

Performance Of The Agricultural Sectors In Haryana

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INTRODUCTION

The state of Haryana is located in northern India, and Chandigarh serves as its capital. It was founded as India's 17th state on November 1st, 1966. It is encircled by Rajasthan in the south, Himachal Pradesh in the north, Punjab in the west, and Uttar Pradesh in the east. The northern Indian state of Haryana is a land-locked state that is situated between 27.39 and 30.35 degrees North latitude and 74.28 degrees and 77.36 degrees Longitude. Haryana is located between 700 and 3600 feet, or 200 and 1200 meters, above sea level. The main crops grown in Haryana grow more as a result of higher production levels brought on by the implementation of appreciation.

A total of 44.2 lakh hectares, or 1.34% of the country's total land area, are located in Haryana. 96% of the area is under cultivation, and 86% of that is agricultural. In addition, a large network of canals and tube Wells is used to irrigate around 75% of the region. Agriculture supports more than 51% of the population and provides 16.7% of the state's GDP. Rice-wheat, bajra-wheat, cotton-wheat, and sugarcane-wheat are the main cropping systems, with a cropping intensity of over 184%. Compared with the national average of 19.2 q/ha, the average productivity of all food grains in the state has reached 35.27 q/ha.

In Haryana, the yearly growth rate of the agriculture sector during the 11th plan was 3.9%, compared to 3.7% across all of India. The State's output of food grains has increased dramatically, largely thanks to the contributions of its three primary crops: rice, wheat, and bajra. In addition to producing the most basmati rice, the state also has the highest yields of wheat (51.8 q/ha), pearl millet (20.4 q/ha), and rapeseed & mustard (18.8 q/ha). The State's agricultural GDP is accounted for by the livestock industry, which makes up around 30% of it. Since the State's founding, milk and egg production have expanded by more than 5 times and 160 times, respectively. Additionally, the State has significant potential to boost the production of higher-income agricultural products and commodities such as guar, horticulture, poultry, and inland fish. In 2010–2011, horticulture was practiced over an area larger than 3.99 lakh hectares. This might be achievable as a result of the advancement and adoption of new technologies, the

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expansion of infrastructure, and governmental policies that are supportive of farmers. State involvement in the "Green Revolution" has received widespread appreciation. With a 60% share of India's exports of basmati rice, Haryana is the second-largest contributor to the country's stockpiles of food grains.

Trends in agriculture were examined at the state level. Along with Haryana, West Bengal has a fast rate of growth. They looked into the elements that affect agricultural production as well. In Haryana, governmental and private investments, incentives and subsidies, and irrigation facilities are the main ways to boost agricultural output. They examined the relationships between several parameters. They discovered no connection between government spending and rainfall, fertilizer, or prices. This indicates that public investment has a specific pattern. Cob-Douglas function is studied. The Cob-Douglas result shows that output is positively correlated with public spending on agriculture.

Due to the farmers' debt to sell their agricultural products on the spot market, agricultural marketing plays a significant role in Haryana in boosting the revenue of the farmers. Farmers in India do not receive fair pricing or on-the-spot procurement prices, and agricultural marketing practices are unethical. The government established the CACP in 1965 to combat fraud because one of its primary goals is to ensure that peasants receive a fair price for the goods they produce for farmers. To stop agricultural marketing fraud in 2018, the government launched the E-NAM mandi, which allows farmers to be paid fairly for their output. According to the E-Nam Scheme, the State has connections to three NAM (National Agricultural Market) schemes to improve the agricultural marketing of products and simplify the process for farmers and trade people.

For planning and development, Haryana is a part of the economically significant National Capital Region. As the "Bread Basket of India," Haryana has been at the forefront of implementing the most recent agricultural technology. It is also one of the top-producing states in the nation.

- Haryana produces all of its food and contributes the second-largest amount of grains to India's main grain store.
- The state produced 163.33 lakh MT of food grain in 2015–16, which is an outstanding contribution of 14% to the Central Pool.
- Rice, jowar, bajra, maize, cotton, jute, sugarcane, sesame, and groundnuts are the main crops grown during the Kharif season. They are sown in April and May and harvested in November.
- The main crops grown during the Rabi season are wheat, tobacco, gramme, linseed, rapeseed, and mustard, which have been planted in late October or early November and harvested in March.

- The area has an arable area of about 86%, and 96% of that area is under cultivation.
- Through the use of tube wells and a vast network of canals, almost 75% of the region is irrigated.
- Related industries including dairying, poultry, fisheries, arid horticulture, mushroom cultivation, beekeeping, and agro-forestry have a significant amount of potential.
- The e-NAM (National Agricultural Market) plan has been connected to 37 mandis in the State to make the system for marketing agricultural products simple, open, and farmer-friendly.
- According to the Indian Council of Agricultural Research, the state boasts the second-highest fish yield per hectare in the nation and is a "Fish Disease Free State."
- Several major marketplaces and the international airport are easily accessible thanks to the state's advantageous location near the National Capital Region (NCR).

Literature of Review

(Tripathy and Gowda 1993) examined the changes in Orissa's rice production patterns following the green revolution for the given timeframe starting in 1970–1971 and ending in 1989–1990. It was discovered that the state continued to see tremendous growth at a rate of 1.43 percent annually. The data also revealed that all of the state's districts' rice yields continued to show excellent outcomes. However, in the districts of Kalahandi, Keonjhar, and Sundargarh, rice production seemed to be at a stalemate.

(Chand and Birthal 1997) revealed that from 1957–1958, the usage of pesticides in Indian agriculture grew extremely quickly. The green revolution began in the first ten years, use of pesticides increased more quickly than the rise in output. However, during the post-green revolution era, the growth rate in output remained to be significantly larger than the growth in pesticide use. The use of pesticides in India was neither excessive nor indiscriminate, according to a comparison of pesticides used in agriculture in other nations.

(Green 2005) imagined that during the protracted green revolution era, the adoption of improved technology resulted in a huge increase in sugarcane output and production (1970-80). However, the post-green revolution period (1980–2001) saw a decline in sugarcane yield, which had a severe impact on the industry. Maharashtra's sugarcane yield fell since it was planted in a non-traditional area, viz. In addition to having inadequate water resources, these locations also suffered from shallow root zones and poor nutritional conditions. Because of this, productivity growth was unable to be increased.

(Sadeesh Kumar 2006) Since the execution of a technology mission specifically focused on oilseeds, it was discovered in the study that the growth in the overall production of oilseeds

had increased. Karnataka, Madhya Pradesh, and Maharashtra all demonstrated a significant increase in the production of all oilseeds. Productivity rose as well India's overall production and productivity increased significantly.

(Joshi, Kumar et al. 2014) discovered the growth patterns of the sugarcane crop's acreage, yield, and production from 2000-01 to 2009-10. In Haryana, the district and state levels both received the results. The study also highlighted the key contributing reasons behind the trends. The eastern and western zones of Haryana have been designated based on the various agro-climatic conditions. Despite district, regional, or state level, unfavorable trends have been observed in the area planted with sugarcane. The output of sugarcane yielded nearly identical results, with Bhiwani and Karnal being the main exceptions. The majority of Haryana's districts had rising sugarcane yields at favorable rates. Additionally, it was revealed that in practically all of Haryana's districts, the growth rate for the area planted with sugarcane has stayed larger than the increase of the crop's output.

(Rao and Mahendra 2003) discovered progress in agriculture. He was in favor of a second agricultural revolution. There is a new Hi-Tech technology to support the diversification of agriculture. Additionally, he discovered several issues with agriculture, such as financial issues - Sterilization of prices - Increased costs for crude oil, insecticides, and fertilizers - Issues with credit generation in rural areas - Reduced drug-related customs fees - Further, drop in agricultural GDP - Reduced irrigation facilitation. The growth of employment in agriculture, according to his argument, will enhance agricultural development and food security. Two solutions are proposed to improve the performance of agriculture in the budget, however, the issue of employment is not addressed; eliminating restrictions on agriculture trade will help farmers and the private sector more generally exercise initiative and enterprise to improve infrastructure, agricultural research, and extension, and loan delivery while safeguarding the environment to enable an appropriate supply response to incentives.

(Rao and Mahendra 2003) raised several difficulties with agriculture. A fundamental component of the economy, agriculture provides a living for 60% of the population. The agricultural sector is not robust enough to satisfy economic demand. In the study, elements that influence agricultural expansion are identified, and restrictions that have hampered it are examined. Since 1990 until recently, the agriculture sector's growth rate has been declining. The number of food crops' hectares yields has recently decreased along with this. Agriculture is growing at vastly different rates throughout states, and this is especially true for food grains.

(Gupta and Aten 1993) has demonstrated the professional benefits of agro-based industry development across India. He looked at the sector's strengths and weaknesses. Through the support of numerous programmers', he provided a fresh vision for the agriculture industry, particularly in Haryana.

(Jodhka 1994) advised that agriculture be modernized. Increased productivity and the integration of agriculture into the larger national market should also result from modernization, but also a fundamental shift in the way society views the social relations of production that will free agricultural labor from all forms of patronage and institution dependency.

Objectives of the study

1. To measure Haryana's agricultural sectors' performance
2. To calculate the measure of land productivity of Haryana.
3. To analyze the contribution of agriculture to the economic growth of the state.
4. To evaluate the agriculture sector's performance in Haryana.
5. To highlight the main problems of the agriculture sector's in Haryana.

Research and Methodology

Tabular charts, Diagrams, percentage and content analysis are applied.

Performance of Agriculture Sector in Haryana

The growth rate of Agriculture Sector in Haryana's GDP grew after independence for the Government placed special emphasis on this sector in its five year plans. Further, the green revolution took place in the Haryana giving a major boost to the growth of agriculture sector. As a consequence of rapid structural transition of the Haryana's economy over the years, the contribution of the Agriculture and Allied Sector at constant (2004-05) prices went down to only 16.7% in the state GDP during 2011-12. The economic growth of the State has become more sensitive to the growth rates in Industry and Services Sectors during the past few years but the recent experience suggests that high GDP growth without consistent and rapid agricultural growth is likely to accelerate inflation in the state, which would jeopardize the larger growth process. Therefore, the growth of the agriculture and allied sector continued to be a critical factor in the overall performance of the state economy.

Agriculture and allied sector is composed of agriculture, forestry and logging and fishing sub sectors. Agriculture including crop husbandry and dairy farming is the main component contributing about 95% in the GDP of the agriculture and allied sector. The contribution of forestry and fishing sub-sectors in GDP of agriculture and allied activities is around 4% and 1%, respectively. The impact of forestry and fishing subsectors is, therefore, very low on the overall growth of agriculture and allied sectors.

In Haryana, about 71.72% of the cropped area is under food grains and the remaining 28.28% area is under non-food grains. Haryana has become a leading producer of white button mushroom and ranks first in India as far as seasonal cultivation of mushroom is concerned. The production of mushroom is increased because of the abundant availability of wheat and paddy

straw, easy availability of quality spawn and comprehensive training programs provided by Universities and Government of Haryana.

Concerning agricultural output, Haryana ranks among the better Indian states. Rice, wheat, maize, oilseeds, sugarcane, cotton, and other main commodities have average yields that are higher than those of other large States and the All-India average (Table 1).

Table: 1 Major Product Average Yields, Metric Ton/Ha, 1995/1996-1997/1998

Commodity	Haryana	All India
All Foodgrains	2.70	1.55
Rice	2.66	1.86
Wheat	3.75	2.54
Potatoes	13.96	16.99
Maize	1.82	1.68
Rapeseed & Mustard	1.13	0.87
Groundnuts	0.84	1.08
Sunflower	1.64	0.60
Cotton	0.34	0.24
Sugarcane	56.52	68.52

Source: CMIE, 1999, Agriculture

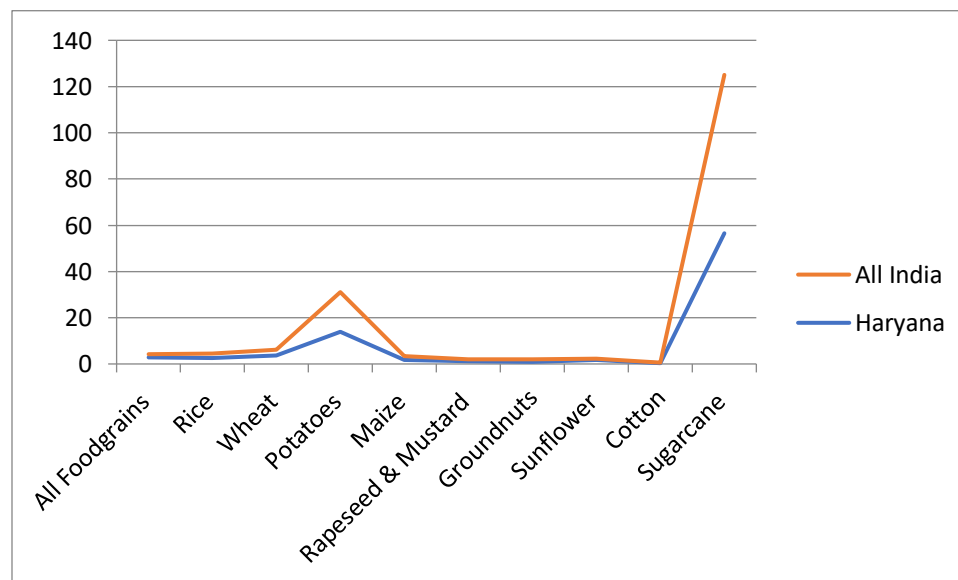


Figure: Major Product Average Yields, Metric Ton/Ha, 1995/1996-1997/1998

According to Table 2 below, the widespread adoption of high-yielding varieties, extensive use of fertilizers, improved access to water thanks to public and private investments in irrigation and power, and improved access to markets thanks to public investments in rural infrastructure all contributed to significant in maintaining agricultural growth in Haryana. Particularly, access to irrigation systems and wholesale markets, as well as fertilizer use, are among the highest in the nation. In the 1990s, this helped keep foodgrain output growth in Haryana at 3 percent per year, compared to the declining average annual growth rate of 1.7 percent for all of India.

Table: 2 Haryana and India's Overall Rural Sector Indicators

Indicators	Year	Haryana	All India
Total Area, million ha		4.3	328.7
Economic			
Per capita income (\$)	95/96	459	350
Agriculture's Contribution to GDP	97/98	36%	24%
Agricultural Production			
Ave. Size of Operational Holding, ha	90/91	2.4	1.6
Net Irrigated Area, million ha	95/96	2.8	53.5
Net Irrigated Area as % of Net Cropped Area	95/96	77%	38%
Irrigated Cropping Intensity	95/96	170%	134%
Electric Pumps/ Gross Irrigated Area, no/1000 ha	95/96	68	
Fertilizer Consumption, kg/ha	98/99	142	90
Tractors/Gross Cultivated Area, no/1000 ha	91/92	28	7
Infrastructure			
Roads, km per 000 sq km	95/96	615	731
Gross cropped area (000 ha) per primary market	92/93	37	7
Gross cropped area (000 ha) per wholesale market	95/96	22	26

Net irrigated area compared to the gross irrigated area. Source: CMIE, 1999, *Profile of States*; CMIE, Agriculture, diverse concerns; Directorate of Economics and Statistics, 1999, *Agricultural Statistics at a Glance*.

While the state ranks 10th in overall rice production, Haryana is the fourth-largest producer of wheat in the nation, accounting for over 12 percent of the nation's total wheat production. The state also produces coarse cereals like jowar and bajra. (Reference: Ministry of Agriculture and Farmers Welfare.)

Major Problems in Haryana's Agriculture sector

Haryana, one of the states that participated in the green revolution, has made great strides in food production. Previously, the main goals of agriculture in the State had been to boost food

production and enhance farmers' quality of life. However, today, agriculture is progressively evolving into a dynamic, technologically driven industry. However, this achievement has also generated issues for the succeeding generation.

The management of natural resources

Soil Resources: Under various production systems in the State, issues with soil deterioration (soil compaction, soil salinity, sodicity, water logging, and pesticide residue), multiple nutrient deficit, low organic carbon content, and loss in the total factor productivity have been observed. A major issue that is starting to emerge is the conversion of agricultural land to non-agricultural usage.

Water Resources: Traditionally, agriculture uses 80% of the water. About 60% of the State has access to good-quality water for guaranteed irrigation. Due to the increased demand for freshwater for domestic and industrial usage, the amount of irrigation water will continue to be less available in the future. In Haryana, brackish groundwater makes up about 65% of the total supply. In addition, untreated industrial effluents and sewage water discharged into the canal system damage freshwater supplies.

Climate Change: In most places, agricultural and animal systems are being significantly impacted by climate change, which is escalating the problems the agriculture sector is already facing the unpredictable climate change is putting more stress on crops, which increases resource consumption and increases the risk of insect resistance and recurrence.

Crop Improvement

Unchanging productivity: Many noteworthy accomplishments have been made as a result of the adoption of HYV/Hybrids, production, and protection technologies, supported by the necessary infrastructure and regulations. Agricultural hybrids and cultivars have played a major part in raising crop productivity. However, many crop yields are starting to decline.

Pest management: In Haryana, illness like yellow rust in wheat has recently become a significant problem. Similar to this, managing weeds has become a significant issue while using DSR and CA technologies.

Low Productivity in Horticulture: Most horticulture crops in Haryana have low per-unit production when compared to the greatest results found in other states.

Changing pattern of Demand: To fulfill the expanding demands of the population brought on by urbanization, changes in dietary preferences, and an increasing focus on nutritional security, value addition, and export, the supply of horticulture produce must be increased.

Major Problems Faced by Farmers

- Farmers, particularly those in small and marginal categories, are being forced into poverty by declining agricultural production, rising cultivation costs, and inadequate price realization.
- Quality seeds guaranteed a 15–20% increase in crop productivity. Before sowing, farmers frequently struggle to get high-quality seeds of improved kinds or hybrids.
- Farmers either lack access to farmer-friendly small equipment and agricultural implements or are unconvinced by their effectiveness, which leads to paying labor costs and rising cultivation costs.
- The only industry in which parties other than the producer set prices is agriculture. Additionally, the extensive network of marketing intermediaries eats up the farmers' profit margin, leaving them with little return for their produce.
- Farmers' lack of information about current agriculture technology and the environment, as well as yield discrepancies between research stations/Field Level Demonstrations and their fields; raise the cost of cultivation without increasing their output and, consequently, their profitability.
- Farmers' inability to generate income is hampered by their lack of awareness about current technologies and government initiatives.

The challenges relating to soil health and irrigation water availability make all these accomplishments encouraging. The state's agricultural growth does, however, exhibit significant annual fluctuations. The government is worried about the sustainability of agriculture, thus it has set a future goal for this sector to grow by at least 4% through technology and legislative changes.

Conclusion and policy implications:

In concluding remark, we can say that growth rate of principal crops has been improved during last decade in comparison to earlier decades. The production of Wheat, Rice and Total Food Grains is going on upward trend. The yield of the principal crops has also improved trend as well as improved use of agriculture land for the principal crops. On the other hand, the present study shows the volatile trend of the production of Oilseeds and Sugarcane as well fluctuating trend of Area and Yield of sugarcane and oilseeds.

Agriculture plays a significant role in the growth of an economy, and its improvement is essential to the economy's balanced development. It can be claimed that agriculture has been essential to Haryana's development. Technology and science have aided the state in reaching new heights. Haryana has emerged as a powerful pillar of agricultural development following the green revolution. Modern economics has a lot to say about agricultural development. The

agriculture industry benefited from crop diversification, wheat, and seed. Agriculture's expansion supplies the cash required for the growth of other industries, transportation, and international trade. The current situation calls for a balanced development of industry and agriculture.

- Increasing the utilization of agricultural inputs, technological advancement, and technical efficacy are the main drivers of agricultural expansion. The agricultural and rural economies are shifting structurally.
- Given the demand for land, there are fewer opportunities for growing the net sown area. Increasing the intensity of land use has the potential to increase cropped area, but doing so requires expenditures in infrastructure development, such as irrigation.
- The agriculture sector's quick growth provides a positive outlook and additional impetus for advancement. As a result, it contributes to the formation of a favorable environment for economic growth in general.
- Economic growth so depends on how quickly agriculture develops. This development will spur potential study and the creation of development policies for Haryana.
- Crops that are suitable for various agro-climatic zones' conditions and need less water should be made a priority.
- It should be highlighted that agricultural effects are reciprocal, meaning that the agricultural sector is affected by both growth acceleration and deceleration.
- Using alternative fertilizers including green manure, farmyard manure, and biofertilizers could help reduce the usage of chemical fertilizers.
- Better irrigation plans, programmers' to minimize soil erosion and the use of contemporary crop varieties, and fertilizers can all help to raise land productivity.
- An important consideration when evaluating the state economy's overall performance is the analysis of the sector's growth. This requires a wider variety of crops and goods, behavioral research, and more recent sources of information for topics that are only lightly addressed.
- The timeliness of data and new trends are significant in today's economy, which is moving more quickly.

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