JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Trends in Agricultural Production: A case study of Haryana

Leena Rani*[1] & Major (Dr.) Shamsher Singh Dhull*[2]

[1] Research Scholar, Department of Geography, NIILM University, Kaithal, Haryana

[2] Professor, Department of Geography, NIILM University, Kaithal, Haryana

Abstract:

Haryana, One of India's leading agrarian state, has witnessed significant shifts in agricultural production over the years. The Green Revolution played a crucial role in transforming Haryana into a major producer of wheat and rice, contributing significantly to India's food security. Haryana remains a major agricultural powerhouse in India, with high productivity in food grains. The production of major crops like wheat, rice, sugarcane, cotton, and oilseeds increased progressively. The state has consistently maintained high productivity levels due to advancements in irrigation, mechanization and improved seed varieties. However, sustainable farming practices, efficient water use and modern agricultural techniques are essential to maintain long-term productivity. This study analyzes trends in agricultural production in Haryana state.

Key Words: Agriculture, Production, Haryana.

Introduction:

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. 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. During 'Green Revolution' period in mid-sixties, the traditional agricultural practices were replaced by modern high-intensity agricultural technologies, mechanisation, high yielding varieties (HYV), increased use of fertilisers and chemicals, specialisation and government policies that

favoured maximum production During 'Green Revolution' period in mid-sixties, the traditional agricultural practices were replaced by modern high-intensity agricultural technologies, mechanisation, high yielding varieties (HYV), increased use of fertilisers and chemicals, specialisation and government policies that favoured maximum production. Haryana is a small state having 4.4 million hectares of land, forming 1.34% of the total geographical area of the country. Nearly 79% of the total geographical area of the state is under cultivation, of which 84% is irrigated, with cropping intensity of 185%. Based on ecology and cropping pattern the state can be divided into three agro-eco regions. Zone-I consists of 8 districts namely Panchkula, Ambala, Kurukshetra, Yamuna Nagar, Karnal, Kaithal, Panipat and Sonipat. Zone-II has 7 districts namely Sirsa, Fatehabad, Hisar, Jind, Rohtak, Faridabad and Palwal. Zone-III has six districts namely Bhiwani, Mahendragarh, Rewari, Jhajjar, Gurgaon and Nuh. The Zone I, II and III cover 32%, 39% and 29% area of the state, respectively. The area falling under Zone I and II are ideal for crop diversification with wheat, rice, sugarcane, cotton and pulses. Agriculture is main occupation in Haryana and more than 2/3rd of its population is dependent on agriculture. The average size of land holding is 2.25 hectares only and about 48% farmers are marginal having land up to 1 hectare only. Agricultural growth in Haryana showed an increase in area under specialised crops of wheat, rice and cotton while area under coarse cereals and pulses decreased in almost all districts since 1980. The area under food grains showed negative growth whereas production and productivity were positive during over all period. In general, for food grains the yield effect was higher than area effect due to increased use of high yielding varieties.

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 behaviour of trends and performance of agriculture production in Haryana farm area, yield, production and income, the exponential function will be fitted.

Review of Literature:

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.

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.

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.

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.

Result and Discussion:

In Haryana the average size of land holding is 2.25 hectares which is higher than national average of 1.16 hectares. In Punjab it is 3.11 hectares. The states which have higher land holding are Arunachal Pradesh (3.51ha.) and Rajasthan (3.07ha.). The average land holding is lowest in Kerala (0.22ha.). Over the decades, the total cropped area has steadily increased, rising from 4599 (1966-67) to 6528 (2020-2021). This indicates an expansion of agricultural activities. Table 1 shows total reported area has remained relatively stable, fluctuating slightly around 4,300–4,400 thousand hectares. This stability suggests minimal changes in land availability. The net area sown peaked in 1980-81 (3,602 thousand hectares) and has slightly declined to 3,518 thousand hectares in 2010-11. This could indicate urbanization, industrialization, or land degradation reducing available agricultural land. The Areas sown more than once; has increased consistently over the years, from 1,176 thousand hectares in 1966-67 to 2,917 thousand hectares in 2020-21.

Table 1: Classification of area in Haryana (000 Hectares).

Year	Total Reported Area	Net Area Sown **(NAS)**	Cultivable Area	Area sown more than once	Total Cropped area	Total Irrigated Area		% of NAS to total Reported	Crop Intensity in %
						Area	% to NAS		
1966-67	4399	3423	3819	1176	4599	1293	37.8	77.81	134.4
1970-71	4802	3565	3813	1392	4957	1532	43.00	74.24	139.1
1980-81	4405	3602	3839	1860	5462	2134	59.20	81.77	151.6
1990-91	4378	3575	3792	2344	5919	2600	72.70	81.66	165.6
2000-01	4402	3526	3817	2589	6115	2958	83.90	80.10	173.4
2010-11	4370	3518	3681	2987	6505	2887	82.10	80.50	184.9
2020-21	4371	3611	3847	2917	6528	3360	93.00	82.61	180.78

Source: Office of Director of Land Records, Haryana.

It indicates intensified cropping practices to maximize agricultural output. Total cropped area also Increased steadily from 4,995 thousand hectares in 1966-67 to 6,528 thousand hectares in 2020-21, showcasing improved

land utilization as well as total Irrigated area shown significant growth, especially between 1980-81 and 2000-01. It rose from 2,134 to 2,958 thousand hectares, indicating efforts in irrigation infrastructure development. By 2020-21, the irrigated area reached 3,360 thousand hectares, supporting higher cropping intensity. Percentage of net area sown to total reported area was highest in the 1980s but has since stabilized around 82-83%. Crop Intensity has also increased from 134.4% in 1966-67 to 180.78% in 2020-21. It reflects greater utilization of land through multiple cropping cycles. Table 2 presents the production of principal crops in Haryana (in '000 tonnes or bales) over selected years from 1966-67 to 2020-21. Wheat production increased significantly from 1,059 ('000 tonnes) in 1966-67 to 12,393 ('000 tonnes) in 2020-21. It shows consistent growth across decades, reflecting advancements in agricultural practices and technology. Rice production increased from 223 ('000 tonnes) in 1966-67 to 5,638 ('000 tonnes) in 2020-21. Rapid growth between 2000-01 and 2020-21 suggests improved irrigation and hybrid rice varieties. Total food grain production grew from 2,592 ('000 tonnes) in 1966-67 to 19,522 ('000 tonnes) in 2020-21. It reflects Haryana's success in food grain self-sufficiency due to the Green Revolution. Sugarcane production is fluctuating, peaking at 8,532 ('000 tonnes) in 2020-21. It indicates varying focus on sugarcane farming likely driven by demand and profitability. Growth of Oilseeds is Moderate; from 92 ('000 tonnes) in 1966-67 to 1,349 ('000 tonnes) in 2020-21.

Table 2: Production of principal crops in Haryana ('000' Tonne).

Year	Wheat	Rice	Total F/Grain	Sugarcane	Oilseeds	Cotton (000 Bales)
1966-67	1059	223	2592	5100	92	288
1970-71	2342	460	4771	7070	99	373
1980-81	3490	1259	6036	4600	188	643
1990-91	6436	1834	9559	7800	638	1155
2000-01	9669	2695	13295	8170	563	1383
2010-11	11578	3465	16568	6042	965	1747
2020-21	12393	5638	19522	8532	1349	1823

Source: O/o Director of Agriculture and Farmers Welfare, Haryana.

It shows steady improvement, although growth is less dramatic compared to other crops and Cotton is increased from 288 ('000 bales) in 1966-67 to 1,823 ('000 bales) in 2020-21. Its steady growth is possibly due to the introduction of better cotton varieties. The Green Revolution played a key role in boosting wheat and rice production in Haryana. The focus on cash crops like cotton and sugarcane increased in later years, diversifying the agricultural economy. Oilseed production shows the least growth, suggesting that it remains a secondary focus for farmers. Table 3 shows the area under High-Yielding Varieties (HYV) of rice and wheat in Haryana, measured in thousand hectares, over different years. Total area under rice cultivation has steadily increased from 192 (1966-67) to 1,532.4 (2020-21) thousand hectares. The proportion of the area under HYV of rice increased significantly from 11.1% (1970-71) to 86.3% (2020-21). The absolute area under HYV rice increased from 30 (1970-71) to 1,323.2 (2020-21) thousand hectares. The total area under wheat cultivation rose from 743 (1966-67) to 2,507.0 (2020-21) thousand hectares. The adoption of HYV wheat has been near-universal since 1980-81, with 92.0% of the area under HYV then, reaching 100% (2020-21). The absolute area under

HYV wheat increased from 630 (1970-71) to 2,507.0 (2020-21) thousand hectares. Adoption of HYV has significantly increased for both crops, but wheat reached 100% adoption earlier than rice. The total cultivated area for both crops expanded, reflecting agricultural intensification or expansion in Haryana.

Table 3: Area under high yielding varieties of food grains in Haryana (000Hectares).

Year	Rice			Wheat		
	Total	HYV	%	Total	HYV	%
1966-67	192.0	DNA*	DNA*	743.0	DNA*	DNA*
1970-71	269.2	30.0	11.1	1,129.3	630	55.8
1980-81	483.9	414.0	85.6	1,479.0	1,360	92.0
1990-91	661.2	479.0	72.4	1,850.1	1,829	98.9
2000-01	1,054.3	656.7	62.3	2,354.8	2295	97.5
2010-11	1,243.0	779.0	62.7	2,504.0	2,470	98.2
2020-21	1,532.4	1,323.2	86.3	2,507.0	2,507	100.0

DNA*: Data not available.

Source: Office of Director of Land Records, Haryana.

This reflects Haryana's focus on adopting modern agricultural practices to increase productivity. Table 4 presents data on the area, production and average yield per hectare for wheat and rice in Haryana across different years.

Table 4: Area, production and average yield per hectare.

Year	Wheat			Rice		
	Area	Production	Yield (Av.)	Area	Production	Yield (Av.)
1966-67	743.0	1059	1425	192.0	223	1161
1970-71	1129.3	2342	2074	269.2	460	1697
1980-81	1479.0	3490	2360	483.9	1259	2606
1990-91	1850.1	6436	3479	661.2	1834	2775
2000-01	2354.8	9669	4106	1054.3	2695	2557
2010-11	2504.0	11578	4624	1243.3	3465	2788
2020-21	2564.0	12393	4834	1527.6	5638	3691

Source: Department of Agriculture and Farmers Welfare, Haryana.

The area under wheat cultivation steadily increased from 743 thousand hectares (1966-67) to 2,564.0 thousand hectares (2020-21). Production rose significantly from 1,059 thousand tonnes (1966-67) to 12,393 thousand tonnes (2020-21) due to increased area and yield. Yield improved dramatically from 1425 kg/ha (1966-67) to 4,834 kg/ha (2020-21), reflecting advancements in farming techniques and adoption of high-yielding varieties. The area under rice cultivation grew from 192 thousand hectares (1966-67) to 1,527.6 thousand hectares (2020-21). Rice production increased significantly from 223 thousand tonnes (1966-67) to 5,638 thousand tonnes (2020-21). Yield improved from 1,161 kg/ha (1966-67) to 3,691 kg/ha (2020-21), more than doubling over the

period. Both crops experienced a substantial increase in area, production, and yield over the years. The improvement in yields highlights the success of agricultural intensification, adoption of modern farming techniques, and better irrigation and input systems. Wheat yields consistently surpassed rice yields, indicating Haryana's stronger performance in wheat productivity. This data underscores Haryana's progress in achieving agricultural growth and food security through technological and agronomic advancements.

Conclusion:

During the study period in Haryana, area sown more than once has increased more than 2.4 times. Total cropped area has increased more than 1.4 times. Total Irrigated area has also increased more than 2.5 times. Under the major crops production, wheat has increased 11.7 times and rice increased more than 25 times. The total food grains production has increased more than 7.5 times moreover Sugarcane has also increased 1.67 times, Oilseeds increased more than 14.6 times and Cotton has increased more than 6.3 times. Area under high yielding varieties of rice has increased 44 times, production increased 25.28 times and average yield has been increased 3.16 times. Area under high yielding varieties of wheat has increased approximately 4 times, production increased 11.7 and average yield has been increased 3.4 times. Production increased due to Green Revolution, improved irrigation, use of fertilizers and pesticides, Mechanization of Agriculture, Government policies and MSP, Agricultural research and development and Expansion of credit facilities like ease credit and subsidies through schemes like kisan credit card (KCC) has enabled farmers to invest in better inputs. These combined factors have significantly increased the production. However, sustainable farming practices, efficient water use and modern agricultural techniques are essential to maintain long-term productivity.