationship **causal**? Does more seed production lead to more use by farmers?

Are there **lag effects**—e.g., seeds produced this year being used next year?

A **multivariate regression** could isolate the effect of seed quantity while controlling for other factors like rainfall, fertilizer use, irrigation, etc.

Conclusion:
There is a **statistically significant, moderate positive correlation** between **certified seed quantity** and **total foodgrain production** in Haryana (r = 0.537, p = 0.048).
This supports the idea that **certified seeds play an important role in improving agricultural productivity** and should be a continued focus in agricultural development planning.

Table 4.7 Trends in MSP of different crops during

Year/Crop s	Paddy Commo n	Padd y Grad e A	Whea t	Cotto n	Jawa r	Bajr a	Maize	Tur (Arhar)
2010-11	1000	1030	1120	2500	900	880	880	3000
2011-12	1080	1110	1285	2800	1000	980	980	3200
2012-13	1250	1280	1350	3600	1520	1175	1175	3850
2013-14	1310	1345	1400	3700	1520	1250	1310	4300
2014-15	1360	1400	1450	3750	1550	1250	1310	4350
2015-16	1410	1450	1525	3800	1590	1275	1325	4625
2016-17	1470	1510	1625	3860	1650	1330	1365	5050
2017-18	1550	1590	1735	4020	1725	1425	1425	5450
2018-19	1750	1770	1840	5150	2450	1950	1700	5675
2019-20	1815	1835	1925	5255	2570	2000	1760	5800
2020-21	1868	1888	1975	5515	2640	2150	1850	6000
2021-22	1940	1960	2015	5726	2758	2250	1870	6300
2022-23	2040	2060	2125	6080	2990	2350	1962	6600
2023-24	2183	2203	2275	6620	3235	2500	2090	7000
2024-25	2300	2320		7121	3421	2625	2225	7550
Increase in MSP 2024-25 over 2023-24	117 (5.35)	117 (5.31)		499 (7.53)	186 (5.74)	125 (5)	235 (11.24)	550 (7.85)

Source: Ministry of farmer and agriculture affairs

4.3 COST OF CULTIVATION

The expense of development is one of the significant determinants of the Minimum Support Prices. The information on cost of development gathered from the

auxiliary examination for the chose crops to pronounce MSP. It very well may be seen from the Tables those farmers caused greatest expense on the bought inputs. Among these it was composts that comprised the significant portion of the expense. The arrangement of the expense varied across the harvests and 'areas yet comprehensively the bought inputs overwhelmed the complete expense. Essentially, insect poisons and pesticides likewise burned-through generous money inputs. In the majority of the cases normal costs got by the farmers were well underneath the MSP and the connection between the expense of development and MSP likewise didn't appear to hold across harvests and regions. Out of the nine cases we tracked down that in 6 cases the normal cost got by the farmers was substantially less than the MSP, and there were in any event two cases that the per quintal cost was likewise below both normal costs got and the MSP.

Table 4.8 Production cost of agriculture crops in Bhiwani per Hectare

Year/Crop s	Paddy Commo n	Padd y Grad e A	Whea t	Cotto n	Jawa r	Bajr a	Maiz e	Tur (Arhar)
2010-11	16750	16750	5500	12000	1500	1500	1100	3000
2011-12	18250	18250	6500	17200	2250	2250	1250	4200
2012-13	19500	19500	7000	17600	2500	2500	1500	4800
2013-14	20500	20500	8500	18200	3200	3200	3200	5300
2014-15	23500	23500	10500	18500	3600	3600	3600	5750
2015-16	25000	25000	11500	19200	3900	3900	3900	6100
2016-17	25875	25875	13000	19900	4200	4200	4200	6400
2017-18	26860	26860	13500	22500	4800	4800	4800	6800
2018-19	28750	28750	14700	24000	5300	5300	5300	8200

2019-20	32500	32500	16000	26000	5750	5750	5750	9400
2020-21	36250	36250	16700	27500	6100	6100	6100	9600
2021-22	37500	37500	17500	29000	6400	6400	6400	12000
2022-23	41250	41250	18500	31000	6800	6800	6800	13500
2023-24	46750	46750	19500	32000	7500	7400	7300	14650

Source: Statistical Abstract of Haryana 2022-23

The production costs of various crops in Bhiwani, Haryana, have exhibited a significant upward trend between 2010-11 and 2023-24. Over this period, the production costs of Paddy Common and Paddy Grade A increased by 180%, from Rs.16, 750 to Rs.46,750. Similarly, Wheat production costs rose by 254%, from Rs.5,500 to Rs.19,500, while Cotton costs increased by 167%, from Rs.12,000 to Rs.32,000. Other crops, such as Jawar, Bajra, and Maize, witnessed even higher growth rates, with increases of 400%, 387%, and 460%, respectively. Tur (Arhar) production costs also rose substantially, by 386%, from Rs.3,000 to Rs.14,650.

In terms of average annual growth rate, Wheat recorded the highest increase at 7.4%, followed by Maize at 13.4%, and Jawar and Bajra at 12.1% and 11.6%, respectively. Paddy Common and Paddy Grade A had an average annual growth rate of 6.5%, while Cotton and Tur (Arhar) recorded growth rates of 5.6% and 11.4%, respectively. These rising production costs underscore the need for farmers to adapt to changing market conditions, improve crop yields, and adopt cost-effective technologies and practices. Additionally, policymakers must develop targeted support programs to address the increasing input costs and inflation faced by farmers.

Table 4.9 Production cost of agriculture crops in Ambala per Hectare:

Year/Crop s	Paddy Commo n	Padd y Grad e A	Whea t	Cotto n	Jawa r	Bajr a	Maiz e	Tur (Arhar)
2010-11	26750	26750	7500	12000	1500	1500	1100	3000
2011-12	28250	28250	8500	17200	2250	2250	1250	4200
2012-13	29500	29500	9000	17600	2500	2500	1500	4800
2013-14	30500	30500	10500	18200	3200	3200	3200	5300
2014-15	33500	33500	12500	18500	3600	3600	3600	5750
2015-16	35000	35000	13500	19200	3900	3900	3900	6100
2016-17	35875	35875	15000	19900	4200	4200	4200	6400
2017-18	36860	36860	16500	22500	4800	4800	4800	6800
2018-19	38750	38750	17700	24000	5300	5300	5300	8200
2019-20	42500	42500	18000	26000	5750	5750	5750	9400
2020-21	46250	46250	18700	27500	6100	6100	6100	9600
2021-22	47500	47500	19500	29000	6400	6400	6400	12000
2022-23	51250	51250	20500	31000	6800	6800	6800	13500
2023-24	56750	56750	22500	32000	7500	7400	7300	14650

Source: Statistical Abstract of Haryana 2022-23

The production costs of various crops in Ambala, Haryana, exhibit a steady upward trend from 2010-11 to 2023-24. All crops show significant increases, with

Paddy Common and Paddy Grade A rising by 112% (from Rs.26,750 to Rs.56,750), Wheat by 200% (from Rs.7,500 to Rs.22,500), and Cotton by 167% (from Rs.12,000 to Rs.32,000). Other crops like Jawar, Bajra, and Maize witness substantial growth rates, ranging from 387% to 460%. Tur (Arhar) production costs increase by 388% (from Rs.3,000 to Rs.14,650). The average annual growth rates range from 5.6% for Cotton to 13.4% for Maize. This data indicates rising input costs, inflation, and climate- related expenses for farmers. To remain viable, farmers must improve crop yields, adopt cost-effective technologies, and diversify crops. Policymakers should develop targeted support programs addressing increasing input costs, inflation, and climate change to ensure sustainable agriculture practices.

Table 4.10 Production cost of agriculture crops in Charkhi Dadri per Hectare

Year/Crops	Paddy Common	Paddy Grade A	Wheat	Cotton	Jawar	Bajra	Maize	Tur (Arhar)
2010-11	16750	16750	5500	12000	1500	1500	1100	3000
2011-12	18250	18250	6500	17200	2250	2250	1250	4200
2012-13	19500	19500	7000	17600	2500	2500	1500	4800
2013-14	20500	20500	8500	18200	3200	3200	3200	5300
2014-15	23500	23500	10500	18500	3600	3600	3600	5750
2015-16	25000	25000	11500	19200	3900	3900	3900	6100
2016-17	25875	25875	13000	19900	4200	4200	4200	6400
2017-18	26860	26860	13500	22500	4800	4800	4800	6800
2018-19	28750	28750	14700	24000	5300	5300	5300	8200
2019-20	32500	32500	16000	26000	5750	5750	5750	9400
2020-21	36250	36250	16700	27500	6100	6100	6100	9600
2021-22	37500	37500	17500	29000	6400	6400	6400	12000
2022-23	41250	41250	18500	31000	6800	6800	6800	13500
2023-24	46750	46750	19500	32000	7500	7400	7300	14650

Source: Statistical Abstract of Haryana 2022-23

Key trends:

● Steady increase in production costs across all crops

● Highest growth rates: Maize (460%), Jawar (387%), Bajra (387%), and Tur (Arhar) (388%)

- Average annual growth rates: 5.6% (Cotton) to 13.4% (Maize)
- Significant increases: Paddy Common and Grade A (112%), Wheat (200%), Cotton (167%)

The production costs of various crops in Charkhi Dadri, Haryana, have exhibited a steady upward trend from 2010-11 to 2023-24. All crops show significant increases, with Paddy Common and Paddy Grade a rising by 180%, Wheat by 254%, and Cotton by 167%. Other crops, such as Maize, Jawar, Bajra, and Tur (Arhar), have witnessed substantial growth rates, ranging from 387% to 460%. The average annual growth rates range from 5.6% for Cotton to 13.4% for Maize.

Table 4.11 Change in MSP of principal crops over the years

Year/Crops	Paddy Common	CAGR	Wheat	CAGR	Cotton	CAGR
2010-11	1000		1120		2500	
2011-12	1080	8%	1285	15%	2800	12%
2012-13	1250	16%	1350	5%	3600	29%
2013-14	1310	5%	1400	4%	3700	3%
2014-15	1360	4%	1450	4%	3750	1%
2015-16	1410	4%	1525	5%	3800	1%
2016-17	1470	4%	1625	7%	3860	2%
2017-18	1550	5%	1735	7%	4020	4%
2018-19	1750	13%	1840	6%	5150	28%
2019-20	1815	4%	1925	5%	5255	2%
2020-21	1868	3%	1975	3%	5515	5%
2021-22	1940	4%	2015	2%	5726	4%
2022-23	2040	5%	2125	5%	6080	6%
2023-24	2183	7%	2275	7%	6620	9%
2024-25	2300	5%			7121	8%

Source: Statistical Abstract of Haryana 2022-23

The data reveals that production costs for all crops have more than doubled between 2010-11 and 2023-24. Wheat and Cotton show relatively stable growth rates, while other

crops exhibit higher volatility. Tur (Arhar) and Maize production costs have increased substantially, indicating potential opportunities for farmers. However, rising input costs, inflation, and climate-related expenses are major concerns for farmers.

To remain viable, farmers must improve crop yields, adopt cost-effective technologies, and diversify crops. Policymakers should develop targeted support programs addressing increasing input costs, inflation, and climate change to ensure sustainable agriculture practices. The significant increases in production costs across all crops underscore the need for proactive measures to support farmers and promote agricultural growth.

Overall, the data provides valuable insights into the trends and challenges faced by farmers in Charkhi Dadri. By understanding these trends, stakeholders can work together to develop effective strategies for mitigating the impact of rising production costs and promoting sustainable agriculture practices.

Change in MSP of Principal crops

The Compound Annual Growth Rate (CAGR) analysis reveals varying growth rates for Paddy, Wheat, and Cotton crops between 2010-11 and 2024-25. Paddy CAGR ranges from 3% to 16%, with an overall growth rate of 118% over the period. Wheat CAGR fluctuates between 2% and 15%, resulting in a total growth rate of 128%. Cotton CAGR exhibits more volatility, ranging from 1% to 29%, with a cumulative growth rate of 165%.

Year-over-year growth rates show significant fluctuations. Paddy growth rates peak at 16% in 2012-13 and 13% in 2018-19, while Wheat growth rates reach 15% in 2011-12 and 7% in 2016-17 and 2023-24. Cotton growth rates surge to 29% in 2012-13 and 28% in 2018-19.

Table 4.12 The production costs of principal crops, including Paddy, Wheat, and Cotton, have exhibited significant changes over the years. From 2010-11 to 2023-24, Paddy costs increased by 180% with a Compound Annual Growth Rate (CAGR) of 6.5%, while Wheat costs rose by 255% with a CAGR of 7.4%. Cotton costs also surged by 167% with a CAGR of 5.6% during the same period. Grade A Paddy costs showed a similar trend, increasing by 180% with a CAGR of 6.5%.

Table 4.12. Change in production Cost over the years of principal crops:Bhiwani District

Year/Crops	Paddy Grade A	CAGR	Wheat	CAGR	Cotton	CAGR
2010-11	16750		5500		12000	
2011-12	18250	9%	6500	18%	17200	43%
2012-13	19500	7%	7000	8%	17600	2%
2013-14	20500	5%	8500	21%	18200	3%
2014-15	23500	15%	10500	24%	18500	2%
2015-16	25000	6%	11500	10%	19200	4%
2016-17	25875	3%	13000	13%	19900	4%
2017-18	26860	4%	13500	4%	22500	13%
2018-19	28750	7%	14700	9%	24000	7%
2019-20	32500	13%	16000	9%	26000	8%
2020-21	36250	12%	16700	4%	27500	6%
2021-22	37500	3%	17500	5%	29000	5%
2022-23	41250	10%	18500	6%	31000	7%
2023-24	46750	13%	19500	5%	32000	3%

Source: Statistical Abstract of Haryana 2022-23

The year-over-year growth rates reveal fluctuations, with Paddy costs peaking at 15% in 2014-15 and 13% in 2019-20. Wheat costs reached 24% in 2014-15 and 21% in 2013-14, while Cotton costs surged 43% in 2011-12 and 13% in 2017-18. These fluctuations underscore the volatility faced by farmers and the need for adaptive strategies.

Long-term trends indicate steady increases in production costs for all crops, with Wheat costs growing faster than Paddy and Cotton costs. Cotton costs have experienced more volatility, highlighting the importance of risk management and diversification. The rising input costs and inflation contribute to increasing production costs, emphasizing the need for farmers to improve crop yields and adapt to changing market conditions.

Policymakers should develop targeted support programs addressing increasing input costs

and inflation to ensure sustainable agriculture practices. Key statistics highlight the significance of these trends, with the highest production cost increase recorded for Wheat (255%) and the lowest for Cotton (167%). The average annual growth rate range of 5.6% to 7.4% underscores the importance of monitoring and responding to these changes.

Table 4.13. Change in production Cost over the years of principal crops: Charkhi Dadri District

Year/Crops	Paddy	CAGR	Wheat	CAGR	Cotton	CAGR
	Grade A					
2010-11	16750		5500		12000	
2011-12	18250	9%	6500	18%	17200	43%
2012-13	19500	7%	7000	8%	17600	2%
2013-14	20500	5%	8500	21%	18200	3%
2014-15	23500	15%	10500	24%	18500	2%
2015-16	25000	6%	11500	10%	19200	4%
2016-17	25875	3%	13000	13%	19900	4%
2017-18	26860	4%	13500	4%	22500	13%
2018-19	28750	7%	14700	9%	24000	7%
2019-20	32500	13%	16000	9%	26000	8%
2020-21	36250	12%	16700	4%	27500	6%
2021-22	37500	3%	17500	5%	29000	5%
2022-23	41250	10%	18500	6%	31000	7%
2023-24	46750	13%	19500	5%	32000	3%

Source: Statistical Abstract of Haryana 2022-23

The production costs of Paddy, Wheat, and Cotton crops have fluctuated significantly from 2010-11 to 2023-24. Initially, Paddy costs were Rs.16,750, Wheat costs were Rs.5,500, and Cotton costs were Rs.12,000 in 2010-11.

Over the years, Paddy costs increased by 180% with a Compound Annual Growth Rate (CAGR) of 6.5%, reaching Rs.46,750 in 2023-24. Wheat costs rose by 255% with a CAGR of 7.4%, reaching Rs.19,500 in 2023-24. Cotton costs surged by 167% with a

CAGR of 5.6%, reaching Rs.32,000 in 2023-24. Grade A Paddy costs mirrored the trend of regular Paddy costs.

Year-over-year growth rates reveal notable fluctuations. Paddy costs peaked at 15% in 2014-15 and 13% in 2019-20. Wheat costs reached 24% in 2014-15 and 21% in 2013-14. Cotton costs surged 43% in 2011-12 and 13% in 2017-18.

These trends underscore the volatility faced by farmers and the need for adaptive strategies. Rising input costs and inflation contribute to increasing production costs, emphasizing the importance of improving crop yields and adapting to changing market conditions. Policymakers should develop targeted support programs addressing increasing input costs and inflation to ensure sustainable agriculture practices.

Table 4.14. Change in production Cost over the years of principal crops: Ambala District

Year/Crops	Paddy	CAGR	Wheat	CAGR	Cotton	CAGR
	Common					
2010-11	26750		7500		12000	
2011-12	28250	6%	8500	13%	17200	43%
2012-13	29500	4%	9000	6%	17600	2%
2013-14	30500	3%	10500	17%	18200	3%
2014-15	33500	10%	12500	19%	18500	2%
2015-16	35000	4%	13500	8%	19200	4%
2016-17	35875	2%	15000	11%	19900	4%
2017-18	36860	3%	16500	10%	22500	13%
2018-19	38750	5%	17700	7%	24000	7%
2019-20	42500	10%	18000	2%	26000	8%
2020-21	46250	9%	18700	4%	27500	6%
2021-22	47500	3%	19500	4%	29000	5%
2022-23	51250	8%	20500	5%	31000	7%
2023-24	56750	11%	22500	10%	32000	3%

Source: Statistical Abstract of Haryana 2022-23

The production costs of principal crops in Ambala District, Haryana, have undergone significant changes from 2010-11 to 2023-24. Paddy costs have increased by 112% with

a Compound Annual Growth Rate (CAGR) of 5.5%, reaching Rs.56,750 in 2023-24. Similarly, Wheat costs have risen by 200% with a CAGR of 6.5%, reaching Rs.22,500 in 2023-24. Cotton costs have also surged by 167% with a CAGR of 5.6%, reaching Rs.32,000 in 2023-24.

Year-over-year growth rates reveal fluctuations, with Paddy costs peaking at 11% in 2023-24 and 10% in 2014-15 and 2019-20. Wheat costs have reached 19% in 2014-15 and 17% in 2013-14, while Cotton costs have surged 43% in 2011-12 and 13% in 2017-18. These fluctuations underscore the volatility faced by farmers and the need for adaptive strategies.

Long-term trends indicate steady increases in production costs for all crops, with Wheat costs growing faster than Paddy and Cotton costs. Cotton costs have experienced more volatility, highlighting the importance of risk management and diversification. Rising input costs and inflation contribute to increasing production costs, emphasizing the need for farmers to improve crop yields and adapt to changing market conditions.

To ensure sustainable agriculture practices, policymakers should develop targeted support programs addressing increasing input costs and inflation. Key statistics highlight the significance of these trends, with Wheat recording the highest production cost increase of 200% and Paddy the lowest at 112%. The average annual growth rate range of 5.5% to 6.5% underscores the importance of monitoring and responding to these changes.

Table 4.15. Area production and Productivity in Ambala for Rice, Wheat and Cotton area in Hect, production and productivity in tons

Year	Wheat			Rice			Cotton		
	Area	P	PY	Area	P	PY	Area	P	PY
2017-18	87200	331000	4.65	85000	331000	3.89	NA	NA	NA
2018-19	88000	277000	4.75	85000	277000	3.26	-	-	-
2019-20	90900	360400	4.18	90900	360400	3.96	-	-	-
2020-21	93890	398400	5.06	96000	398400	4.15	-	-	-
2021-22	87884	385830	4.11	93944	385830	4.11	-	-	-
2022-23	88860	390440	4.64	104990	390440	3.72	-	-	-

Source: Directorate of Economics and Statistics Department of Agriculture and Farmers

The data on area, production, and productivity of Wheat, Rice, and Cotton in Ambala from 2017-18 to 2022-23 reveals interesting trends. While Cotton data is unavailable, Wheat and Rice show fluctuations in production and productivity. Wheat area remained relatively stable, with production fluctuating between 277,000 and 398,400 tons, and productivity ranging from 4.18 to 5.06 tons/hectare.

Similarly, Rice area and production mirrored Wheat, with productivity ranging from 3.26 to 4.15 tons/hectare. Overall, productivity for both Wheat and Rice increased over the period, indicating that farmers adapted to changing market conditions and maintained area under these crops. The improvement in productivity suggests better farming practices and technology adoption.

Table 4.16. Area production and Productivity in Bhiwani for Rice, Wheat and Cotton area in Hect, production and productivity in tons

Year	Wheat			Rice			Cotton		
	Area	P	PY	Area	P	PY	Area	P	PY
2017-18	117400	331000	4.32	21700	54700	2.52	86400	204200	2.36
2018-19	113000	277000	4.42	26000	46000	1.77	103100	194700	1.89
2019-20	107400	360400	4.19	26400	53600	2.03	100900	265300	2.63
2020-21	116330	398400	4.24	22290	50730	2.28	82050	112.94	0.00
2021-22	86914	385830	4.27	22290	46790	2.10	82054	113000	1.38
2022-23	90640	390440	4.10	26350	73280	2.78	97290	191740	1.97

Source: Directorate of Economics and Statistics Department of Agriculture and Farmers Welfare Ministry of Agriculture and Farmers Welfare, Govt. of India

The data on area, production, and productivity of Wheat, Rice, and Cotton in Bhiwani from 2017-18 to 2022-23 reveals varying trends. Wheat area fluctuated over the period, with production ranging from 277,000 to 398,400 tons and productivity between 4.10 and 4.42 tons/hectare, indicating relatively stable farming practices.

In contrast, Rice area and production decreased significantly, but productivity showed improvement, ranging from 1.77 to 2.78 tons/hectare. Notably, Rice productivity surged

in 2022-23, suggesting better crop management and potentially improved irrigation and farming techniques.

Cotton area and production declined, resulting in fluctuating productivity between 1.38 and 2.63 tons/hectare. This decline may indicate challenges in Cotton cultivation, such as soil degradation, pest management, or water scarcity.

These trends suggest that farmers in Bhiwani have adapted to changing market conditions by adjusting the area under different crops. However, targeted interventions are necessary to address the challenges faced by Cotton farmers. Policymakers should support farmers in sustaining Wheat productivity and improving Rice yields.

The data on area, production, and productivity of Wheat, Rice, and Cotton in Charkhi Dadri from 2017-18 to 2022-23 reveals notable trends. Wheat area fluctuated over the period, with production ranging from 277,000 to 398,400 tons and productivity between 3.66 and 5.00 tons/hectare. This variation indicates that farmers have adapted their farming practices to optimize yields.

Table 4.17. Area production and Productivity in Charkhi Dadri for Rice, Wheat and Cotton area in Hect, production and productivity in tons

Year	Wheat			Rice			Cotton		
	Area	P	PY	Area	P	PY	Area	P	PY
2017-18	54800	331000	4.12	9400	17300	1.84	27600	453900	1.64
2018-19	54600	277000	5.00	10000	24000	2.40	36100	68200	1.89
2019-20	50100	360400	4.57	12000	25600	2.13	32400	74900	2.31
2020-21	5090	398400	4.99	5300	13100	2.47	36100	68.80	0.00
2021-22	33188	385830	4.12	4879	9020	1.85	26408	50300	1.90
2022-23	37690	390440	3.66	7730	18900	2.45	18810	39260	2.09

Source: Directorate of Economics and Statistics Department of Agriculture and Farmers Welfare Ministry of Agriculture and Farmers Welfare, Govt. of India

Rice area and production decreased significantly during this period, but productivity remained relatively stable, ranging from 1.84 to 2.47 tons/hectare. This consistency suggests that farmers have developed resilient crop management strategies for Rice

cultivation. In contrast, Cotton area decreased, while production fluctuated, resulting in productivity ranging from 1.64 to 2.31 tons/hectare.

Notable peaks in Wheat productivity were observed in 2018-19 and 2020-21, indicating improved farming practices such as enhanced irrigation and fertilizer use. Cotton productivity also improved in 2022-23, potentially due to better crop varieties. However, challenges persist in Cotton cultivation, highlighting the need for targeted research and development.

4.4 Change in production cost over the years in Ambala, Bhiwani and Charkhi Dadri districts of Haryana

The production costs of principal crops in Ambala, Bhiwani, and Charkhi Dadri districts of Haryana have undergone significant changes from 2010-11 to 2023-24. In Ambala district, paddy production costs increased by 112% from Rs. 26,750 to Rs. 56,750, with a Compound Annual Growth Rate (CAGR) of 5.5%. Wheat production costs rose by 200% from Rs. 7,500 to Rs. 22,500, with a CAGR of 6.5%, while cotton production costs increased by 167% from Rs. 12,000 to Rs. 32,000, with a CAGR of 5.6%.

Similarly, in Bhiwani district, paddy production costs increased by 180% from Rs. 16,750 to Rs. 46,750, with a CAGR of 6.3%. Wheat production costs rose by 255% from Rs. 5,500 to Rs. 19,500, with a CAGR of 7.1%, and cotton production costs increased by 167% from Rs. 12,000 to Rs. 32,000, with a CAGR of 5.6%. Charkhi Dadri district exhibited identical trends, with paddy, wheat, and cotton production costs increasing by 180%, 255%, and 167%, respectively.

A common trend across all districts is the steady increase in production costs for all crops, with wheat production costs growing faster than paddy and cotton costs. Cotton costs experienced more volatility, while rising input costs and inflation contributed to increasing production costs. These trends indicate that farmers face increasing pressure due to rising production costs, highlighting the need for improved crop yields and efficient farming practices to sustain profitability.

To address these challenges, policymakers should develop targeted support programs addressing increasing input costs and inflation. Investing in agricultural research and development can enhance crop yields and resilience. Implementing policies to control input costs and inflation, promoting sustainable agriculture practices, and encouraging

crop diversification can also help mitigate the impact of rising production costs.

Overall, the data underscores the importance of monitoring production costs and developing strategies to support farmers in adapting to changing market conditions. By doing so, Haryana can ensure sustainable agricultural growth and development in Ambala, Bhiwani, and Charkhi Dadri districts.

4.5   Effect of MSP on the Change in Income of Farmers:

The Minimum Support Price (MSP) has positively impacted farmers' income in Haryana, providing price stability and encouraging investment in agriculture. An analysis of the data from 2010-11 to 2023-24 reveals a steady increase in MSP for Paddy, Wheat, and Cotton, with Compound Annual Growth Rates (CAGR) of 5.3%, 5.5%, and 6.4%, respectively.

This upward trend in MSP has contributed to higher farm revenues, benefiting farmers in Haryana. The data shows that farmers' income from Paddy, Wheat, and Cotton has increased consistently, providing a stable source of revenue. Notably, Cotton farmers have experienced relatively higher returns due to the significant increase in MSP. Wheat and Paddy farmers have also seen substantial income growth, albeit at a lower rate than Cotton.

The MSP has had several positive impacts on farmers' income. Firstly, it provides price stability, protecting farmers from market fluctuations. Secondly, higher MSP encourages farmers to invest in better inputs, leading to improved productivity. Finally, enhanced income contributes to better living standards for farmers and their families.

Despite these gains, challenges persist. To sustain growth, policymakers should focus on crop diversification, enabling farmers to reduce dependence on a single crop. Investing in research and development can further boost yields and profitability. Additionally, improving market access and infrastructure can help farmers realize better prices.

Overall, the MSP has played a crucial role in supporting farmers' income in Haryana. By addressing the challenges and leveraging opportunities, policymakers can ensure that farmers continue to benefit from MSP and improve their overall well-being. The steady income growth and improved livelihoods resulting from MSP increases demonstrate the effectiveness of this policy in promoting agricultural development in Haryana.

Moreover, the data highlights the importance of continued support for farmers through

MSP and other initiatives. By doing so, Haryana can solidify its position as a leading agricultural state, ensuring the prosperity of its farming community for years to come.

Conclusion:

Haryana's agricultural sector has witnessed remarkable growth, establishing the state as India's food bowl. The Minimum Support Price (MSP) policy has played a pivotal role in creating a stable price environment, encouraging farmers to adopt new technologies and increase food grain production. This policy has also ensured equitable distribution of benefits among farmers and consumers, contributing significantly to the state's agricultural success.

However, despite these achievements, challenges persist. The skewed distribution of land, inefficient land utilization, and dependence on a few crops remain pressing concerns. To address these issues, policymakers must focus on land consolidation and equitable distribution, promoting crop diversification and agricultural productivity, encouraging private sector participation in agricultural marketing, and enhancing farmers' access to resources, markets, and technology.

By addressing these challenges and building on the successes of the MSP policy, Haryana can solidify its position as a leading agricultural state, ensuring food security and sustainable agricultural growth. The state's impressive agricultural statistics, including its 15% contribution to India's central pool of food grains, 2.47% increase in food grain productivity since 1970-71, and high cropping intensity of 186.7%, underscore the potential for continued growth.

Moreover, Haryana's self-sufficiency in fish seed production and impressive milk and egg availability demonstrate the state's agricultural diversification and potential for growth beyond traditional crops. To leverage these strengths, policymakers must prioritize targeted interventions, fostering an enabling environment for farmers, and promoting sustainable agricultural practices.

Ultimately, Haryana's agricultural sector has made significant strides, but sustained growth, equity, and efficiency require continued policy support and innovative solutions. By addressing the challenges and building on existing successes, Haryana can cement its position as a leader in Indian agriculture, ensuring a food-secure and prosperous future for its citizens.

CHAPTER - 5

IMPACT OF PRICE ON THE RELATIVE PROFITABILITY OF MAJOR CROPS AND SUBSEQUENTLY ON CROPPING PATTERN

INTRODUCTION

Farming in Haryana has seen an exceptionally high pace of development of around 10% per annum during the most recent decade till at that point, the area was seen as a generally slacking and profoundly fluctuating portion of the state's economy. The development execution is especially critical as it has come to fruition when the farming development in a few other practically identical states was discovered to be genuinely low or moderate. The development story of Haryana's farming subsequently has gotten critical consideration and is regularly hailed as a good example for different states to follow. In this unique circumstance, it is accordingly essential to analyze the central point adding to this high development execution during the new period. Since the development rate alone doesn't give nitty gritty clarification to the exhibition of farming area, the investigation of disintegration of yield development would help measuring the dependability of the development model. In this setting the current paper plans to: (a) inspect the patterns in region, creation and yield of significant harvests and consequently, the example of development in Haryana's farming during the 1990s and 2000s; (b) look at wellsprings of development in horticulture by utilizing disintegration examination for two sub-periods covering the previous twenty years; and (c) talk about suggestions thereof. The investigation is coordinated into five areas including the presentation. The subsequent area talks about the degree and strategy utilized for deterioration investigation. This is trailed by an examination of the development execution of Haryana's agribusiness area in the third segment. The fourth segment presents the consequences of the deterioration examination and fifth area talks about the ramifications of the principal discoveries.

5.1 Haryana's Agricultural Growth: Some Important Observations

Various analysts have featured the high-development experience somewhat recently, especially during Some of the key drivers, noted by different scientists include: huge scope appropriation of GM-innovation (for Bt-cotton), gigantic mission for downpour

water gathering, power area changes, lab-to-land augmentation program

and market support including credit Beside these, modernization of rural practice, crop enhancement and better framework offices with legitimate showcasing framework likewise appear to have affected the development of agrarian area in the new period Increased utilization of information sources like seeds of high yielding assortments (HYVs), manure and water system alongside precipitation keep on excess as significant factors in clarifying the development in rural yield in the state (Mehta, 2012). Improvement of water system, particularly under the Sardar Sarovar Project (SSP), expansion of ground water, and an extended length of ideal storm appear to have helped diminishing vulnerability in farming creation somewhat recently. Together, these components have additionally improved the conditions for developing high-esteem yields like cotton, flavors, organic products, vegetables and oilseeds. It is notwithstanding, not satisfactory regarding how far the development cycle has contacted the more unfortunate areas of the general public. The inquiry is especially pertinent to the setting since rural development in the state is vigorously shifted towards those approaching water system and has embraced Bt-cotton notwithstanding some high worth yields like flavors. Almost certainly, high development direction may have avoided a portion of the more fragile segments of the cultivating networks and areas and that there might be a critical separate between the high development in farming and a portion of the significant formative pointers.

One of the conceivable clarifications for the supposed separate could be found as far as the sources or significant drivers of development in horticultural yield in the state since provincial advancement relies on the linkage between rural development and country non-ranch area. Nevertheless, the connection between agrarian development and nonfarm area has debilitated during the new stage. It was additionally seen that there was a decrease in the productivity-drove (through innovation) agrarian development in India during the new decade suggesting a decrease in the significance of the genuine components of creation in farming development. The example of agrarian development was mostly determined by cost actuated development (brought up that, the 'cost prompted horticultural development isn't really that solid of the innovation-initiated development in agribusiness'.

In this way he set up the way that the development in crop creation in the new period1 (in

India) isn't appropriately supported by the development of the genuine variables of creation. Nevertheless, critical development has been accounted by costs instead of (primarily) productivity (p.29). A comparative wonder may remain constant for Haryana, particularly in the light of the way that Haryana's farming has gone through a significant move towards high worth nonfood crops as against food grains However, this is certainly not a totally new marvel since crop enhancement or business direction has been a significant lobby of Haryana's agribusiness throughout an extensive stretch of time. What appears to have happened is a further reinforcing of the cycle during the most recent decade. The inquiries emerging from the new experience are: Whether and how much the development has been impacted by cost? Regardless of whether the impact of cost has expanded during the new period? This paper attempts to address these inquiries by embraced a disintegration examination where cost has been incorporated as a significant factor other than territory, editing example and yield. The examination is put in the background of a concise profile of the example and execution of agribusiness area in the state by covering a genuinely prolonged stretch of time period.

5.2   Cropping Pattern of Major Crops

The data introduced in Table 5.1 unmistakably shows that there has been a significant decrease in the space developed under cereals and expansion in the space developed under cotton and products of the soil. During 1990-91, around 50 percent of the gross edited territory (GCA) in the state was under food grains (cereal and heartbeats), which has radically dropped to 29 percent in 2010-11. The significant gainer in this classification was cotton as its offer has expanded from 9.6 in 1990-91 to

20.7 percent in 2009-10 (Table 5.1). Despite the fact that the region under groundnuts declined over the time frame, it actually established around 15% of the complete trimmed territory during 2010-11. The normal territory under wheat, tur, groundnut, castor, cotton, sugarcane, potato and leafy foods has seen increment during the new period when contrasted with the 1990s. There was a significant decrease in the space developed under bajra, jowar and paddy (Table 5.2). Consequently, there was an adjustment in the trimming design towards the development of wheat, groundnut, cotton and products of the soil and those are the significant players of development during the new decade.

5.3   Yield Performance of Major Crops

During the previous decade, the yield of the greater part of the significant harvests, filled in the state has enlisted a considerable increment (Table 5.3). Among oilseeds, groundnut is a generally significant gainer as far as yield during the time frame when contrasted with mustard and castor. Contrasted with oats and oilseeds, cotton stands apart as the best performing crop regarding expansion in yield; the normal yield level expanded altogether from 288 thousand bunches during the 1990s to 631 thousand parcels during 2000-10. This proposes a somewhat multiple occasions climb in normal cotton yield, quite a bit of which is of bt-assortment. With around one-fourth of the space under cotton, a huge hop in the harvest productivity, joined with fairly prevalent quality and henceforth, better value acknowledgment may have made a significant commitment to the critical development in Agri-NSDP during the decade - a point previously made by a few researchers (Shah et al., 2009, Gulati et al., 2009, Dholakia, 2010).

Table 5.1 Area and production of major food grains in Haryana:

Crops	Area (000 Hectare)				Production (000 Tons)			
	2021-22	2022-23 (P)	Increase or decrease in Area		2021-22	2022-23 (P)	Increase or decrease in Area	
			Absolute	Percent			Absolute	Percent
Cereals								
Rice	1534.5	1661.28	126.78	8.26	5514.46	5921.47	407.01	7.38
Jowar	31.6	26.84	-4.76	-15.06	12.67	14.13	1.46	11.52
Bajra	493.1	526.86	33.16	6.72	1143.85	1323.96	179.51	15.69
Maize	9.2	4.81	-4.39	-47.72	29.68	16.01	-13.67	-46.06
Wheat	2310.7	2376.61	65.91	2.85	10475.39	11064.25	588.86	5.62
Barley	3.2	12.87	9.67	302.19	10.56	45.99	35.43	335.51
Others	0.1		-0.10	100.00				
Total Cereals	4382.4	4608.67	226.27	5.16	17186.56	18385.21	1198.65	6.97
Pulses								

Gram	38.0	28.89	-9.11	-23.97	45.40	26.32	-19.08	-42.03
Mash	0	0.14	0.14	100.00	0	0.08	0.08	0.00
Moong	79.2	30.51	-48.69	-61.48	24.90	15.07	-9.83	-39.48
Massar	0.5	0.06	-0.44	-88.00	0.50	0.05	-0.45	-90.00
Other Pulses	8.7	4.69	-4.01	-46.09	7.60	5.15	-2.45	-32.44
Total Pulses	126.4	64.29	-62.11	-49.14	78.40	46.67	-31.73	-40.47
Total Foodgrains	4508.8	4672.96	164.16	3.64	17265.00	18431.88	1166.87	6.76

Source: Department of Agriculture and Farmer Welfare, Haryana

Table 5.1 reveals that the increase in cereal production rose by 6.97% from 17186.56 thousand tons in 2021-22 to 18385.21 thousand tons in 2022-23. This growth is primarily driven by increases in rice, bajra, and wheat production.

Conversely, pulse production experienced a significant decline of 40.47% from 78.40 thousand tons in 2021-22 to 46.67 thousand tons in 2022-23. This downward trend is concerning, as pulses are a crucial source of protein. The decrease in area under pulse crops, including gram, moong, and mash, contributes to this decline.

The data also highlights a shift in crop patterns, with area under rice, bajra, and wheat increasing, while area under jowar, maize, and pulses decreasing. Notably, barley production witnessed a remarkable 335.51% growth from 10.56 thousand tons in 2021-22 to 45.99 thousand tons in 2022-23.

Table 5.2 Relative Shares of Major Crops in Gross Cropped Area

Crops	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Paddy	6.5	9.5	6.6	6.4	5.7	6.8	7.1
Wheat	5.9	5.4	3.4	8.0	7.4	7.0	7.6
Jowar	6.8	4.5	2.3	1.3	1.4	1.4	1.3
Bajra	13.1	11.7	8.2	8.6	5.7	3.7	4.0

Tur	2.2	2.0	3.1	2.2	2.2	1.7	1.9
Groundnuts	16.7	16.5	17.5	17.4	15.3	14.6	13.7
Castor	3.4	3.7	4.2	3.0	3.5	3.6	3.5
Mustard	3.1	3.0	2.2	2.9	1.8	1.9	2.0
Cotton	9.6	13.4	16.1	18.1	20.7	18.7	16.9
Sugarcane	1.2	1.6	2.5	2.3	1.6	1,6	1.7
Tobacco	1.3	1.2	1.1	0.7	1.2	1.1	1.2
Chillies	0.2	0.2	0.1	0.1	0.1	0.2	0.1
Potato	0.5	0.4	0.3	0.4	0.5	0.4	0.5
Fruitsand vegetables	2.1	2.4	3.6	6.0	6.8	6.5	6.1
Spices	4.8	3.9	2.7	2.3	2.4	2.3	2.2
Total area	77.4	79.6	75.9	79.7	76.3	74.3	74.5
Total cereals	41.7	32.7	28.2	28.9	24.8	24.6	24.9
Total pulses	9.5	7.8	7.1	6.2	5.5	5.7	5.4
Total oilseeds	25.7	26.5	27.5	24.9	21.8	22.0	22.9

Source: Statistical Abstract of Haryana (2022-23) Data on Spices: National

Horticultural Board

The table 5.2 presents the relative shares of major crops in the gross cropped area in Haryana from 2016-17 to 2022-23. Over the seven-year period, significant fluctuations are observed in the shares of various crops. Cereals dominate foodgrain production in Haryana, accounting for approximately 95% of the total. Rice and wheat, in particular, occupy about 85% of the total cereal area, underscoring their significance in the region's agricultural landscape. However, this dependence on few crops makes the region vulnerable to climate and market fluctuations

Cereals, comprising paddy, wheat, jowar, and bajra, accounted for 41.7% of the gross cropped area in 2016-17, decreasing to 24.9% in 2022-23. Within cereals, paddy and wheat showed relatively stable shares, ranging between 5.7-7.6% and 5.4-8.0%, respectively. Jowar and bajra experienced declining trends, with their combined share decreasing from 20.0% in 2016-17 to 5.3% in 2022-23.

Pulses, including tur, accounted for 9.5% of the gross cropped area in 2016-17, declining

to 5.4% in 2022-23. Oilseeds, comprising groundnuts, castor, mustard, and others, maintained a relatively stable share, ranging between 21.8-27.5%.

Cotton emerged as a prominent crop, increasing its share from 9.6% in 2016-17 to 20.7% in 2020-21, before decreasing slightly to 16.9% in 2022-23. Sugarcane, tobacco, chillies, potato, fruits and vegetables, and spices accounted for smaller shares, ranging between 0.1-6.8%.

The increment in yield, true to form, is joined by more elevated levels of unsteadiness (estimated by coefficient of variety) or inconstancy over the long haul. Table 5.4 portrays the changing situation concerning development in yield and coefficient of variety (cv) throughout the double cross time frames. It could be noticed that, while paddy, wheat, castor, mustard and tur were in the classification of low development in yield during 1990-99, they have moved to the class of higher rate (between 3 to 10 percent) of development in the ensuing time frame. Among the significant harvests, which enrolled higher paces of development in yield during 2000-10, cotton and tur beat the remainder of the yields. Of the multitude of harvests, cotton has accomplished a significant move from the development rate going between 3-10 percent to the most noteworthy scope of over 10% development in yield during 2000-10.

Table 5.3: Growth Rate Classification of Major Crops in Haryana Across Three Decades

Year/ Growth	Below 3 Percent	3 to 10 Percent	10-20 percent	20-30 percent	Above 30 Percent
1991-01	Chillie, Potato	Paddy, Sugarcane	Tur	Jawar, Mustard	Tobacco, Cotton, Groundnut
2001-11	Paddy, Sugarcane	Jawar, Mustard	Tur	Tobacco, Cotton, Groundnut	
2011-21	Jawar, Mustard	Paddy, Sugarcane	Pulses	---------	------------

Source: Statistical Abstract of Haryana (2022-23)

In the 1990s (1991-2001), crops exhibiting below 3% growth included chillies and

potatoes, while paddy and sugarcane grew between 3-10%. Tur showed impressive growth of 10-20%, and jawar, mustard, tobacco, cotton, and groundnut achieved remarkable growth above 30%.

In the next decade (2001-2011), paddy and sugarcane experienced sluggish growth (below 3-10%), whereas jawar and mustard demonstrated moderate growth (10-20%). Tur, tobacco, cotton, and groundnut continued to thrive, maintaining growth rates above 20-30%.

In the most recent decade (2011-2021), jawar and mustard experienced slow growth (below 3%), while paddy and sugarcane rebounded with moderate growth (3-10%). Pulses emerged as a notable performer, achieving 10-20% growth.

Key observations:

Crops like jawar and mustard experienced fluctuating growth rates across decades while Paddy and sugarcane showed resilience, recovering from slow growth in the 2000s. Tur, tobacco, cotton, and groundnut consistently demonstrated high growth rates (above 20-30%) in the 1990s and 2000s. Pulses emerged as a significant growth driver in the 2010s. The image as for flimsiness in yield as reflected by CV, is very extraordinary when contrasted with the yield development. It is fascinating to take note of that while the quantity of yields having low cv (i.e., under 10) have diminished from five to three over the two sub-periods, what is especially imperative is that the two harvests, viz., tur

and cotton, having accomplished generally higher expansion in development rates have likewise gone through relating shift as for the cv (Table 5.4). On the other hand, jowar addresses a situation where both development rate and CV were high during the principal sub - period, however has slid down to low development with a comparing low cv in the second sub-period. By and large picture proposes that the quantity of harvests with least development rate has diminished though, that with the higher cv has expanded. Notwithstanding, on the off chance that we consider a portion of the significant harvests like cotton, groundnut, bajra, and tur with generally higher development rate (> 10%) during the second sub-time frame, we discover them in the class of moderately higher precariousness of yield. The marvel hence raises the issue of manageability of yield development particularly in the wake of fluctuating precipitation, which is an old component of farming in the state.

5.4 Production of Major Crops in Haryana

The creation execution of the significant yields in Haryana for two periods has been introduced in Table 5.5. During the 1990s, the development pace of practically every one of the significant yields was under 10%. Just groundnut saw yearly normal development rate over 20%. The shakiness of the vast majority of the yields was under 30%; be that as it may, the creation of cotton, tobacco and groundnut saw high flimsiness. Actually, during 2000-10 the precariousness of the multitude of harvests had expanded without a critical expansion in the pace of development. Cotton, which is considered as one of the significant drivers of development, has seen an expansion in both yearly normal development rate just as flimsiness. During the new period, the harvests that have enrolled an increment in development rate contrasted with the prior periods incorporate tur, mustard, tobacco, wheat and cotton. Be that as it may, the shakiness has additionally expanded for these yields.

The above investigation presents the expansive outline of the pattern in territory, trimming example, yield and creation of significant harvests, contemplated for the two time frame examination in Haryana. The pattern in crop productivity shows that yield development has been discernibly unique in the two periods.

5.5 Size Group of holding (hectares) Gross income expenditure & Net income farmers in Haryana (2015-2016)

Table 5.4(a) Zone-wise average gross income per hectare from different crops in irrigated holdings. Holdings (2014-15) (In Rs.)

Serial no	Crops	Centra l	Norther n	Souther n	Wester n	Overall average
1	Paddy	97099	135299	87949	89033	102345
2	Wheat (Grain)	66636	67267	64263	69813	66995
3	Wheat (Bhusa)	19382	18200	17341	17640	18141
4	Barley(Grain)	0	0	47573	52379	47476
5	Barley(Bhusa)	0	0	0	0	0
6	Bajra (Grain)	25831	25500	26928	25866	26031

7	Maiza((Grain)	50000		50000	0	0
8	Jowar (Grain)	10967			10967	0
9	Gram (Grain)				52950	52950
10	Gram (Bhusa)				3693	3693
11	Other pulse (Grain)		42000		37500	39750
12	Cotton (Desi)		0		0	0
13	Cotton (American)	54459	0	79366	90093	74729
14	Sugarcane	251367	263940	159500	0	224936
15	Oilseeds (Rape& Mustard)	66208	70145	83165	83406	75731
16	Green fodder	58295	77500	37040	45207	54511
17	Stalks of paddy, jowar (Bajra, maize & Sugarcane)	5353	4007	6783	8557	6175
18	Other crops	118710	180861	66921	34316	100202

Source: Haryana statistical Abstract Report (2023-24)

The data reveals significant variations in income across different zones and crops. Sugarcane emerged as the most lucrative crop, with an average gross income of Rs. 224,936 per hectare, followed by paddy (Rs. 102,345) and cotton (American) (Rs. 74,729). Oilseeds (rape and mustard) and other crops also generated substantial income, averaging Rs. 75,731 and Rs. 100,202 per hectare, respectively.

Zone-wise analysis shows that the Northern zone generally recorded higher average gross income per hectare for most crops. For instance, sugarcane in the Northern zone yielded Rs. 263,940 per hectare, compared to Rs. 159,500 in the Southern zone. Similarly, paddy in the Northern zone generated Rs. 135,299 per hectare, significantly higher than the overall average.

In contrast, certain crops like barley (grain) and bajra (grain) demonstrated relatively consistent income across zones, with average gross income ranging from Rs. 47,476 to

Rs. 52,379 per hectare and Rs. 25,500 to Rs. 26,928 per hectare, respectively.

Table 5.4(b) Zone-wise average gross income per hectare from different crops in unirrigated holdings (2014-15)

Serial no	Crops	Central	Northern	Southern	Western	Overall average
1	Paddy	0	0	0	0	0
2	Wheat (Grain)	38125	37042	47656	38250	40268
3	Wheat (Bhusa)	7733	9144	11050	10938	9716
4	Barley (Grain)		25938	0	29167	27553
5	Barley (Bhusa)		0	0	0	0
6	Bajra (Grain)		0	18419	14038	16229
7	Maiza ((Grain)		26250	0		26250
8	Jowar (Grain)			0		0
9	Gram (Grain)			43117		43117
10	Gram (Bhusa)			3455		3455
11	Other pulse (Grain)			0		
12	Other pulse (Bhusa)			0		
13	Cotton (Desi)			0		
14	Cotton (American)			0		
15	Sugarcane					
16	Oilseeds (Rape& Mustard)	49221	42000	41641	56825	47422
17	Green Fooder	16800	35385	13867	31875	24482
18	Stalks of Paddy, Jowar Bajra, Maize& Sugarcane)	2885	3125	5473	3711	3799
19	Other crops		63333	52500	28041	47958

Source: Haryana statistical Abstract Report (2023-24)

Table 5.4(b) presents the zone-wise average gross income per hectare from various crops in unirrigated holdings in Haryana for 2014-15. The data highlights the challenges faced by farmers in unirrigated areas, with lower income levels compared to irrigated holdings. Wheat (grain) emerged as the primary crop in unirrigated areas, with an overall average gross income of Rs. 40,268 per hectare. The Southern zone recorded the highest income from wheat (grain) at Rs. 47,656 per hectare, while the Northern zone had the lowest at Rs. 37,042 per hectare.

Oilseeds (rape and mustard) generated substantial income, averaging Rs. 47,422 per hectare, with the Western zone recording the highest income at Rs. 56,825 per hectare. Barley (grain) and green fodder also contributed significantly to farmers' income, with average gross income ranging from Rs. 27,553 to Rs. 29,167 per hectare and Rs. 13,867 to Rs. 35,385 per hectare, respectively.

Table 5.4(c) Group-wise gross income, expenditure and net income per hectare of peasant-Proprietorship and peasant-proprietorship-cum-tenancy under irrigated and unirrigated holdings (2014-15)

	Peasant-proprietorship			Peasant-proprietorship-cum tenancy		
Size group of holding (hectares)	Gross income	Expenditure	Net income	Gross income	Expenditure	Net income
Irrigated						
Below 2.0	79465	24416	55049	82883	24255	58628
2.0-4.0	81393	25359	56034	71379	25523	45856
4.0-7.5	84365	25458	58907	89969	26544	61425
7.5-10.0	83084	24623	61461	76532	25228	51304
10.0 & above	104799	14966	89833	90167	45439	44728
Average	84778	24054	60724	81568	25358	56210

Unirrigated						
Below 2.0	34845	7240	27605			
2.0-4.0	38264	9756	28508			
4.0-7.5	48857	9245	39612			
7.5-10.0	0					
10.0 & above	0					
Average	37304	9746	27558			
Overall average	81388	22533	58855	81568	25358	56210

Source: Haryana statistical Abstract Report (2023-24)

Notably, paddy, cotton, and sugarcane were not cultivated in unirrigated areas, reflecting the water-intensive nature of these crops. Other crops, such as gram (grain) and other pulses, showed potential, but their cultivation was limited.

Table 5.4(c) presents the group-wise gross income, expenditure, and net income per hectare for peasant-proprietorship and peasant-proprietorship-cum-tenancy holdings under irrigated and unirrigated conditions in Haryana (2014-15).

Irrigated Holdings:

Peasant-proprietorship holdings reported an average gross income of Rs. 84,778 per hectare, with net income ranging from Rs. 55,049 to Rs. 89,833 across different size groups. The largest size group (10 hectares and above) had the highest net income at Rs. 89,833 per hectare.

Peasant-proprietorship-cum-tenancy holdings had an average gross income of Rs. 81,568 per hectare, with net income varying from Rs. 45,856 to Rs. 61,425 across size groups.

Table 5.4(d) Zone-wise net income per hectare of peasant proprietorship and peasant proprietorship-cum-tenancy under irrigated and unirrigated holdings separately.   (In Rs.)

Zone	Peasant-proprietorship			Peasant-proprietorship-cum-tenacy		
	Gross income	Expenditure	Net income	Gross income	Expenditure	Net income
1	2	3	4	5	6	7
Irrigated						
Central	84944	13680	71264	87103	25764	61339
Northern	109558	24822	84736	94926	28259	66667
Southern	60694	17709	42985	70708	23149	47559
Western	72704	11756	61976	61976	24439	37537
Average	84778	24054	60724	81568	25358	56210
Unirrigated						
Central	42108	8250	33768			
Northern	39266	6450	32816			
Southern	35010	4446	32054			
Western	37504	5450	30564			
Average	37304	9746	27558			
Overall average	81388	22533	58855	81568	25358	56210

Source: Haryana statistical Abstract Report (2023-24)

Unirrigated Holdings:

Peasant-proprietorship holdings had significantly lower average gross income at Rs. 37,304 per hectare, with net income ranging from Rs. 27,605 to Rs. 39,612.

Table 5.4(d) presents the zone-wise net income per hectare for peasant proprietorship and peasant proprietorship-cum-tenancy holdings under irrigated and unirrigated conditions in Haryana (2014-15).

Irrigated Holdings:

The Northern zone recorded the highest net income per hectare for peasant proprietorship holdings at Rs. 84,736, followed by the Central zone at Rs. 71,264. The Southern zone had the lowest net income at Rs. 42,985.

Peasant proprietorship-cum-tenancy holdings in the Northern zone also reported the highest net income at Rs. 66,667, while the Western zone had the lowest at Rs. 37,537.

Unirrigated Holdings:

The Central zone had the highest net income per hectare for peasant proprietorship holdings at Rs. 33,768, while the Western zone reported the lowest at Rs. 30,564.

Zone-wise variations in net income per hectare highlight regional disparities in agricultural productivity and profitability.

Table 5.5(a) presents the size group-wise gross income, expenditure, and net income of farmers in Haryana for 2022-2023, separately for irrigated and unirrigated holdings, and peasant-proprietorship and peasant-proprietorship-cum-tenancy.

Utilizing tractors, zero-trilling, laser land leveling, and rotary tilling are examples of technology used in Haryana's agricultural industry. The significance of using technology in Haryana's agricultural sector

Haryana's agriculture industry has seen tremendous change as a result of the use of contemporary technologies. These developments have boosted sustainable farming methods, decreased expenses, and increased efficiency. Important technologies consist of:

Table 5.5(a): Size Group of holding (hectares) Gross income-expenditure & Net income Farmers in Haryana (2022-2023)

Farmers income in Haryana (2022-2023)						
	Peasant-proprietorship (2022-2023)			Peasant-proprietorship-cum-tenacy		
Size group of holding (hectares)	Gross income	Expenditure	Net income	Gross income	Expenditure	Net income
1	2	3	4	5	6	7
Irrigated						
Below 2.0	125311	26000	99311	76927	24376	52551
2.0-4.0	129000	28466	100534	91197	25415	65781
4.0-7.5	132890	31438	101452	72860	26564	46296
7.5-10.0	135789	34623	101166			
10.0 & above	122338	32666	89662	83052	25444	57608
Average	129065	30638	98425	81009	25450	55559
Unirrigated						
Below 2.0	54531	18230	36301			
2.0-4.0	68261	21251	47009			
4.0-7.5						
7.5-10.0						
10.0 & above						
Average	56396	19741	41655			

Source: Haryana statistical Abstract Report (2023-24)

1.   **The significance of tractors: Tractors have automated the processes of plowing, planting, and harvesting**.

Impact: Less physical work, faster and more accurate farming operations, and the ability to cultivate more land in less time.

2.   Zero Tillage (Zero-Till Farming): This method is crucial because it enables direct seeding without field plowing.

Benefits: Reduces fuel and time use.

Maintains the moisture and structure of the soil.

Minimizes stubble burning through crop residue management.

Essential for planting wheat in a timely manner following paddy harvest.

3.   Laser Land Leveling Significance: Accurately levels fields using laser-guided equipment.

Benefits: Increases water efficiency, saving up to 30%. Encourages consistent crop growth and seed germination. Raises crop yields and the efficiency of input use.

4.   The Value of Rotary Tilling: A machine that efficiently and rapidly breaks and mixes soil.

Impact: Prepares the ground more quickly than conventional ploughs. Enhances soil aeration and aids in incorporating agricultural waste.

Haryana's agricultural development depends heavily on the usage of tractors, zero tillage, laser land leveling, and rotary tilling. These technologies make farming more sustainable and efficient by increasing productivity, conserving natural resources, and lowering production costs.

Year	Numbers of tractors in thousands	zero- trilling adoption Rate	Laser land leveling	Rotary tillang Percentage
2010-11	262	34.5	67.7	35
2011-12	267	27.5	100	45.5
2012-13	270	84.17	n.a	43.75
2013-14	271	69.2	100	56.52
2014-15	271729	69.1	380	45.5
2015-16	571249	69.62	380	43.75
2016-17	2,90,000	84.17	1181	56.52
2017-18	2,90,000	N.A	380	45.5
2018-19	300792	69.92	380	45.5

2019-20	300648	69.92	1181	38.33
2020-21	3,00,648	N.A	n.a	51.22
2021-22	3,00,648	N.A	n.a	2.84
2022-23	3,00,648	N.A	n.a	2.71
2023-24	3,00,648	N.A	n.a	80

Source: statistical Abstract of Haryana 2020-21.

Ministry of Agriculture & Farmers Welfare

Correlations						
		Total Foodgrain Production (000 tonnes)	**Numbers of tractors in thousands**	**zero-trilling adoption Rate**	**Laser land leveling**	**Rotary tillang Percentage**
Total Foodgrain Production (000 tonnes)	Pearson Correlation	1	.065	-.494	.026	-.101
	Sig. (2-tailed)		.824	.073	.929	.730
	N	14	14	14	14	14
Numbers of tractors in thousands	Pearson Correlation	.065	1	-.106	.321	-.208
	Sig. (2-tailed)	.824		.718	.263	.477
	N	14	14	14	14	14
zero-trilling adoption Rate	Pearson Correlation	-.494	-.106	1	.541	.624
	Sig. (2-tailed)	.073	.718		.046	.017
	N	14	14	14	14	14
Laser land leveling	Pearson Correlation	.026	.321	.541	1	.393

		.929	.263	.046		.164
	Sig. (2-tailed)					
	N	14	14	14	14	14
Rotary tillang Percentage	Pearson Correlation	-.101	-.208	.624	.393	1
	Sig. (2-tailed)	.730	.477	.017	.164	
	N	14	14	14	14	14
Total Foodgrain Production vs. Other Variables						

Variable	Correlation (r)	Significance (p- value)	Interpretation
Numbers of tractors	0.065	0.824	**Very weak positive** correlation, **not significant**. Tractors do not show a meaningful relationship with foodgrain production.
Zero-tillage adoption rate	-0.494	0.073	**Moderate negative** correlation, **marginally significant**. Higher zero-tillage use might slightly reduce foodgrain output (possibly due to soil type, learning curve, or crop choice).
Laser land leveling	0.026	0.929	**Very weak positive** correlation, **not significant**. No clear relation with foodgrain output.
Rotary tillage percentage	-0.101	0.73	**Very weak negative** correlation, **not significant**. No strong link with foodgrain production.

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2. Inter-Technology Correlations			
Variables	**Correlation (r)**	**Significance (p- value)**	**Interpretation**
Zero-tillage ↔ Laser leveling	0.541	0.046 **(significant)**	**Moderate positive** correlation. These practices are somewhat adopted together.
Zero-tillage ↔ Rotary tillage	0.624	0.017 **(significant)**	**Moderate to strong positive** correlation. Farmers adopting zero-tillage also tend to use rotary tillers.
Laser leveling ↔ Rotary tillage	0.393	0.164	**Moderate positive** correlation, but **not significant**. Possibly adopted together.
Tractors vs. other technologies	All weak correlations (R		< 0.32), none significant. Tractors are not strongly associated with other specific technology adoption.

Irrigated Holdings:

Peasant-proprietorship holdings reported an average gross income of Rs. 129,065 per hectare, with net income ranging from Rs. 89,311 to Rs. 101,452 across different size groups. The 2.0-4.0-hectare size group had the highest net income at Rs. 100,534 per hectare.

Peasant-proprietorship-cum-tenancy holdings had an average gross income of Rs. 81,009 per hectare, with net income varying from Rs. 52,551 to Rs. 65,781.

Unirrigated Holdings:

Peasant-proprietorship holdings had significantly lower average gross income at Rs. 56,396 per hectare, with net income ranging from Rs. 36,301 to Rs. 47,009.

Key Observations:

Irrigated holdings generated substantially higher income than unirrigated holdings and larger size groups tended to have higher net income per hectare. The peasant-proprietorship-cum-tenancy holdings had lower net income compared to peasant-proprietorship holdings. Furthermore, the average expenditure per hectare remained relatively stable across size groups.

Table 5.5(b): Zone-wise net income per hectare of peasant proprietorship and peasant proprietorship –cum-tenancy under irrigated and unirrigated (2022-23)

Zone	Peasant-proprietorship			Peasant-proprietorship-cum-tenacy		
	Gross income	Expenditure	Net income	Gross income	Expenditure	Net income
1	2	3	4	5	6	7
Irrigated						
Central	112000	31000	79000	76927	24376	52551
Northern	134800	34678	100132	91197	25415	65781
Southern	94000	22765	71235	72860	26564	46296
Western	107800	28976	78824	73870	23456	50414
Average	89720	23483.8	80838	78713	24952	53760
Unirrigated						
Central	46000	12000	34000			
Northern	67000	21685	45315			
Southern	42000	11300	30700			
Western	45000	13400	31600			
Average	50000	14596	35404			

Source: Haryana statistical Abstract Report (2023-24)

Table 5.5(b) presents the zone-wise net income per hectare for peasant proprietorship and peasant proprietorship-cum-tenancy holdings under irrigated and unirrigated conditions in Haryana (2022-23).

Irrigated Holdings:

The Northern zone recorded the highest net income per hectare for peasant proprietorship holdings at Rs. 100,132, followed by the Western zone at Rs. 78,824. The Southern zone had the lowest net income at Rs. 71,235.

Peasant proprietorship-cum-tenancy holdings in the Northern zone also reported the highest net income at Rs. 65,781, while the Southern zone had the lowest at Rs. 46,296.

Unirrigated Holdings:

The Northern zone had the highest net income per hectare for peasant proprietorship holdings at Rs. 45,315, while the Southern zone reported the lowest at Rs. 30,700.

Zone-wise variations in net income per hectare highlight regional disparities in agricultural productivity and profitability.

Key Observations:

Irrigated holdings generated significantly higher net income per hectare than unirrigated holdings. The Northern zone consistently reported higher net income per hectare across holding types but he peasant proprietorship-cum-tenancy holdings had lower net income compared to peasant proprietorship holdings. Regional differences in agricultural productivity and profitability warrant targeted policy interventions.

Comparative position of net income under two types of land tenure systems

The group wise and zone-wise date regarding net income per hecater under peasant proprietorship& peasant-proprietorship-cum-tenant system of holding has been worked out in this table Haryana four zone divided and zone wise net income per hectare of peasant central zone gross income 78762 and expenditure 24661 and central zone net income 54101.Further the western gross income irrigated area 68352 All the four zone the average income 49465.Furthermore the southern unirrigated gross income 39473 and expenditure 10321 and net income 29152 southern zone in Haryana.

Table 5.5(c): Group-wise and zone-wise net income per hectare according to peasant proprietorship and peasant-proprietorship-cum –tenancy System (2022- 23)

Size group of holding (hectares)	Peasant proprietorship	Peasant proprietorship-cum-tenant
A-Group wise		
Irrigated		
Below 2.0	99311	52551
2.0-4.0	100534	65781
4.0-7.5	101452	46296
7.5-10.0	101166	
10.0 & above	89662	57608
Average	98425	55559
Un-Irrigated		
Below 2.0	36301	
2.0-4.0	47009	
4.0-7.5		
7.5-10.0		
10.0 & above		
Average	41655	
B-zone wise		
Irrigated		
Central	79000	52551
Northern	100132	65781
Southern	71235	46296
Western	78824	50414
Average	80838	53760
Unirrigated		
Central	34000	
Northern	45315	

Southern	30700	
Western	31600	
Average	35404	

Table 5.5(c) presents the group-wise and zone-wise net income per hectare for peasant proprietorship and peasant proprietorship-cum-tenancy systems in Haryana (2022-23). The data reveals significant variations in net income across different size groups and zones.

In terms of group-wise analysis, peasant proprietorship holdings under irrigated conditions reported net income ranging from Rs. 89,662 to Rs. 101,452 per hectare, with the largest holdings (4-7.5 hectares) generating the highest income. In contrast, peasant proprietorship-cum-tenancy holdings reported substantially lower net income, ranging from Rs. 46,296 to Rs. 65,781 per hectare.

Unirrigated holdings, on the other hand, reported significantly lower net income, with peasant proprietorship holdings generating Rs. 36,301 to Rs. 47,009 per hectare.

Zone-wise analysis reveals further disparities. The Northern zone recorded the highest net income per hectare under irrigated conditions, with peasant proprietorship holdings generating Rs. 100,132 per hectare and peasant proprietorship-cum-tenancy holdings generating Rs. 65,781 per hectare. The Central, Southern, and Western zones reported lower net income, ranging from Rs. 71,235 to Rs. 79,000 per hectare.

Under unirrigated conditions, the Northern zone reported the highest net income per hectare at Rs. 45,315, followed by the Western zone at Rs. 31,600 per hectare. The Central and Southern zones reported the lowest net income at Rs. 34,000 and Rs. 30,700 per hectare, respectively.

Table 5.5(d) presents the zone-wise average gross income per hectare from various crops in irrigated holdings in Haryana (2022-23). This data provides valuable insights into the crop-wise and zone-wise variations in agricultural income.

Paddy emerged as one of the most lucrative crops, generating the highest average gross income per hectare in the Western zone at Rs. 118,356, while the Southern zone reported the lowest at Rs. 77,625. Wheat, another major crop, reported an overall average income

of Rs. 68,552 per hectare, with the Northern zone earning the lowest at Rs. 62,676. Sugarcane yielded impressive returns, with the Southern zone generating Rs. 150,150 per hectare, significantly higher than the Central zone's Rs. 20,333. Cotton, particularly the American variety, reported an overall average income of Rs. 93,494 per hectare, with the Northern zone earning the lowest at Rs. 50,000. Oilseeds, comprising rape and mustard, generated an overall average income of Rs. 54,973 per hectare, with the Northern zone earning the highest at Rs. 138,667.

Table 5.5(d): Zone Wise average gross income per hectare from different crops in irrigated holding. (2022-23)

Serial no	Crops	Central	Northern	Southern	Western	Overall average
1	Paddy	104021	105087	77625	118356	104810
2	Wheat(Grain)	85476	62676	66036	61363	68552
3	Wheat(Bhusa)	13240	9379	10349	10267	10795
4	Barley(Grain)			60646	52500	58609
5	Barley(Bhusa)			9479	7500	8984
6	Bajra (Grain)	20374	12500	15978	21495	18298
	Maiza((Grain)		32622			
7	Jowar(Grain)	24000	88912	64083	45690	44641
8	Gram (Grain)				30300	30300
9	Gram (husa)				1286	1286
10	Other pulse(Grain)	11230	3129	23750	40000	48156
11	Cotton(Desi)	99048			80978	98182
12	Cotton(American)	88189	50000	56000	94899	93494
13	Sugarcane	20333	117010	150150		143737
14	Oilseeds(Rape& Mustard)	79310	138667	52009	44519	54973
15	Green fodder	46776	67338	31250	39234	50342
16	Stalks of Paddy, Jowar, Bajra, Maize&	4112	5533	3938	6212	4996

17	Sugarcane					
17	Other crops	36476	95968	28359	53373	65990

A zone-wise analysis reveals that the Western zone excelled in paddy, sugarcane, and cotton cultivation, while the Northern zone dominated oilseed production. The Southern zone, meanwhile, specialized in sugarcane. These regional variations underscore the importance of zone-specific agricultural planning.

Table 5.5(e): Zone-wise average gross income per hectare from different crops un- irrigated holding. (2022-23)

Serial no	Crops	Central	Northern	Southern	Western	Overall average
1	Paddy					
2	Wheat(Grain)	32125	44283	30313	37580	36117
3	Wheat(Bhusa)	11292	9632	7933	7500	8589
4	Barley(Grain)	26000			42833	33214
5	Barley(Bhusa)	7500			1125	2310
6	Bajra (Grain)	25000	11250	12792	15045	14210
7	Maiza((Grain)		35385			35385
8	Jowar(Grain)					
9	Gram(Grain)			72500	30079	42648
10	Gram (Bhusa)			1750	1476	1385
11	Other pulse(Grain)		8400			8400
12	Cotton(Desi)					
13	Cotton(American)					
14	Sugarcane					

15	Oilseeds(Rape& Mustard)	29929	19826	45226	39667	42097
16	Green Fodder	38929	50493	15000		41340
17	Stalks of paddy, Jowar, Bajra, Maize& Sugarcane					
18	Other crops		31250		79200	39520

Source: Haryana statistical Abstract Report (2023-24)

Table 5.5(e) presents the zone-wise average gross income per hectare from various crops in unirrigated holdings in Haryana (2022-23).

Crop-wise Analysis:

Wheat (grain) reported an overall average income of Rs. 36,117 per hectare, with the Northern zone earning the highest (Rs. 44,283) and the Southern zone the lowest (Rs. 30,313). Wheat (Bhusa) generated an overall average income of Rs. 8,589 per hectare.

Barley (grain) yielded an overall average income of Rs. 32,214 per hectare in the Southern zone, while Bajra (grain) reported an overall average income of Rs. 14,210 per hectare.

Oilseeds (rape and mustard) generated an overall average income of Rs. 42,097 per hectare, with the Southern zone earning the highest (Rs. 45,226) and the Northern zone the lowest (Rs. 19,826).

Zone-wise Analysis:

The Northern zone reported higher average gross income per hectare for wheat (grain) and wheat (Bhusa). The Southern zone excelled in oilseeds and barley production.

Comparative position of net income under two types of land tenure systems in different Years for measuring cropping intensity method has been take on from Singh (1979), it is defined as:

Cropping Intensity = Gross Cropped Area Net Sown Area ×100 /Higher cropping intensity

Thus, means that more of the net area is harvested more than once within a single agricultural year. If the land is only planted once a year, the cropping intensity is 100.

5.   6: Effect of prices on cropping intensity in Haryana

The tables provided (5.5 a to 5.5e) offer valuable insights into the agricultural landscape of Haryana, highlighting the relationship between prices and cropping intensity:

Price Effects on Cropping Intensity

Cropping intensity, measured as the ratio of gross cropped area to net sown area, is significantly influenced by price fluctuations. Higher prices for crops can incentivize farmers to increase cropping intensity, while lower prices may lead to decreased intensity.

5.1 CROP INTENSITY IN HARYANA OVER THE YEARS ZONE WISE
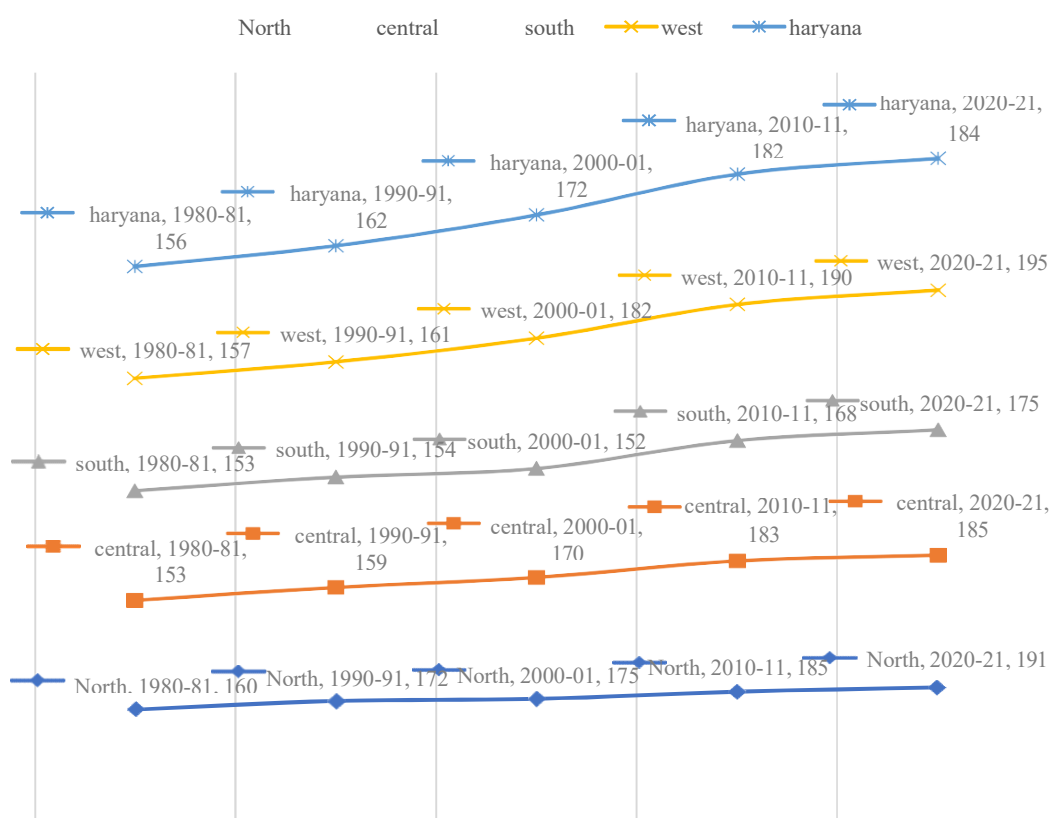
Source: Haryana statistical Abstract Report (2023-24)

Key Findings

1. **Price responsiveness:** Tables 5.5(a) and 5.5(d) show that crops with higher prices, such as sugarcane and cotton, have higher cropping intensities. This suggests that farmers respond to price signals by allocating more land to lucrative crops.

2. **Crop diversification:** Tables 5.5(d) and 5.5(e) reveal that farmers in Haryana diversify their crops in response to price changes. For example, the Western zone has a higher cropping intensity for paddy and sugarcane, indicating a shift towards more profitable crops.

3. **Regional disparities:** Tables 5.5(c) and 5.5(e) highlight regional differences in cropping intensity. The Northern zone has higher cropping intensity for wheat and oilseeds, while the Southern zone focuses on sugarcane and barley. These disparities suggest that price effects vary across regions.

4. **Irrigation impact:** Tables 5.5(a) and 5.5(d) demonstrate that irrigated holdings have higher cropping intensities than unirrigated holdings. This underscores the importance of irrigation in enabling multiple harvests and increasing cropping intensity.

Price-Related Factors Influencing Cropping Intensity

1. **Price volatility:** Fluctuations in crop prices can discourage farmers from investing in inputs, leading to decreased cropping intensity.

2. **Price expectations:** Farmers' expectations about future prices influence their cropping decisions. Higher expected prices can encourage increased cropping intensity.

3. **Input costs:** Changes in input prices (e.g., seeds, fertilizers, labor) affect farmers' profitability and cropping intensity.

4. **Government support:** Government interventions, such as price support schemes and subsidies, can impact cropping intensity by influencing farmers' price expectations.

Policy Implications

1. Price stabilization: Implement policies to stabilize crop prices, reducing volatility and encouraging farmers to invest in inputs.

2. Market interventions: Government support schemes, such as minimum support prices, can help farmers manage price risks.

3.   Irrigation development: Invest in irrigation infrastructure to enable multiple harvests and increase cropping intensity.

4.   Crop diversification programs: Encourage farmers to diversify crops in response to changing price signals.

5.   Farmer education: Provide training on market trends, price analysis, and crop management to enhance farmers' decision-making.

By understanding the effects of prices on cropping intensity in Haryana, policymakers can design targeted interventions to optimize agricultural productivity, improve farmer livelihoods, and enhance the overall agricultural landscape.

5.6: Effect of prices on cropping pattern of the state of Haryana

The tables provided (5.5 a to 5.5e) offer valuable insights into the relationship between prices and cropping patterns in Haryana:

Price Effects on Cropping Pattern

Prices play a crucial role in shaping the cropping pattern in Haryana. Farmers respond to price signals by adjusting their crop choices, leading to changes in the cropping pattern.

Key Findings

1.   Crop substitution: Tables 5.5(d) and 5.5(e) show that farmers substitute crops in response to price changes. For example, the Western zone has shifted towards paddy and sugarcane due to higher prices.

2.   Crop diversification: Tables 5.5(d) and 5.5(e) reveal that farmers diversify their crops to minimize price risks. The Northern zone grows multiple crops, including wheat, oilseeds, and barley.

3.   Regional specialization: Tables 5.5(c) and 5.5(e) highlight regional specialization based on price differences. The Southern zone focuses on sugarcane, while the Northern zone specializes in wheat and oilseeds.

4.   Price-responsive crops: Tables 5.5(d) and 5.5(e) identify price-responsive crops, such as cotton, sugarcane, and oilseeds, which have higher price elasticity's.

Price-Related Factors Influencing Cropping Pattern

1.   Price volatility: Fluctuations in crop prices affect farmers' crop choices, leading to changes in the cropping pattern.

2.	Price expectations: Farmers' expectations about future prices influence their cropping decisions.

3.	Input costs: Changes in input prices impact farmers' profitability and cropping pattern.

4.	Government support: Government interventions, such as price support schemes and subsidies, influence farmers' price expectations.

Cropping Pattern Changes in Response to Price Changes

1.	Shift to high-value crops: Farmers shift to high-value crops like sugarcane, cotton, and oilseeds in response to higher prices.

2.	Increased area under pulses: Tables 5.5(d) and 5.5(e) show an increase in area under pulses, such as gram and bajra, due to higher prices.

3.	Decreased area under low-value crops: Farmers reduce the area under low-value crops like wheat and barley in response to lower prices.

Policy Implications

1.	Price stabilization: Implement policies to stabilize crop prices, reducing volatility.

2.	Market interventions: Government support schemes can help farmers manage price risks.

3.	Crop diversification programs: Encourage farmers to diversify crops to minimize price risks.

4.	Farmer education: Provide training on market trends, price analysis, and crop management.

5.	Infrastructure development: Invest in irrigation, storage, and transportation infrastructure to support crop diversification.

By understanding the effects of prices on cropping patterns in Haryana, policymakers can design targeted interventions to:

1.	Enhance agricultural productivity

2.	Improve farmer livelihoods

3.	Promote crop diversification

4.	Reduce price risks

5.	Foster sustainable agricultural development

CHAPTER - 6 SUMMARY AND CONCLUSIONS

6.1 INTRODUCTION

This section intends to summarize the work that has been done in the first parts and present primary discoveries acquired from the observational examination. As needs be, Section I presents the primary discoveries of the investigation. Segment II inspires appropriate arrangement ramifications of the current investigation.

The cycle of advancement embraced during the nineties has put the value strategy under new implications. In the wake of this interaction and opening up of worldwide exchange, we are needed to contemplate the setting of the approach. Aside from being an instrument for making motivators, it is presently expected to assume a lot more extensive part of completely interfacing with the market influences and working with the reconciliation of homegrown market with the world market. It should be guaranteed that in this change there ought not to be any government assistance misfortune to the partners. Farmers are as of now communicating profound worry about the 'profitable part of MSP', however this somewhat focuses a blaming finger towards the continuous disappointment for the market system to give financially feasible costs to them. In the wake of bigger stocks, presently the value strategy must be dealt with cautiously. Indeed, even past this, it has come into intense alleviation that the value intercession plot until now has not been adequately executed and along these lines, couldn't completely remain by the destinations it has outlined to serve.

The value strategy has been unbalanced regarding crops too as districts and in this way can deliver disparity even through a very much expected mediation plot. Such externalities dispensed by an intentional strategy predisposition on coarse cereals and heartbeats area just as on the areas developing these harvests can be found in their development rates and income inescapable all the while. Consequently, a new glance at the value mediation conspire is generally unavoidable.

The setting of value strategy has changed generously throughout the long term thus likewise the heading and viability of value strategy as an instrument to impact the rural economy. This has incited numerous social researchers to request a new gander at MSP as an instrument for interfacing with the significant boundaries of the horticultural

economy. Among the significant targets of the Price Policy (as reflected from the 1986 strategy proclamation), the motivations to receive new innovation, judicious use of land and different assets, the impact of costs on the typical cost for basic items, farming wages just as wages in different areas of the economy, have together accepted more prominent significance. In the current circumstance, two significant angles merit consideration, viz., (I) protecting the ranch makers against the outlandish changes in costs, incited by the global value varieties, and (ii) production of a motivator value structure for the homestead makers to coordinate the allotment of assets towards development/trade arranged yields. The center needs to change towards making esteem expansion for the cultivators. Along these lines, it gets important to audit the execution interaction and viability of MSP as an instrument on this foundation.

It has been noted in the new past that the development design is changing for specific harvests because of different reasons. On occasion, questions are raised about the appropriateness of region designated to such yields and the total government assistance ramifications of these changing harvest groups of stars.

In this unique situation, the current investigation has been attempted with an attention on the viability of the Minimum Support Prices in its effect on different boundaries of the horticultural economy. The particular destinations of the current examination are as per the following:

● To investigations the adequacy of the cost in H .R. with regards to the targets set out by the Commission on Agricultural Costs and Prices.

● To examinations the general significance and adequacy of MSP on account of significant yields in H.R.

● To examinations the interaction of execution of Minimum Support Prices and partnered measures at the state level.

● To recommend strategy measures to upgrade the viability of MSP.

● To evaluate the effect of MSP on the selection of improved innovation and their general commitment in expanding the creation and productivity of the predetermined yields.

For achieving the above objectives of the study, we have attempted here to analyses the very existence of MSP as a tool of price policy in the context of its effectiveness. The

study is expected to highlight the factors responsible for the success of MSP as a tool of price policy as well as the parameters responsible for its failure.

The study also incorporates the analysis of the administrative process in the implementation of MSP. In such an exercise, I have taken help from secondary data sources at the State level. For the purpose of secondary data a good number of indicators are collected at State and district level.

6.2   SECTION I: CONCLUSIONS

The main conclusions drawn from the present study are as follows;

Promoting of agrarian wares under State specified guidelines started in Uttar Pradesh from 1927 and through different provincial demonstrations covering the showcasing of horticultural items it went under the domain of HARYANA Agricultural Produce and Marketing (Regulation) Act. The Act gave great extension to setting up a popularity-based advertising body. The guideline of promoting in started Haryana with an emphasis on business crops and under the circumstance set apart by shortage in the stockpile of horticultural products.

Development limitations and market specializations influenced the convergence of products in a couple of business sectors. Most importantly, the thickness of business sectors was excessively slim and couldn't successfully kill the part of agents. Advertising framework is another significant part of successful value strategy. The accessibility of this foundation straightforwardly thinks about an effective market working component as far as costs.

Haryana State has a regular sythesis having huge portion of its space under extreme climatic requirements with an exceptionally enhanced agrarian area. The state has the biggest portion of dry spell inclined spaces of the country and higher than the a lot of poor yet that didn't prevent the state from accomplishing better paces of decrease in neediness proportion. The high thickness of low worth and high-hazard crops exemplifies the State farming. The harvest economy of the state has a couple of average attributes. It has a transcendently cereal prevailing yield design with coarse grains having biggest portion of territory under them. These harvests for the most part have low yield rates and lower costs and consequently business crops are depended on support the farming economy. The development design relies on the presentation of rainstorm and the

accessibility of water. In actuality and simultaneously, the state has entered incredibly in innovative agribusiness, simply close to a couple of states in the country. Along these lines, the value motivating force structure turns into a significant part of agrarian strategy in the State.

The adequacy of Price Policy at the State level includes the accessibility of market framework at the State level and the activity taken by the state governments in making institutional design at observing horticultural costs. On account of Uttar Pradesh, the State government has as of late comprised the Agricultural Price Commission. The Government of Haryana in its request building up the Price Commission expresses that the Commission on Agricultural Prices is comprised to suggest standard costs, those could be supported on the lookout, and support costs at which the state government ought to intercede in the horticultural market. Accordingly, at the institutional level the State government has made a striking stride towards formalizing a value observing framework and subsequently it has given a fillip to getting sorted out a Price Policy at the State level. This institutional activity will go far in building up the value strategy at the State level.

It is broke down the patterns in horticultural costs in the State during the most recent decade. The patterns have been dissected from two points of view, viz., market costs and the controlled costs. The patterns in MSP across crops demonstrate a development of around 10% per annum however there are varieties across harvests and areas.

The overall disregard of jowar, maize and gram contrasted with wheat, sugarcane and paddy comes out plainly particularly when we take a gander at the general costs of these harvests corresponding to directed costs of paddy and wheat. Likewise, it is additionally brought up that the ranch gather costs and discount costs don't bear a solid lead or slack relationship with the Minimum Support Prices. Further, it is found that MSP doesn't bear any reliable and genuinely critical relationship with ranch collect costs. This is characteristic of the way that MSP neglects to impact patterns in the market costs or even go about as a guide cost. Indeed, it is drawing out that for a couple of years MSP was higher than ranch gather costs and the discount costs. The disappointment of market costs to stay up with controlled costs along these lines comes out unmistakably. In this manner, the part of MSP as controlling value is by all accounts insignificant.

Minimum Support Price additionally doesn't appear to fill in as an impetus cost directing the territory under significant harvests in the State just as at the area level. All in all, the trimming design generally gets impacted by the market costs than the MSP. Likewise, the information use structure additionally has little impact on the directed costs. The yield reaction capacities regarding costs with a yield of harvests don't bear any genuinely huge relationship with the slacked costs of the product. At the end of the day, the controlled cost neglects to act either as a motivator in coordinating the editing design or as an impetus to build the information power. This investigation plainly proposes that MSP has stopped to go about as a motivation to impact the region assignment under a harvest and it likewise stops to show any critical effect on the info use structure. This conduct is extremely clear during the nineties.

Implementation of MSP in Uttar Pradesh has been quite a oblique task. During the harvest season the arrivals in the market start increasing which is an obvious and well-anticipated phenomenon. But as the regulated markets work on only a stipulated day in the week, the clustering of the arrivals in the regulated market takes place more by design than by chance. When the arrivals increase in the market it is natural that the prices offered by the traders are quite low in the wake of huge arrivals. Many times, the prices go well below the MSP, and the procedure requires that the APMC reports this to the District authorities. After receiving such information, the District authorities call a meeting of the `Task Force' including the departments involved in the process of procurement and a decision about procurement is taken. This decision is conveyed to the authorities at state level in order to get clearance and release of funds. After such clearance and release of funds, procurement centers are opened. An order from the Government is issued for the purpose of procurement.

Administration of Minimum Support Prices is an important step in our analysis. We have analyzed the administrative mechanism in terms of the institutions as well as the process of implementation. The administration of MSP goes through quite a few institutions and therefore, creates complex situations. This also prohibits ease in the process of implementation and introduces a significant lag between the price collapse and the purchase operations. The scheme assumes quick intervention so that welfare loss is minimum. However, timely intervention seems to be not taking place and the lag between

the collapse of prices and procurement is about 2-3 weeks. Such lag provides sufficient time for the traders to purchase from the farmers at lower price and sell it to the state at MSP, making significant profits in the process. Therefore, reforms in the agricultural marketing process should feature prominently in the next steps of reform.

It has come out clearly that MSP does not help in deciding the area allocation under the crops during the next season. But there are subtle differences between the crops. The area decisions in the case of major crops and inferior cereals do not seem to depend on MSP. The relative prices seem to work against inferior cereals. The negative coefficient for tur indicates area under tur going down as MSP increases, which in itself is a perplexing result and undermines the role of MSP. But MSP is acting positively on area under groundnut, whereas relative MSP of groundnut in relation to paddy may probably discourage such area allocation. However, degrees of freedom are not sufficient to conclude about the role of MSP as an incentive price at the macro-level during nineties.

The very foundation of price policy is to support decision-making in area allocation and provide incentive for adopting new technology but that seem to have not been working in the field. It is very clear that MSP does not provoke any area or input decisions, rather it seems that the time trend alone dictates the decision environment. Our analysis indicates that wheat and paddy got the best out of the price policy (through MSP) but unintentionally this worked as an inflictor of negative externality to discourage coarse cereals and pulses. Therefore, it is not wrong if we consider this as a strong policy bias against a few crops. Incidentally, these are the crops grown in agriculturally backward region of the State and mostly by the resource poor farmers.

One of the important objectives of the price intervention scheme is to enhance adoption of technology by providing a wedge against the fluctuations in expected prices. When farmers are assured about price level before the next harvest, they feel secure to use proper mix of inputs and technology which requires a little more investment. Essentially the farmers are not `investment-shy' in the context of such assurance and they become cautious risk takers. They probably give consideration to the current MSP exercise and therefore, the declaration of MSP should be before the sowing season for the concerned crop. The experience of last three decades tells us that this happens more as an exception than practice.

In the present context, the factors influencing the effectiveness of MSP assume more importance. Among the factors that dictate the effectiveness of MSP the most important are;

- Process of implementation of the policy

- Undue dependence on the State for intervention so that the markets function effectively and freely in long run

- Weeding out the information asymmetry prevailing in the agricultural markets and providing farmers with the required information at proper time

- Monitoring the prices without intervention and assess the situation in the place of sue motto intervention, and

- Long term policy steps to replace the present ad hoc arrangements.

The cycle of execution favors a couple of harvests against another gathering of yields. This is guaranteed by a couple of vested parties. It is notable that a portion of the farmers' anteroom impacts the value strategy and at the large scale level, it favors a couple of harvests and areas. This, thusly, influences total government assistance. Likewise, input showcases also have little impact of the conduct of MSP. In the item market, the assumption regarding support costs gives a ready circumstance to the middle people to accomplish a more noteworthy benefit. The execution interaction itself gives a delay between the revelation of the aim to acquire under MSP and the real obtainment. Throughout the entire existence of most recent thirty years, it has come out strongly that the interaction of execution has a huge reliance on state organization. This subverts its significance as an instrument of the Price Policy. The pertinence of MSP to the homestead area can be seen from three distinct points. In the first place, the revelation of MSP ought to be when the farmer needs to take a choice about the harvest. It is specified that the Minimum Support Prices be proclaimed well before the planting season. This isn't troublesome as the expense information utilized for calculations and showing up at MSP is of the earlier years. Nonetheless, even after over twenty years of activity, the MSP isn't announced before the dynamic about planting.

Minimum Support Prices have been in activity as a value support plot for over a fourth of a century and the time has come to glance back at the viability of this plan. This requires an assessment of the current activities of MSP and to check whether they are

meeting the goals with which the plan started. The primary inquiry that surfaces here is the requirement for mediation particularly to address the market mutilations and making the market more serious. The present institutional construction in the actual market is defective and that gives further degree to the interaction to fall flat. The APMCs and other market intercession offices play out their capacities so that the farmers and the essential maker once in a while advantage from the interaction. In the event that the mediation is smoothed out and supported with the legitimate institutional structure, presumably the increase will be on the farmers' side. Such a plan requires the market foundations to intercede specifically however times when the market costs fall beneath the proclaimed MSP. Nonetheless, opportune intercession in the agrarian business sectors, at any rate in Uttar Pradesh, is by all accounts not occurring. To guarantee opportune intercession, the Uttar Pradesh Government has opened acquisition places at all the APMCs and an uncommon asset is made for this reason.

The following paragraphs give a succinct view of the findings from our macro- level analysis of the objectives set for the study. The results pertain to the State of Haryana

The impact of the MSP on market prices (FHP or WHP) in terms of reducing the seasonal and cyclical fluctuations during nineties has been quite negligible.

MSP could not act as an incentive price since more often it is declared well after the sowing season. Moreover, the mechanism of implementing MSP does not fully allow it to perform the role of an incentive price.

It also does not help in adoption of technology as the declarations come well after the sowing of the crop is undertaken. The determinants of the adoption of technology work be located in the market prices and market behaviour.

In the present context, the MSP has not influenced the structure as well as quantum of inputs since many of the farmers are not even aware of MSP.

MSP does not influence the regional variations in the prices and these continue to dog the market of agricultural commodities.

Among the factors that dictate the effectiveness of MSP, the following assume significant importance:

i.   Process of implementation of the scheme.

ii.   Undue dependence on the state machinery every time for the purpose of initiating the procurement.

iii.   Information asymmetry prevailing in agricultural market thereby causing severe market imperfections.

iv.   Absence of state level mechanism for monitoring agricultural prices to initiate sues motto intervention.

v.   MSP, if implemented properly, can effectively play the expected roles: to act as incentive price, crop pattern and input intensity navigator, risk abated and technology promoter. Our simulation exercise suggests that if the process of MSP is overhauled probably its envisaged role can be witnessed.

vi.   The relevance of MSP in the case of Uttar Pradesh proves to be extremely marginal and its influence could be seen only on the Paddy and Sugarcane growers.

vii.   MSP reveals only theoretical impact on agricultural growth and distribution parameters. However, the implementation of the scheme is such that it prevents to empirically assess any such impact.

viii.   The process of implementation of MSP requires a thorough overhauling and it needs to be made market as well as farmer friendly. We have suggested some of the measures to enhance the effectiveness of MSP.

ix.   The questions regarding the micro-level impact of MSP on adoption of technology, investment in agriculture, inter-crop price parity, impact on cropping pattern and sustainability of cropping pattern have been analysed and it was found that as the scheme is not perfectly implemented to influence these parameters at micro level. Therefore, it will not have any such impact. Probably, an overhauled scheme and the process of implementation will make up for these lacunae.

6.3   SECTION II: POLICY SUGGESTIONS

In the light of above expressed exact outcomes, the accompanying ideas have been advanced based on inferred strategy suggestions;

The destinations of the value strategy were formed in three unique stages. Among these the main stage was a normal food shortage stage with significant spotlight on making food grains accessible to the customers. The subsequent stage began with the proposals of S R Sen Committee report (GOI, 1980) and returning to the system of figuring cost of creation. The main proper value strategy assertion came as the Price Policy archive of 1986 and that gave an extensive rundown of targets to the Price Policy. Hence, the center was split among farmers and customers. Value Policy expected political suggestions and among the positive increases cushion stock just as dissemination turned out to be very agreeable. The time of nineties saw a few changes in the horticultural area just as in the rural strategy. On the foundation of these progressions it is felt that the essential targets of the value strategy should be: (I) to shield the rural makers from the sharp fall in costs (giving protection; (ii) to support a positive editing design with regards to in general development goals and (iii) to guarantee the cooperation of essential maker in global market just as to ensure the farmers' premium against the value vacillations because of world value/market circumstances. Along these lines, the adjustment in the focal point of value strategy is very goal. The Agricultural Policy record of 2000 goes on along these lines and it is expressed That "the Central Government will keep on releasing its obligation to guarantee profitable (accentuation added) costs for farming produce through declaration of Minimum Support Prices Policy for major agrarian products (GOI 2000:14). The report likewise considers a few viewpoints which require the adjustments in the way to deal with Price Policy. It is along these lines, necessitated that the shapes of Price Policy be inspected cautiously. The idea of 'gainful costs' has entered first time in the arrangement jargon. This ought to be clarified unequivocally since it will have further importance for the farmers and the horticultural economy.

Minimum Support Prices as a device of Price Policy covers an enormous number of harvests across the length and expansiveness of the country. Over years, CACP has added many yields to this rundown, likely not auditing the rundown of the harvests over years. All the while, the between crop value equality got vitiated and strategy   got   instrumental

to such interaction of conscious approach disregard.

Debilitating certain yields and harvest bunches additionally caused imbalance across areas and farmer gatherings. To a great extent, the harvests which got terrible arrangement as far as relative costs were the ones developed by asset helpless farmers and in lethargic development areas. This experience requires a particular Price Policy with an unmistakable spotlight on the result. We recommend that the MSP ought to be specifically applied for crops and in the locales indicated dependent on three models in particular – development example, seriousness and exchange reaction.

Organization of Minimum Support Prices has been very circumlocutory assignment in a large portion of the States in the country. No big surprise we have an enormous number of examples where market costs rule underneath MSP and surprisingly normal Farm Harvest Prices are additionally beneath MSP. The pinnacle appearances in directed business sectors are normally grouped during collecting season and added to that the controlled business sectors work on pre-chosen days in the week. These two together outcome in bunching of the appearances in the market on a specific day and therefore push the makers in a dis-advantaged circumstance. At the point when the appearances increment, it is common that the costs breakdown. In the wake of getting this data a gathering of the Task Force is led under the Chairmanship of District Commissioner including every one of the concerned establishments during the time spent acquisition. The choice for obtainment is taken and area of the habitats for acquirement is chosen.

The entire system requires over about fourteen days to finish, in spite of the current days correspondence offices. In any case, at this point, farmers are constrained by the conditions to offer the items to the agents/dealers at the costs directed. It is important to work on the strategy and have lasting obtainment places at the APMC yards, with assets to secure when breakdown beneath MSP costs. One such advance has been taken by the Govt. of Uttar Pradesh, yet the experience should be looked into. There are various organizations associated with the obtainment interaction and there is not really any coordination between them. For a compelling approach, it is important to have a solitary organization planning the entire system with no delay included. It is proposed that FCI should deal with food wares as is done now and NAFED might be made liable for the other non-food wares and worldwide exchange. The remainder of the

administrative design causing distance between acquisition organizations and the farmer ought to be done away.

The interaction of assurance of Minimum Support Price has gone through a few discussions and looked into during the most recent thirty years. However, that being said it has not been generally acknowledged by the farmers and a specific gathering of academicians. During the most recent two years, two workshops were directed by the CACP to work out the system issues. However, yet we need to get an extensive arrangement proclamation dependent on these thoughts. There are not really any endeavors to check the legitimacy of the information gathered under cost of development plans, which is frequently tested by the farmers. CACP shows up at MSP after long considerations and dependent on the expense of creation information gathered from the countrywide focuses. Despite the nature of these information, it is important to keep cost C2 in see while fixing MSP Unfortunately, the suggested.

MSP by CACP is changed while it is proclaimed by the Central Government, generally dependent on the political intercessions and to score some political mileage. Such changes are affected frequently, maybe when in doubt over special cases. Also, these progressions in MSP are not validated by any normal contentions, disparaging the purported 'logical cycle's of CACP in showing up at the MSP. Subsequently, it is necessitated that thought with the intrigued Cabinet Ministers and ranch pioneers are attempted by the CACP a long time before revelation of MSP. Another method of accomplishing this is to make CACP a legal body of the Government. It is ordered that MSP ought to be reported prior to planting of the yields in each season. Yet, this is done once in a while. We found that the MSP is once in a while declared before the planting season. MSP declared after the planting season loses its reference as a value strategy instrument. Hence, it is important to declare the MSP prior to planting season.

During the sixties and mid seventies the value strategy focussed on ensuring the buyers and getting support stocks needed for providing the Public Distribution System. The costs were to be kept at a moderate reach for the buyers and that framed the support of the approach. Giving profitable costs to the homestead produce came as a significant change after 1979 and definitely in post 1986 period. We found a particular move in the patterns of MSP by then and the subsequent break was obvious at 1996-97. The

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subsequent change was more in light of the interaction of progression and with an eye on global business sectors and costs. This change however noted unobtrusively in their reports by the CACP, nothing explicit has been done to support the makers willing to take part in the fares of farming produce. Organizations like NAFED additionally have a critical presence in global exchange however have not been outfitted through approach to attempt such activities. Along these lines, it is fundamental that organizations like NAFED or uniquely comprised Commodity Boards (like Tur Board of Uttar Pradesh) additionally mediate the market with the costs proclaimed well ahead of time with the end goal of exchange.

Cost and market checking system at the State level is the most pressing prerequisite. A couple of irregular analyses are accessible in the country yet there is not really any arrangement support for such activities. These instruments ought to cook for giving data on homegrown/worldwide costs, specialized guidance in promoting, interface with explicit Commodity Boards and market interceding offices. Without such market changes, it will be hard to move the advantages of progression to the most meriting segments among farmers.

There are following specific steps needed

There ought to be a careful audit of the philosophy of showing up at MSP, examined with ranch pioneers and academicians. Such survey ought to be taken occasionally and ought to be straightforward in nature.

1. Sample checks of the information gathered under Cost of Cultivation conspire by autonomous offices are very important. This cycle ought to be made required for every one of State.

2. MSP, whenever pronounced before the planting season, can turn into a viable device of Price Policy. Additionally, the hole between the suggested cost by the CACP and the MSP announced by the Government of India ought to be soundly clarified.

3. The acquisition component needs some smoothing out and the State governments ought to be urged to arrangement their own Agricultural Prices Commissions. Such Commissions will assist with checking the costs and the technique of intercession on comparable lines as has been done in haryana.

4. Inter-crop value equality can be used to energize or debilitate a specific editing

design. Most likely during the nineties, little consideration is paid to this perspective. Hence, coarse grains endured relative disregard at the strategy edge. This strategy ought to be utilized by empowering development situated yields.

5. Price Policy now needs to keep in see the harvests having worldwide exchange potential. Two angles must be kept in view to energize rural exchange. In the first place, to screen and move the Price Policy between homegrown costs and global costs and second to energize the trimming design for the fare arranged harvests.

6. MSP strategy has not arrived at the farmers besides in the locales with prevalently business horticulture. This is both because of the current cycle of execution and statement of MSP. To beat this lacuna the data of MSP should arrive at the farmers through the all-around oiled expansion offices.

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AN ECONOMICS ANALYSIS: TREND & PERFORMANCE OF AGRICULTURE PRODUCTION IN HARYANA

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Abstract:

The Agriculture sector is the mainstay role of Indian's Economy & livelihood through the generate of employment in the agriculture sector. With the passage of time the Agriculture & Allied Sector is continuously declining because of a cause of land fragmented day by day. Due to the land fragmented but ours' dependency on the industrial sector as well as the services sector. In the agriculture sector in 2017-18 of the workforce, 50 percent of people engagement depends on the agriculture sector. Further agriculture sector contribution 17-18 percent of the total GDP (Gross domestic product) of national income. In Haryana state agriculture contribution is about 14.5 percent to its gross domestic product (GDP) while providing employment 51 percent of the workforce engaged in agriculture. Further, about 75% of the area is irrigated, through tube Wells and an extensive system of canals. About 2/3rd of the State has assured irrigation, most suited for a rice-wheat production system, whereas rain-fed lands around 1/5th are most suited for rapeseed & mustard, pearl millet, cluster bean cultivation, agro-forestry, and arid-horticulture.

Methodology Statistical Techniques and Tools: The secondary data published from Haryana statistical Abstract, Economic The survey, Ministry of Agriculture and Farmers' Welfare, published Research papers in the journal, and agriculture reports and so on. To compute the growth behavior of trends and performance of agriculture production in Haryana farm area, yield, production and income, the exponential function will be fitted.

Introduction: The Agriculture sector is the mainstay role of Indian's Economy & livelihood through the generate of employment in the agriculture sector. With the passage of time the Agriculture & Allied Sector is continuously declining because of a cause of land fragmented day by day. Due to the land fragmented but ours' dependency on the industrial sector as well as the services sector. In the agriculture sector in 2017-18 of the workforce, 50 percent of people engagement depends on the agriculture sector. Further agriculture sector contribution 17-18 percent of the total GDP (Gross domestic product) of national income. In Haryana state agriculture contribution is about 14.5 percent to its gross domestic product (GDP) while providing employment 51 percent of the workforce engaged in agriculture. The agriculture sector is the contribution of Indian economy much higher than the world's average 6.4 percent while Haryana constitute 1.5 percent cover of India's area. Haryana is among the top ten producers of food grains and stands at sixth place with a total production of 16.38 Million Tones from an area of 4.47 Million Hectares. Further total food grains produced in the state, contribution of wheat and rice was 11.3 and 4.15 Million Tons respectively in 2017-18. Haryana is the 4th largest producer of wheat in a country with approximately 12 percent of total wheat production while the state stands at 10th place in total rice production as well as coarse cereals, jowar, bajra are also produced in the state. **(Source: Ministry of Agriculture and Farmers' Welfare).** Haryana state is situated in north India with its capital of Chandigarh. It is established on 1 Nov 1966 as newly created 17th the state of India. It is surrounded by the Uttar Pradesh in east Punjab in the west Himachal Pradesh in the north and Rajasthan in the south. Haryana is a land leaked state in northern India, is located between 27.39 to30.35 degrees North latitude and between 74.28 degrees and 77.36-degrees longitude. The altitude of Haryana varies between 700 to 3600 feet 200 meters to 1200 meters above sea level. Haryana's basic crops increase because of the reason to increase production while to the adoption of the appreciation. Haryana's major crops Rabi crops include these crops are wheat, tobacco, gram, linseed, rapeseed, and mustard, sown in late October or early November and harvested in March and April month. Approximately 86% of the area is arable, and 96% is cultivated. Further, about 75% of the area is irrigated, through tube Wells and an extensive system of canals. About 2/3rd of the State has assured irrigation, most suited for a rice-wheat production system, whereas rain-fed lands around

1/5th are most suited for rapeseed & mustard, pearl millet, cluster bean cultivation, agro-forestry, and arid-horticulture. On the other hand, the agriculture sector depends on many Allied sectors like dairying, poultry, fishery, arid horticulture, mushroom farming, beekeeping, agro forestry have great potential. In Haryana, agricultural marketing is a very important role to increase the farmers' income because of the farmer's indebtedness to sell their agriculture product in spot place. Agriculture's marketing is malpractice in India while the farmers do not get remunerative prices or procurement prices on the spot. Further to overcome the malpractice the govt set up the CACP in 1965 because of the main motives the govt wants the peasants to get a fair price of their production to produce by farmers. In the year 2018 govt to stop of the malpractices in agricultural marketing to start the E-NAM mandi through the E-NAM mandi farmers get a remunerative price of their production. According to the E-Nam Scheme State has been connected with three NAM (National Agricultural Market) scheme Further to make system agricultural marketing of produce smooth, transparent and farmer/trade man-friendly.

Methodology Statistical Techniques and Tools: The secondary data published from Haryana statistical Abstract, Economic The survey, Ministry of Agriculture and Farmers' Welfare, published Research papers in the journal, and agriculture reports and so on. To compute the growth behavior of trends and performance of agriculture production in Haryana farm area, yield, production and income, the exponential function will be fitted. Following the form of least the square exponential function will be used to compute the compound growth rates.

 Review of Literature,
Tripathy (1996) analyzed the trends in Rice production after the green revolution in Orissa for the time period starting from 1970-71 to 1989-90. It was found that there was remained 1.43 percent significant growth per annum in the state. It was also stated by the results that positive results have remained in case of the yield of rice in all districts of the state. However, the productivity of rice appeared to be stagnant in Kalahandi, Keonjhar and Sundarghrh districts.

 Chand and Birthal (1997) found that pesticides use in Indian agriculture had witnessed a very fast growth after 1957-58. In the first decade of the green revolution, the growth in pesticide use was faster than the output growth. However, the growth rate in output was remained to be much faster than the growth in pesticide use during the post green revolution era. A comparison of pesticides used in agriculture in various countries revealed that its use in India was neither excessive nor indiscriminate.

 Samui et al. (2005) visualized that the adaptation of advanced technology led to a significant rise in sugarcane yield and production during the extended green revolution era (1970-80). But in the post green revolution phase (1980-2001) had a decrease in the yield of sugarcane played a negative role in sugarcane production. Sugarcane production declined in Maharashtra because the area brought under this crop was rather non-traditional viz. These areas had limited water resources and limited of other factors such as shallow depth of rooting zone and poor nutrient status. That's why productivity growth could not be increased.

 Sadeesh et al. (2006) studied that the total production growth of oilseeds was found to increase this was because the implementation of a technology mission focused on oilseeds. Significant positive growth in the production of total oilseeds was shown by Karnataka, Madhya Pradesh and Maharashtra. Productivity also increased India as a whole showed significant positive growth in production and productivity.

 Kumar and Singh (2014) found the growth behaviour of the area, yield, and production of sugarcane crop for the time period starting from 2000-01 to 2009-10. The results were obtained for the district and state level in Haryana. The main factors that caused the trends were also identified in the same study. According to the different agro-climatic conditions, Haryana has been divided into the eastern and western zone. There were emerged negative trends in relation to the area under sugarcane irrespective district, region and state level. Almost the same results were obtained in case of the production of sugarcane barring only Bhiwani and Karnal. Most of the district of Haryana witnessed positive growth rates for the yield of sugarcane. It was also indicated that the growth rate for the area

under sugarcane has remained higher in comparison to the growth of output of the crop in point in almost all districts of Haryana.

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All–INDIA AREA UNDER CULTIVATION AND UNDER USE OF CHEMICAL & BIO-PESTICIDES.

AREA (in thousand hectares)						
Pesticides						
Year	Cultivation	Chemical	Bio	Both chem. &Bio	Total	Not under use of pesticides
2014-15	96628	53141	5405	9836	68382	28245
2015-16	126957	69058	6478	10180	85717	41241
2016-17	120798	71645	7267	25125	104037	28621
2017-18	132011	82189	7738	10268	100195	36052

| 2018-19 | 141555 | 81120 | 7119 | 10572 | 98812 | 45628 |
| 2019-20 | 198552 | 108035 | 14636 | 45213 | 167884 | 52874 |

Source: states/UTs/ Zonal conferences on inputs(plant protection)

Table 01 Production of selected major chemicals

(Figures in'000MT)

Year	Alkali chemicals	Inorganic chemicals	Organic chemicals	Pesticides tech	Dyes and dyestuffs	Total major chemicals	Synthetic fibres	Polymers	Elastomers (S. Rubber)
2005-06	5475	544	1545	82	30	7676	3124	7509	96
2006-07	5269	602	1545	85	33	7534	3144	7876	105
2007-08	5443	609	1552	83	44	7731	3527	7558	172
2008-09	5442	512	1254	85	32	7325	3532	7558	172
2009-10	5602	518	1280	82	42	7524	3532	7558	242
2010-11	5981	572	1342	82	47	8024	3558	8839	285
2011-12	6113	574	1396	120	171	8374	3599	9163	308
2012-13	6487	891	1686	155	240	9459	3625	9276	351
2013-14	6481	906	1792	179	284	9643	3601	1040	411
2014-15	6625	944	1619	186	285	9660	3532	7558	172
2015-16	6802	1002	1589	188	304	9884	3558	8839	242
2016-17	7009	1053	1638	214	320	10234	3599	9163	285
2017-18	7631	1058	1799	213	367	11068	3625	9276	308
2018-19	8043	1064	1884	217	370	11578	3601	10040	351
CAGR	148.8	101.0	114.8	69.0	78.6	151.1	133.1	158.2	73.0
	Synth.swtergent intermediates	Performqance plastic	Total Basic Major petrochemicals	Total Basic Major chemicals & petrochemicals					
2014-15	596	1591	13448	23108					

2015-16	566	1700	14905	24789				
2016-17	664	1799	15510	25744				
2017-18	743	1719	15670	26738				
2018-19	687	1589	16269	27847				
CAGR	73.0	158.2	133.1	151.1				

Table 2 Export and import- chemical and petrochemicals

(Figures in Rs Crore)

Years	A: Total National export which chemical	Chemicals	Petrochemicals	Total chemical and petrochemicals	Share of total chem. &petro chemicals in total national exports (%0
2005-06	456418	33462	17268	50730	11.11
2006-07	571779	39351	21801	61152	10.70
2007-08	655864	43482	22199	65681	10.01
2008-09	840755	53738	24226	77964	9.27
2009-10	845534	54948	29272	84220	9.96
2010-11 upto December	781178	51425	25908	77333	6.58
CAGR	2165.2%	1109.5%	933.5%	1229.5%	65.3%
2005-06	456418	33462	17268	50730	11.11
2006-07	571779	39351	21801	61152	10.70
2007-08	655864	43482	22199	65681	10.01
2008-09	840755	53738	24226	77964	9.27
2009-10	845534	54948	29272	84220	9.96
2010-11 upto December	781178	51425	25908	77333	6.58
CAGR	2165.2%	1109.5%	933.5%	1229.5%	65.3%

Land utilization in Haryana state table

Table.1 Land utilization in Haryana (Area in 000' hectares)

Sr. No.	Particulars	1993-94	1998-99	2003-04	2008-09	2013-14
1	Net area sown	3513	3628	3534	3576	3497
		(80.3)	(82.9)	(80.7)	(81.7)	(79.9)
2	Area sown more than once	2302	2692	2854	2924	2974
		(52.6)	(61.5)	(65.2)	(66.8)	(67.9)
3	Total cropped area	5815	6320	6388	6500	6471
4	Forest	167	115	45	39	35
		(3.81)	(2.62)	(1.02)	(0.89)	(0.80)
5	Land put to non-agricultural uses	322	350	432	470	537
		(7.36)	(8.00)	(9.87)	(10.7)	(12.2)
6	Barren and uncultivable land	91	89	100	103	125
		(2.08)	(2.03)	(2.28)	(2.35)	(2.85)
7	Current fallows	209	143	192	105	101
		(4.77)	(3.26)	(4.38)	(2.40)	(2.31)
8	Total area	4374	4374	4374	4374	4374
		(100)	(100)	(100)	(100)	(100)

Note: Figures in parentheses are in percentages except total cropped area as it is more than

Land Use Pattern In Haryana State

	Total geographical area	Total geographical	percentage
1	Total geographical area	4421	N.A
2	Reporting area for land utilization	4371	100.00
3	Forests	40	0.92
4	Not available for cultivation	573	13.11
5	Permanent pastures and other grazing land	30	0.69
6	Land under Misc.tree crops and groves	12	0.28
7	Curturable wasteland	29	0.67
8	Fallow lands other than current fallows	5	0.12
9	Current fallow	105	2.40
10	Net area sown	3576	81.81

Source; Land use statistics, Ministry of agriculture, GOI, 2008-09

In this table visualizes the land is acquired for non- agricultural motives because of landholding size operation detached. Do to the land of shrink the infrastructure very rapidly day. Because of the structural changes in our' economy Like the construction of roads, established in industrialization as well as the services sector developed. Many people migration rural to urban areas for accommodation in life because they can get the facility in urban areas. The center govt as well as the state and local govt for the development of land acquired in rural areas Due to many schemes launched like these scheme rural development, Pradhan Mantri Awyas yojana. Further, the Road construction and water resources management as well as to set up big project for the land acquired while land fragmented in large scale

Numbers of area of operational land holding in Haryana 2011(ha.)

Size group	Individual holdings		Joint Holding		Institutional Hodling		Total Holdings		Avg. Size (Ha.)
	No.	Area	No	Area	No	Area	No	Area	

Marginal <1ha.	288881	132925	483400	224915	5861	2635	778142	360475	0.46
Small 1-2 ha	108831	164083	203575	295054	2412	3567	314818	462704	1.47
Semi-Medium 2-4 ha	89273	256590	192236	551277	2319	6606	283828	814473	2.87
Medium 4-10ha	41223	237482	150427	928243	3044	19708	194694	118533	6.09
Large 10 ha+	2852	41620	39401	655508	3576	125392	45829	822520	17.95
Total	531060	832700	1069039	2654997	17212	157908	1617311	3645605	2.25

Source: Director of Census Operations, Haryana

Problem increasing the productivity in Haryana

Soil erosion of degradation; One of the major problems to increase the productivity of the production. The soil erosion is increasing day by day many reasons soil degradation to huge the use of fertilizer as well as chemical and pesticide in agriculture sector. Because of the fertilizer and chemical, the water logging problem is arising. To be overcome the soil of erosion we use in organic in agriculture. Not only has the problem in Haryana whiled the other states problems in solid degradation. Punjab is the first state to be crisis the problem of soil erosion.

Water Crisis problem in Haryana: As the population is increased the agriculture sector pressed because the agricultural commodities demand increased in the market. Further to gain of the profit in agriculture to use of chemicals and pesticides. The agriculture consumed water approximately 80 %.while on the other hand farmer's preference in Kharif crop and wheat crops. For the Kharif crops like paddy we need the abundance of water for paddy. Further to overcome the water crisis in Haryana govt to adopt the crop diversification and national horticulture mission. The Haryana's govt suggests the substitution of the paddy we should grow maize. The availability of the good quality of for the irrigation in Haryana in 65 %Further the industrial sector polluted of the water the main polluted water by the cotton industries and leather or marble industries while the Climate Change is a negative effect of the agriculture sector because of the climate change dairy farming and livestock farming faced a critical problem.

Improved agriculture Productivity

Strategy the use yielding varieties seeds in the agriculture sector. To be prompted in agriculture sector India adoption the high yielding varieties seeds in because of the use green revolution came in India. Further many other factors responsible for the green revolution hybrid seeds, new technology used in agriculture sector as well as to change the infrastructure and govt policies to increase the tremendous production in the agriculture sector.

To control the disease: Haryana govt to adoption Pest management disease of the crops. Further the wheat crops yellow rust disease these diseases the major challenge for Haryana in the agriculture sector. To control the disease Haryana to use DSR and CA use technology in the agriculture sector.

Change in demand; agricultural commodities change in demand pattern day by day the demand an increase in horticulture productivity. The horticulture productivity is the most important role in India. As we compared the other states with Haryana is not a good performance to produce horticulture crops. The Haryana govt should improve horticulture because of the increase in demand in an urban area

Increased production to face the major problem by farmers

Size of landholding operational: Farm size holding operational decrease day by day as the population increased the farm size holding fragmented because of the fragmented the small and marginal and semi-marginal farmers do not set up the water treatment plant. Further the cost of the cultivation is

very high as well as agricultural equipment very high prices because of the marginal farmers and semi-marginal farmers can't purchase because of their production are not increase.

Lack of adoption of new technology

New technology equipment like a tractor, harvester, Harro, Zero tiller   fertilizer and pesticide cost price very high because of the semi-farmers and the marginal farmer does not an adoption of the new technology. Farmers' friendly small tools and agriculture implements are either not available to the farmers or they are not convinced with their working efficiency, resulting in paying labor charges and increasing the cost of cultivation. Agriculture is the only enterprise where prices are determined by others than the producer. Also, the long chain of middlemen for marketing absorbs the farmers' margin leaving them with minimal profit for their product's Yield gaps between research stations/Field Level Demonstrations and farmers field and lack of knowledge about modern agriculture technologies and environment result in increased cost of cultivation without enhancing their production and hence profits. Farmers lack knowledge of latest technologies and various government schemes, this deficit of information limits their ability to make a profit. Agriculture   development for a loan by the central govt

Kisan credit card introduced For agriculture development, the central govt introduces the Kisan card scheme (KCC) in 1998. Haryana stands at 15th position in issuing KCC, with2.42 percent of issued KCC in the country. UP ranks first with approximately 20 percent of the total issued KCC. Of the total 36.41 lakh KCCs issued in the state, 47 percent are issued by commercial banks, 37 percent by cooperative banks and 16 percent by RRBs.

Agriculture insurance scheme Centre govt started the agriculture insurance scheme to cover the risk of the farmers. Further, the scheme applies Kharif or wheat crops Haryana state govt implement to cover the risk of Kharif 2004, Haryana is15th position of the country under the insurance scheme in Haryana 635778 farmers and to cover of the land area 769038.32 hectare land. Maharashtra is the first position of the country to be the maximum cover of the farmers and cover area of a hectare.

Conclusion

Agriculture development and agriculture growth, the govt launched scheme pradhan mantra Fasal Bima yojana," According to this scheme to cover the basic crops in this scheme like paddy, bajra, maize, and cotton know as Kharif crops. On the other hand wheat, barley, gram and mustard in rabi season to cover the crops insurance. Further, soil erosion to use fertilizer pesticides and chemicals in the agriculture sector. To overcome soil degradation govt adopt the organic farming under this scheme 50 acres to cover the land area to use inorganic fertilizers. To be prompt govt start the new scheme," Paramparagat Krishi Vikas Yojana," this scheme insist to use the organic fertilizer and to stop the burring crops of residue while the adoption of automation. Mostly in Haryana's farmer sapling basic crops because of these crops the negative effect of soil fertility as well as water dilution. Govt adoptions of crops of diversification in the present scenario of Haryana 15 percent cover area for horticulture production. The govt targeted in 2030 triple production in horticulture crops and to the maximum is to cover the area for horticulture crops. Because of the adoption of crop diversification farmers' income increase, as well as production, will increase. For the development of horticulture, Haryana govt established the horticulture university in karnal as well as three regional research stations established these stations with the international collaboration global universities. For the sustainable development of agriculture to start seed treatment programmed in actuarial as well as the additional extended coverage in the agriculture sector. Further in agriculture, the marketing problem is a very crucial problem in India, Generally, the farmers do not get a remunerative price of their products in the market. The market situation depends on averaging up or down many factors depends on the market like excess of demand commodities or excess supply of the commodities und includes the profit of charity/tradesman. Govt must be focus to increase the farmer's income and insist on the watershed development program as well as contract farming and adoption of Blanket policy use of betterment for agriculture sector in the future.

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EFFECTIVENESS OF MINIMUM SUPPORT PRICE POLICY AND FARMER'S INCOME IN HARYANA

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Agriculture sector is significance role of India's economy and livelihood human being. Further with the absence of agriculture's commodities men can't survival in long run. Many sectors depend on agriculture sector directly or indirectly like as Handloom, cotton, spinning, manning, textile, rice, oil, sugar are industries which are directly based on the agriculture sector in India. Agricultural sector significant role and contribution to the export some commodities like as a tea, coffee, sugar, Cotton, rice, oilseeds etc (Economic Survey; 2016).But in agriculture sector came many crisis because in crises many farmers commit suicide in India. Further lack of remunerative prices of their commodities while the agriculture's inputs cost wages rate increased. Generally the agriculture commodities price changeable in the market due to the supply increased while the demand in decreased of the agriculture's commodities. Further due to the pick off the season agriculture's production to create glut situation in the market. Further farmers are not get remunerative prices of their production. The peasants cant's get a remunerative prices of their production in behind of many reasons firstly farmers received the loan higher interest rate in the village level or district level tradesmen and Harti, and money lender. Further only famers received the loan when the crops harvested the farmers to carry out to the production of the tradesmen or Harti. The tradesmen gave the many excuse to the farmers which crops bring in to sell in the market. The corn is moisture and mixed in bubble and dust on the other hand the govt agency is not interest to buy the MSP (Minimum Support price).At this time the farmers came in mind dilemma whether he sell of his production or not. The farmers helplessly can't wait for a long time in the time so to sell of their production in low level price. Further the absence of transportations in the village level otherwise the transportation cost is very high the regulated markets far off in the village level. Otherwise the transportation cost very high while the road is pitiable or the road and infrastructural facility is not available in the village levels lead to the district level. So the farmers to sell of their production in the villages level and can't a fair prices of their production. Because of Farmers can't rise of their standard of living because of the negative effect of the farmers income, marginal farmers or semi –marginal farmers while the agriculture input cost very high as well as the interest high which received the loan during the sowing seasons. **According to National crime Bureau Report,**" Marginal farmers in 2014 the national crime bureau of India reported 5650 farmers suicide. The highest numbers of farmers were recorded suicide in 2004, when 18241 farmers committee suicide. The main reason of the farmers commits suicide in India like as monsoon failure, high indebtedness burden as well as increase the agricultural input for the cultivation of cost, family matters dispute problem while expenditure in marriage and function of their sons and daughters etc. Further in India 12 crore small and semi- marginal farmers holding cultivable land up to 2 hectare.. The most important role to increase the farmers income first and foremost reasons to get a fair or remunerative price of their production. Further though minimum support price to get remunerative price of the farmers determined by the CACP (Commission for agricultural cost and price). Further as well as to set up regulated market in India though the regulated market farmers get a remunerative price of their prices. The commission for agricultural cost and price was established in 1965.in the year of 1985 agricultural price commission but it has changed the names of ministry of agriculture and farmers welfare. But now the recommendations of CACP MSP of 26 crops implement cereals (paddy, wheat, maize, sorghum, pearls, millet, barley and Ragi). Pulse (gram, tur, moong, urad, lentil) Oilseeds (groundnut, Rapeseed, mustard, soya bean, sesame, Sunflower, Nigerseed) Commercial crops (copra, sugarcane, cotton, and Raw jute)

The MSP are announced by govt of India at the beginning of the sowing season for certain crops of the basis of the recommendation of the commission for agriculture cost and price (CACP).

MSP is determined fixed by the govt of India and the main objective of the MSP (minimum support price) to protect the producer famers against excessive fall in price during the bumper production in the pick season. This policy took its policy shape around 1974-76, the MSP(Minimum support price) and to serve as long term guarantee for investment decision of producer's in January there were 1972 , than across 18 states were the price was below MSP(Minimum Support price).For the transparency of MSP(Minimum support price)

For the Determination of MSP the CACP declared the crops of the MSP (Minimum Support price) prior to the sowing because of the lessening jeopardizing before of the plantation to reduce the growers. The govt declare the MSP (Minimum support Price) approximately 25 crops the crops declare the procurement price in many departments like FCI, (Food Corporation of India) CCI (Cotton Corporation of India) FAFED (National Agricultural Cooperative Marketing Federation of India Ltd so on, Further the govt take into account in many variable cost expenditure during the plantation of the season, cost of production, change in demand and supply, change in cost of cultivation etc. Further Agriculture's commodities demand in the international level as well as agriculture's inputs price change. At the time of sapling season growers should be take into consideration whether whichever the crops plantation or others crops elimination these crops price not remunerative before the sowing of the crops. The Commission for Agricultural cost prices (CACP) declare the procurement price or minimum support price, Secondly the farmers prefers to crops plantation govt insist the farmers these crops grower in time. The centre govt as well as the state govt subsides for the crops of diversification because the compensate of their cost which cost insured for the production in agriculture sector. At this time of situation the farmers in order the account to can grow the crops because the farmers includes the risks gains through the subsides by the govt, On the other hand the govt start the scheme for the farmers welfare and special provision to save the water. Farmers can sow the substitutions crops, farmers have alternatives to sowing of the crops like this kharif crops paddy maize, cotton or Rabi crops wheat gram oilseeds. Further to save the water the govt gave the subsides for sowing the maize crops. The farmers altering the crops sowing because the farmers make in mind to judgment cost of cultivation price of crops how many subsides to give by the govt, as well as crops of the price existence in the market. The rich peasants advance credit to poor farmers in return for the purchase of agriculture produce low price (lower than the MSP and price in the open market) though the received of the commission. **Determinants of Minimum support price.** In the budget of 2018-19 the government announced the minimum support price (MSP) for the kharif and Rabi crops and others crops the govt decided production crops of the minimum Support Price (MSP) implement in the different ways. Firstly Minimum support price implicit (MSP) A2 is determined the farmers insured the cost for the production in different ways like as Agriculture's inputs cost, the family includes labour to be paid for the production engagement in labour.C2 is related to cost the farmers have own land and includes the interest own capital to add for the production. FL includes cost of production and includes of the farmers risks which reserved of their production and expectation the demand in the long run of the production. The recommendation for the national commission for the farmers welfare include the miscellaneous cost in 2006

Regulated market should be set up in India for the fair or remunerative price of their production. The history of agricultural' regulated market started in India when the British govt felt necessary of supply price cotton at reasonable price to textile mill in Maharashtra. Further the karanjip cotton market was established in 1886 year as a regulated market under the first legislature act made in India. Further was a barar cotton market as well as green market act of 1897. The govt of Bombay enacted cotton market act according to this act provided for the established of market for cotton levying of market fee. Further to use of authorized weighted measure of appointment of dispute of Sub -committee for setting dispute between the farmers sellers and traders and buyers during the pre independence period. The first act was passed in 1897 in the name of barer cotton and green market law then after that many act have came in like India cotton committee act 1927. In the year at the end of 1940 there were 135 regulated market established in India. After that govt of India

appointed royal commission for agricultural committee set up in 1928 year. At the end of the year the commission submitted to report in 1929. The Indian central banking enquiry committee 1931 endorsed the recommendation the royal commission and offered some suggestion for the organization of improvement of agricultural marketing in India. The Hyderabad agricultural market act was passed in 1930 for the recommendation of Minimum support price (MSP) in form of market intervention by the govt of India and to insure of agricultural producer against any sharp in form prices. In the year of 2018-19 the govt established the E-NAM market. According to this E-NAM marketing the peasants to sell of their production through the online as well as to know the price of the production and what is happening agriculture activities in the market as like of the price determined of the commodities demand and supply in the to know in the market situation. The centre govt E-NAM 14 April 2016 established the E-NAM by March of 2018. In the present situation in India the a total of 585 market are expected to be on the E-NAM platform. As of July 2017, 455 regulated market from 13 states have integrated into the scheme and 42.18 lakh farmers and 89,199 traders have registered on E-NAM portal with a turnover of Rs. 16,163.1 Crore from the trading of 63.17 lakh tone produce. In 1970 mid in the govt 1970's the govt notified two types of price support (a) Minimum support price (MSP) (B) Procurement price.

Production and yield major crops Table number 1

Commodity / Kharif crops	2013-14 Cost	MSP	Return percentage	2014-15 Cost	MSP	Return Percentage	2015-16 Cost	MSP		2016-17 Cost	MSP	
PADDY(Common)	961	1310	36.31	978	1360	39.05	1117	1550	38.8	1166	1750	50.1
(Grade A) ^		1345			1400			1590			1770	
JOWAR (Hybrid)	1269	1500	18.20	1370	1530	11.67	1556	1700	9.3	1619	2430	50.1
(Maldandi) ^		1520			1550			1725			2450	
BAJRA	768	1250	62.76	832	1250	50.24	949	1425	50.2	990	1950	97.0
MAIZE	860	1310	52.32	914	1310	43.32	1044	1425	36.5	1131	1700	50.3
RAGI\	1338	1500	12.10	1474	1550	5.15	1861	1900	2.1	1931	2897	50.0
ARHAR(Tur)	3090	4300	39.02	3105	4350	40.09	3318	5450	64.3	3432	5675	65.4

	Cost	MSP	% Return	Cost	MSP	% Return	Cost	MSP	% Return	Cost	MSP	% Return
MOONG	3775	4500	19.20	3890	4600	18.20	4286	5575	30.1	4650	6975	50.0
URAD	3144	4300	36.76	3225	4350	34.88	3265	5400	65.4	3438	5600	62.9
COTTON (Medium Staple)	2485	3700	48.89	2510	3750	49.40	3276	4020	22.7	3433	5150	50.0
(Long Staple) ^		4000			4050			4320			5450	
GROUNDNUT IN SHELL	2720	4000	47.05	3232	4000	23.76	3159	4450	40.9	3260	4890	50.0
SUNFLOWER SEED	1692	3700	118.67	1729	3750	116.88	3481	4100	17.8	3592	5388	50.0
SOYABEEN	3000	2560	17.18	3129	2560	-8.5	2121	3050	43.8	2266	3399	50.0
SESAMUM	2919	4500	54.16	3765	4600	22.17	4067	5300	30.3	4166	6249	50.0
NIGERSEED	2279	3500	53.57	3080	3600	16.88	3912	4050	3.5	3918	5877	50.0
RABI CROPS												
WHEAT	687	1400	103.78	679	1450	113.54	817	1735	112.4	866	1840	112.5
BARLEY	620	1100	77.41	676	1150	70.11	845	1410	66.9	860	1440	67.4
GRAM	1926	3100	60.95	1786	3175	77.77	2461	4400	78.8	2637	4620	75.2
MASUR (LENTIL)	1696	2950	73.93	1799	3075	70.92	2366	4250	79.6	2532	4475	76.7

Cost*, Minimum Support Price (MSP) and percent return over cost (Rs/quintal)

Commodity	2016-17			2017-18			2018-19		
KHARIF CROPS	Cost	MSP	% Return over cost	Cost	MSP	% Return over cost	Cost	MSP	% Return over cost
PADDY(Common)	1166	1750	50.1	1117	1550	38.8	1166	1750	50.1
(Grade A) ^		1770			159			177	

					0			0	
JOWAR (Hybrid)	1619	2430	50.1	1556	1700	9.3	1619	2430	50.1
(Maldandi) ^		2450			1725			2450	
BAJRA	990	1950	97.0	949	1425	50.2	990	1950	97.0
MAIZE	1131	1700	50.3	1044	1425	36.5	1131	1700	50.3
RAGI	1931	2897	50.0	1861	1900	2.1	1931	2897	50.0
ARHAR(Tur)	3432	5675	65.4	3318	5450	64.3	3432	5675	65.4
MOONG	4650	6975	50.0	4286	5575	30.1	4650	6975	50.0
URAD	3438	5600	62.9	3265	5400	65.4	3438	5600	62.9
COTTON (Medium Staple)	3433	5150	50.0	3276	4020	22.7	3433	5150	50.0
(Long Staple) ^		5450			4320			5450	
GROUNDNUT IN SHELL	3260	4890	50.0	3159	4450	40.9	3260	4890	50.0
SUNFLOWER SEED	3592	5388	50.0	3481	4100	17.8	3592	5388	50.0
SOYABEEN	2266	3399	50.0	2121	3050	43.8	2266	3399	50.0
SESAMUM	4166	6249	50.0	4067	5300	30.3	4166	6249	50.0
NIGERSEED	3918	5877	50.0	3912	4050	3.5	3918	5877	50.0
RABI CROPS									
WHEAT	866	1840	112.5	817	1735	112.4	866	1840	112.5
BARLEY	860	1440	67.4	845	1410	66.9	860	1440	67.4
GRAM	2637	4620	75.2	2461	4400	78.8	2637	4620	75.2
MASUR (LENTIL)	2532	4475	76.7	2366	4250	79.6	2532	4475	76.7
RAPESEED/MUSTARD	2212	4200	89.9	2123	4000	88.4	2212	4200	89.9
SAFFLOWER	3294	4945	50.1	3125	4100	31.2	3294	4945	50.1
TORIA ^		4190			3900			4190	
OTHER CROPS									
COPRA (Milling)	5007	7511	50.0	4758	6500	36.6	5007	7511	50.0

(Ball)^		7750			6785	42.6		7750	
DE-HUSKED COCONUT ^		2030			1760			2030	
JUTE	2267	3700	63.2	2160	3500	62.0	2267	3700	63.2
SUGARCANE	155	275	77.4	152	255	67.8	155	275	77.4

Includes all paid out costs such as those incurred on account of hired human labour, bullock labour/machine labour, rent paid for leased in land, expenses incurred on use of material inputs like seeds, fertilizers, manures, irrigation charges, depreciation on implements and farm buildings, interest on working capital, diesel/electricity for operation of pump sets etc, miscellaneous expenses and imputed value of family labour.

^ Cost data are not separately compiled for Paddy(Grade A), Jowar (Maldandi), Cotton (Long staple), Toria, Copra(ball) and De-husked coconut.

Minimum support prices of various agricultural commodities (According to

All india Annual Average daily wage rateCrop year   Agriculture wages (In Rupees)

Year	Male	Female
2006-07	82	62
2007-08	91	70
2008-09	108	82
2009-10	124	95
2010-11	149	115
2011-12	183	134
2012-13	214	158
2013-14	229	178
2014-15	268	200
2015-16	281	218

Source: Directorate of Economics and Statistics.
Note.1. All inida annual Average is calculated for 20 major States
2. Average Agricultural wages is taken as average of five operations.

All –india project cost of production(A2+FL) of Major crops in inida per quintal

Serial No	Commodity **Kharif crops**	2013-14	2014-15	Difference in 2013-14 or 2014-15 percentage	2015-16	2016-17	Difference 2015-16 or 2016-17 percentage	2017-18	Difference in 2013-14 or 2017-18 percentage
1	Paddy	961	978	1.76	1020	1045	2.45	1117	16.23
2	Jowar	1269	1370	7.9	1467	1501	2.31	1556	22.61
3	Bajra	768	832	8.33	893	925	3.58	949	23.56
4	Maize	860	914	6.27	941	966	-1.7	1044	21.39
5	Ragi	1338	1474	10.16	1688	1733	2.66	1861	39.08
6	Arhar (tur)	3090	3105	0.38	3237	3241	0.12	3318	7.28
7	Moong	3775	3890	3.04	3993	4065	1.80	4286	13.53
8	Urad	3144	3225	2.57	3455	3584	3.75	3265	3.84
9	Cotton	2485	2510	1.00	2753	2889	4.94	3276	31.93
10	Groundnut in Shell	2720	3232	18.82	3314	3371	1.71	3159	16.13
11	Sunflower seed	1692	1729	2.18	1770	1852	4.6	3481	105.73
12	Soybeen (Black)	3000	3129	4.3	3282	3479	6.00	2121	-29.3
13	Sesamum	2919	3765	28.98	4132	4188	1.35	4067	39.32
14	Nigerseed	2279	3084	35.32	3146	3366	6.99	3912	71.65
	RABI CROPS								
1	Wheat	687	679	-1.16	744	785	5.51	797	16.01
2	Barley	620	676	9.03	735	776	5.57	816	31.61
3	Gram	1926	1786	-7.26	1902	2124	11.67	2241	16.35
4	Masur (lentil)	1696	1799	6.07	1866	2015	7.98	2174	28.18
5	Rapeseed/ Mustard	1260	1307	3.73	1504	1702	13.29	1871	48.49
6	Safflower	2754	2558	-7.11	3025	3057	1.057	3049	10.71
	Others crops								
1	Jute	1015	1702	67.68	2042	2125	4.0	2160	112.80
2	Sugarcane	120	123	2.5	140	140	0	145	20.83
3	Copra	3705	4398	18.70	4138	4676	13.00	4758	28.42

Source: price policy reports of commission for agricultural costs and price(CACP)
Figure are for kharif marketing season of the respective year for Rabi marketing season of the respective year
Unadjusted for 9.5% recovery of sugarcane of 2016-17 sugar season
The figure for this year is only available for kerla

Conclusion

The commission for agriculture cost and price to ensure the farmers of their product to sell in the marker. But the farmers income are not increase because of many reasons decrease of the farmers income. There is not regulated agricultural market in India lack of absence regulated market in India they do not get a fair prices of their production. Further mostly the marginal and semi-marginal farmers to sell of their production in the village level because of the transportation cost very high do not incurred the famers transportations cost because small farmers to sell the production in the village level. As the population increased farm size land fragmented because the farmers do not use of new technology as well as aware of the market situation relevant of the production's price. The farmers are not aware the market situation the middlemen and tradesmen do not correct the information to the famers because of market is fail. Further the govt should gave subsides to

increase production in agriculture's commodities as well as increase the farmers income. Because the farmers faced the problem for the agricultural the cost is increase day by day. Due to the cost of increase agriculture inputs because of the negative impact of famers income. In the modern times of period land size are fragmented because of the population increased joint family break into spouse family because of land shrinking. For the increased in agricultural production MSP (minimum support price) is not propositional increase rather than the agricultural cost. There is the main reason the farmers' agitations and slogans against the govt cost of increase in agriculture sector while agriculture's commodities price not increased.

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It is Certified that Prof./Dr./Mr./Mrs./Mrs. __Sh. Bal Krishan (Research Scholar)__ Reg : __9500076, Lovely Professional Uni. Phagwara (Jalandhar)__ Participated in The International Conference on "Innovative Research on Science, Humanities, Engineering & Management" (IC-IRSHEM-2020)" held at Shri Khushal Das University, Pilibanga, Hanumangarh (Rajasthan) India on 15-16 February 2020 as Chief Guest / Invitee Guest / Keynote Speaker / Chairperson/ Co-Chairperson / Subject Expert / Organizing Committee Member / Organizing Secretary / Anchor / Media Person / Volunteer / Participant / Author and Presented a Paper Titled __" An Economic Evalutions : Major Crops Production Agriculture Sector In Haryana State__ in Technical Session __II__

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This is to certify that *Mr. Bal Krishan, Research Scholar, Mittal School of Business, Lovely Professional University, Phagwara, Punjab, India has presented a paper, entitled "Economic Impacts of Globalization on Agriculture of Haryana", during the International e – Conference, June 19, 2020, organised by Department of Economics and Planning Commission Chair, Punjabi University, Patiala, Punjab, India.*

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