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

Harvesting Prosperity: Haryana's Agricultural Reforms Drive and Socio-economic Development

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Abstract

The state of Haryana has implemented several agricultural reforms over the years to boost productivity, enhance farmers' income, and contribute to overall socio-economic development. These reforms have included the introduction of high-yielding varieties, better irrigation practices, modernization of agricultural practices, and policy measures aimed at improving market access and reducing the cost of inputs. The impacts of these reforms on Haryana's socio-economic development are significant, contributing to both economic growth and improved social conditions in rural areas. The Agricultural reforms entails a significant enhancement in agricultural productivity within a brief timeframe, as well as the maintenance of a higher level of agricultural output over a relatively extended period. The introduction of miraculous seeds and dwarf and early-maturing types has resulted in a rapid and significant change in Indian agriculture. The Agricultural reforms in Haryana has significantly improved agricultural productivity, but at the expense of land and water degradation. The use of intensive agriculture during the Agricultural reforms era resulted in a sustained growth in agricultural productivity, primarily attributed to the application of substantial amounts of fertilizers and pesticides. The implementation of diverse contemporary agricultural methods has bolstered the significance of the agricultural sector in the economic advancement and creation of employment opportunities in Haryana. Haryana has one of the highest cropping intensities among all Indian states. The introduction of the Agricultural reforms has led to a significant improvement in the production and productivity of major crops in the region. However, the implementation of a new cultivation strategy has limited the state to cultivating only two crops: wheat and paddy. Moreover, it has led to the degradation of soil, the proliferation of pests in crops, the excessive extraction of groundwater, and the formation of waterlogged desert areas. This study discusses the influence of the Agricultural reformson the economic progress of Haryana.

Key terms:

Green Revolution, agriculture, economic development, Haryana, Agricultural Reforms, Haryana, Socio-Economic Development, High-Yielding Varieties, Irrigation Practices, Market Access, Rural Development, Farmers' Income, Modernization, Policy Measures

Introduction

Prior to the 1940s, the term 'economic progress' was infrequently employed. Prior to its establishment in 1966, the Haryana region was agriculturally underdeveloped compared to the erstwhile Punjab. The net area irrigated in Punjab was 35.54

percent, which is lower than the 58.48 percent. The compound annual growth rate of agriculture in the ratio 1:2 is associated with Punjab. It is worth noting that the establishment of the state coincided with the commencement of the Agricultural reformsin several regions of India, including the Haryana area. The introduction of the Borlaug seed fertilizer technique marked a significant shift in agricultural development in the mid-1960s. The Agricultural reformswas a technological innovation. This incident served as a catalyst for the expansion of irrigation, which was the crucial requirement for its success. However, the progress in agriculture led to a shortage of clean water, the destruction of forests, and the erosion of soil in the Shiwalik hills and the Aravalli outliers. It also caused waterlogging in areas irrigated by canals and low-lying regions in the east-central area and along the streams. Additionally, there was a significant decline in the water level in the tubewell irrigated area in the north-east.

The annals of human history have borne witness to several momentous agricultural revolutions. An important agricultural transformation occurred along political boundaries during the post-1917 revolution in the Soviet Union. The agricultural land was expropriated and restructured into either collective or state-owned farms. The formation of communes in China was guided by the same communist ideology. In the mid-20th century, the world saw a significant agricultural upheaval known as the Green upheaval. This revolution was characterized by the development of high-yielding varieties of wheat and paddy, which resulted in increased agricultural productivity. Norman Borlaug was credited with the development of this new technology, specifically the innovation of new types of dwarf wheat, for which he was honored with the Nobel Peace Prize.

The introduction of the new seeds took place in third world nations between 1965 and 1970. The per capita productivity in emerging countries had a significant boost as a result of the introduction of new seeds. According to the World Development Report (2008), the Agricultural reformsin Asia resulted in a twofold increase in cereal production from 1970 to 1995.

Although the Agricultural reforms was clearly successful, it faced significant criticism since its inception due to ecological and socio-economic concerns. A major critique of the Green Revolution's achievements was the inability to achieve high yields under specific ideal conditions, such as optimal irrigation, intensive fertilizer use, monoculture for efficient machinery and equipment utilization, and pest control through chemical pesticides.

The implementation of this innovative technique has entirely substituted the previous method of production in Haryana's agriculture. Haryana quickly became a role model for other states in the country as traditional agriculture was gradually replaced by modern and commercial agriculture. Undoubtedly, the use of modern technology has resulted in significant economic benefits for both the State and the country. These benefits include a substantial rise in production and productivity, as well as the expansion of irrigation coverage to encompass 95 percent of the entire cropped area in Haryana. Therefore, it is crucial to analyze the economic benefits of the agricultural reforms.

Aims and Objectives.

i Firstly, to determine the spatial distribution of the agricultural reforms in Haryana.

ii. The objective is to analyze the expansion of agricultural activity and the resulting socio economic progress in Haryana.

iii. To establish the connections between the Agricultural reforms and economic progress propped up by empirical evidence from Haryana.

Methodology

This work utilized secondary data obtained from several issues of the statistical abstract of Haryana, which is issued by the Economic and Statistical Advisor of the Planning Department of the Government of Haryana, as well as from the Haryana

Agricultural University in Hisar. The methodology in this chapter focuses on the aims stated in the introduction of this work. The objective is to analyze the economic advantages of the Agricultural reforms and determine the specific aspects of the economy that would be affected by it. Additionally, the aim is to assess the current situation regarding regional disparities in the extent and intensity of Agricultural reforms. The degree of cropping in the Agricultural reforms has been determined using the following formula:

-The product of the total cropped area and 100.

-Cropping intensity is calculated by dividing the total cropped area by the total arable land area.

-Agricultural land

-The Agricultural reformshas brought forth significant economic advantages.

Agricultural Growth: Meaning

Agricultural growth refers to the increase in the production, productivity, and overall output of the agricultural sector over time. This growth can be measured through various indicators such as crop yield, livestock production, and the value of agricultural products. The significance of agricultural growth extends beyond mere increases in food supply; it encompasses improvements in the efficiency and sustainability of farming practices, technological advancements, and enhanced resilience against environmental and economic challenges. Growth in this sector is crucial for ensuring food security, reducing poverty, and fostering economic development, especially in rural areas where agriculture is often the primary source of livelihood. Additionally, agricultural growth can stimulate other sectors of the economy through its backward and forward linkages, creating demand for inputs like seeds, fertilizers, and machinery, and supplying raw materials for industries like food processing and textiles. This growth is also linked to better nutritional outcomes and health improvements, as it can lead to more diverse and affordable food options. Moreover, sustainable agricultural growth involves practices that maintain the health of the soil, water, and ecosystems, thereby ensuring that future generations can continue to meet their food needs. Thus, agricultural growth is a multifaceted concept that plays a pivotal role in economic stability, environmental sustainability, and societal well-being.

As far as Haryana is taken into account on these parameters, the agricultural growth has been a significant driver of the region's economic development. Known as one of the leading agricultural states in India, Haryana has made substantial strides in enhancing crop productivity and diversifying its agricultural portfolio. The state's success can be attributed to a combination of favorable government policies, investments in irrigation infrastructure, and the adoption of modern farming techniques. Haryana's farmers have benefited from access to high-quality seeds, fertilizers, and efficient irrigation systems, which have collectively boosted crop yields. The Agricultural reforms had a profound impact on the state, transforming it into a major producer of wheat and rice. Additionally, Haryana has embraced horticulture, dairy farming, and fisheries, contributing to a more varied agricultural output. The state's emphasis on research and development in agriculture, supported by institutions like the Chaudhary Charan Singh Haryana Agricultural University, has further propelled its agricultural growth. By focusing on sustainable practices and resource management, Haryana aims to continue its trajectory of agricultural advancement while ensuring environmental conservation and rural prosperity.

Background of Agricultural Reforms in Haryana

Agriculture is the backbone of Haryana's economy, with a significant portion of its population engaged in farming. Over the years, the state has implemented various reforms aimed at enhancing productivity, ensuring sustainable agricultural practices, and improving the socio-economic status of farmers. The agricultural reforms in Haryana focus on modernization,

diversification, and the adoption of new technologies to address challenges such as water scarcity, soil health, and market access.

-Modernization of Agricultural Practices:

Haryana has made substantial investments in the modernization of agricultural practices. This includes the promotion of advanced irrigation techniques like drip and sprinkler irrigation to optimize water use. The state has also encouraged the use of high-yielding variety seeds and modern farming equipment to increase productivity. Moreover, the Haryana government has established several training and extension centers to educate farmers on the latest agricultural practices and technologies [[”]](https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1826742)
[[”]](https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1899193).

- Crop Diversification Programs

To reduce the dependency on water-intensive crops like rice and wheat, Haryana has introduced crop diversification programs. These programs promote the cultivation of alternative crops such as pulses, oilseeds, and horticultural crops. The government provides financial incentives and technical support to farmers who adopt crop diversification. This shift not only helps in conserving water but also improves soil health and increases farmers' income by providing better market opportunities for diverse crops [[”]](https://mdbiocoals.com/blog-detail.php?id=MTc4).

-Soil Health Management

Maintaining soil health is crucial for sustainable agriculture. Haryana has implemented various initiatives to monitor and improve soil health. The state distributes soil health cards to farmers, which provide detailed information on soil nutrient status and recommend appropriate fertilizers. Additionally, the government promotes the use of organic farming practices and bio-fertilizers to enhance soil fertility and reduce the dependency on chemical inputs [[”]](https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1826742).

- Water Management Initiatives

Water scarcity is a significant challenge in Haryana's agriculture. The state has introduced several water management initiatives to ensure efficient use of water resources. These include the construction of check dams, rainwater harvesting structures, and the renovation of traditional water bodies. The government also promotes the adoption of micro-irrigation systems, which help in reducing water consumption and increasing irrigation efficiency [[”]](https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1899193) [[”]](https://mdbiocoals.com/blog-detail.php?id=MTc4).

-Financial and Insurance Support

Haryana provides various financial support schemes to farmers, including subsidies on agricultural inputs like seeds, fertilizers, and machinery. The state also implements crop insurance schemes to protect farmers from the risks associated with crop failure due to natural calamities. These measures aim to reduce the financial burden on farmers and ensure their economic stability [[”]](https://mdbiocoals.com/blog-detail.php?id=MTc4).-

-Market Reforms and Farmer Empowerment

To improve market access and ensure fair prices for agricultural produce, Haryana has implemented several market reforms. The state has established a network of regulated markets and farmer markets to facilitate direct sales. Additionally, the

government promotes the use of digital platforms and e-NAM (National Agriculture Market) to provide better market linkages. These reforms empower farmers by providing them with multiple selling options and better price realization [[”]](https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1899193).

- Promotion of Organic Farming

The Haryana government actively promotes organic farming to ensure sustainable agricultural practices and improve the quality of produce. Financial incentives, training programs, and certification support are provided to farmers who adopt organic farming. The state aims to increase the area under organic cultivation and develop a robust market for organic products [[”]](https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1826742) [[”]](https://mdbiocoals.com/blog-detail.php?id=MTc4).

Socio-economic Impacts

From an economic standpoint, the agricultural sector in the state of Haryana has had remarkable advancement since gaining independence in 1966. Following its establishment as a new state, Haryana witnessed significant progress in the agricultural sector. From 1966 to 1985, the state's economy experienced an annual growth rate of 5.60%, compared to 5.18% for Punjab and 4.05% for the entire country. Since the 1970s, the State of Haryana has been recognized as the 'Bread Basket' of India because of its strong agricultural performance. Haryana's food surpluses have played a crucial role in supporting the national food system. Despite its small size, Haryana contributes significantly to India's agricultural output, producing 3.4 million tonnes of rice and 11.8 million tonnes of wheat, which is a remarkable achievement considering it covers only 1.34 per cent of the country's entire geographical area. Haryana ranks third in overall food grain output, after Utter Pradesh and Punjab. An analysis has been conducted to assess the primary economic benefits of the agricultural reforms, with a specific focus on the following aspects:

-There has been a rise in agricultural output.

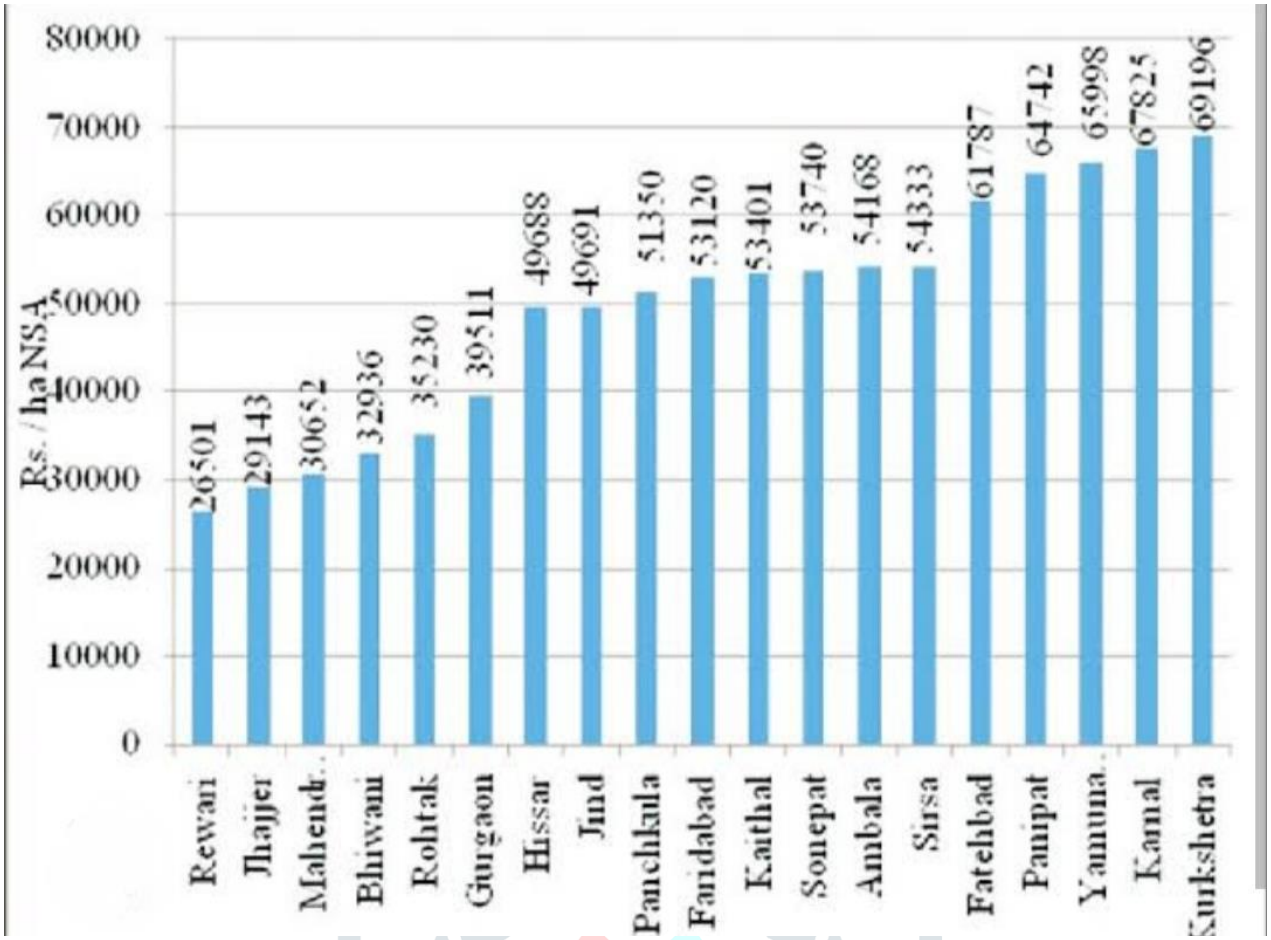
-Enhancement of productivity

-Impact on Employment

--Reliance on the industrial sector

-Impact on Agricultural Structure

-Effect on Landless Labor



(District wise Agricultural Productivity)

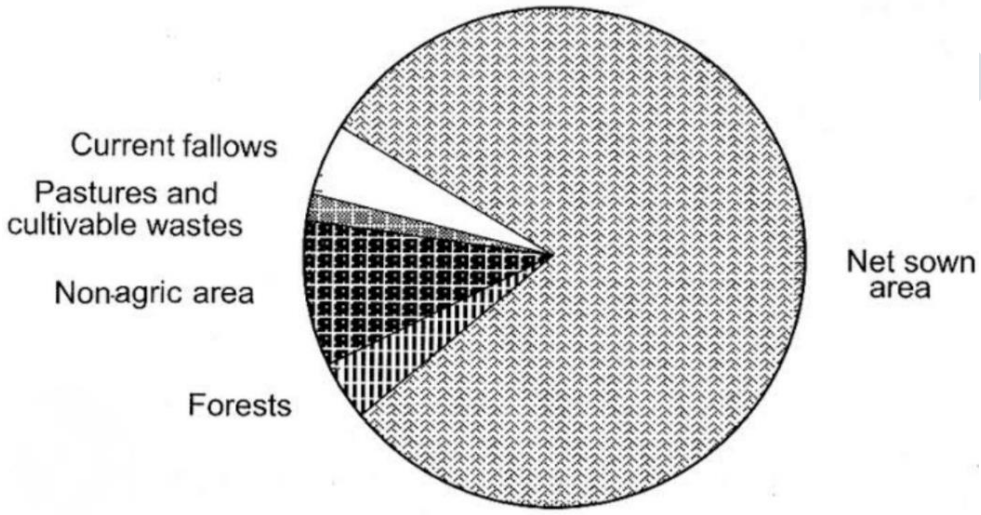
Gross State Domestic Product (GSDP) and employment

The production structure of Haryana is predominantly characterized by primary sector activity. Thanks to the introduction of contemporary cultivation techniques, the agriculture industry in Haryana has emerged as the frontrunner in economic progress. Agriculture is the predominant sector of the economy in Haryana. In 1981, it employed 60.79 percent of the workforce as cultivators and agricultural laborers. Approximately 86 percent of the entire land is cultivated. The nationwide percentage is 46.31 percent. Approximately 60% of the cultivated land is irrigated, whereas India has a lower irrigation rate of around 30%. In 1985-86, agriculture accounted for around 44.48% of the state's domestic product, whereas in India as a whole, it accounted for 27.30% at current prices.

The agriculture industry in Haryana accounted for 46% of the Gross State Domestic Product (GSDP) in 1980-81. This percentage gradually decreased to 28.47% in 2001-02 and further down to 19.03% in 2013-14. In 1980-81, agriculture accounted for 95.23% of the income from primary activities. Currently, it makes up 93.19% of the entire output from primary activities. However, when comparing the proportion of the agriculture sector to that of the industrial or dynamic sector, it remains a significant component of the state's economy. It is vital to mention that despite the fast mechanization of agricultural activities in Haryana since the early sixties, the agriculture sector continues to play a significant role in generating employment. In 1971, 62.67% of the total workforce was employed in the agriculture sector. By 1981, this percentage had reduced to 60.79% after a span of ten years. The proportion of employment in the agriculture industry remains significant. Despite the introduction of the Agricultural reforms and capital-intensive production techniques in the rural economy of Haryana over the past forty years, a significant section of the workforce still relies on the agriculture sector for their livelihood. The agriculture industry is not only the main engine of the State's Gross State Domestic Product (GSDP), but also a significant source of income for a substantial section of the people.

Change in Land Utilization

The availability and characteristics of land resources in a specific area were crucial factors in the advancement of agriculture. Haryana is predominantly a flat region, with around 94 percent of its land situated at an elevation below 300 meters. The plain extends from the hilly region in the northeast to the desert landscape with scattered sand dunes in the south and southwest. The Aravallis' outliers are visible in the southern region of the state. Haryana takes on the form of a saucer, with a concave area located in the region surrounding Rohtak. Haryana has historically been a constituent of the former Punjab region and serves as a geographical boundary between the Ganga and Indus river systems. It serves as a transition between the Rajasthan desert and the Ganga plain. During the past century, the State has experienced two instances of territorial changes - the violent partition of India in 1947 and the administrative separation of Punjab in 1966, resulting in the creation of Haryana and Himachal Pradesh. Haryana currently covers a total land area of 4421 thousand hectares, which accounts for around 1.34 percent of the country's total land area. According to Table 1, approximately 80% of the State's total geographical area is used for agriculture.



(Land Utilization)

Table 1 displays the land utilization pattern in Haryana.

Item	1966-67	1970-71	1980-81	1990-91	2000-01	2911-12	2021-22
Barron Land	232	181	65	97	102	106	109
Fallow Land	259	150	177	169	232	149	157
Net Sown Area	3423	3565	3602	3575	3526	3513	3550
Cropped Area	4599	4957	5462	5919	6115	6489	6510
Cropping Intensity	134%	139%	151%	165%	173%	185%	183%

Origin: Statistical abstract of Haryana, Director of land records, Haryana

From 1966-67 to 1990-91, there has been a continual decline in uncultivated and barren land due to the introduction of new technology and the commercialization of production relations. However, there has been a little growth in the 1990s and onwards. The area measured 232 thousand hectares in 1966-67 and subsequently decreased to around 130 thousand hectares in 2011-12. Likewise, the introduction of a new method of production in Haryana's agriculture resulted in the cultivation of previously unused land. The fallow land decreased from 259 thousand hectares in 1966-67 to 177 thousand hectares in 1980-81, and further decreased to 149 thousand hectares in 2011-12.

The data in table1 indicates that advancements in production techniques have led to a growth in the net sown area from 3423 thousand hectares in 1966-67 to 3602 thousand hectares in 1980-81. However, it slightly decreased to 3513 thousand hectares in 2011-12. The decrease in cultivated land area can be attributed to the rapid expansion of urban areas in various regions of the State. Furthermore, the Haryanvi people are progressively gravitating towards improved living conditions as a result of the influence of Western lifestyle. The cultivated land area has increased from 4599 thousand hectares to 6489 thousand hectares between 1966-66 and 2011-12. The agricultural intensity has increased from 134 in 1966-67 to 185 in 2011-12. The implementation of contemporary agriculture techniques not only expanded the cultivated land, but also had a beneficial impact on the conversion of traditional agricultural methods.

Trends in production and productivity

The implementation of innovative agricultural techniques in Haryana resulted in a significant surge in production and productivity, hence greatly enhancing the total economic growth. The implementation of modern agricultural techniques in Haryana has led to an overall improvement in the productivity of all crops. However, the productivity of rice and wheat had a significantly higher growth rate compared to other crops. According to Table 2, the wheat yield had a significant increase from 1425 kg/hectare in 1966-67 to 5183 kg/hectare in 2011-12. Likewise, the rice output has risen from 1161 kg/hectare to 3044 kg/hectare over the same timeframe. It is noteworthy that over a period of forty years, the average productivity of wheat and rice has increased by around three to four times.

Table 2 displays the yield of the main crops in Haryana and Examine the agricultural advancements in the state of Haryana

Item	1966-67	1970-71	1980-81	1990-91	2000-01	2011-12	2021-22
Wheat	1425	2074	2360	3479	4106	5183	5281
Rice	1161	1697	2606	2775	2557	3044	3101
Jwar	181	277	354	497	208	500	575
Bazra	418	939	544	864	1079	2040	2250
Maize	988	1142	1134	1414	2267	2727	2909
Barley	1313	1150	1451	2092	2682	3617	3400
Gram	500	742	629	722	640	934	1181
Grapeseed	404	678	634	1338	1369	1364	1360
Cotton A	300	359	387	421	1081	2577	2654
Cotton D	289	299	264	278	319	416	514
Sugarcane	3400	4504	4067	5273	5713	7319	7467

(Kilograms per hectare)

Origin: Statistical Abstract of Haryana, Multiple editions

With the exception of maize, grams, rapeseed & mustard, and peanuts, all other crops have shown a rise in production. Wheat and rice have seen significantly better yields compared to other crops.

The wheat production has shown a significant growth, rising from 1425 thousand tonnes in 1966-67 to 5281 thousand tonnes in 2021-22. In the same time frame, rice output had a significant growth, rising from 1161 thousand tonnes to 3101 thousand tons during 2021-22. The availability of an appropriate support price for paddy and wheat crops is the rationale behind this. The production of other crops, such as bajra, experienced a significant growth from 418 thousand tonnes in 1966-67 to 2250 thousand tons in 2021-22. The production of American cotton has experienced a significant increase, rising from 300 thousand tonnes to 2654 thousand tonnes during the previously mentioned period. However, the output of Desi cotton has only increased from 289 thousand tonnes in 1966-67 to 514 thousand hectares in 2021-22.

Cropping Intensity

Intensification is a ubiquitous practice in modern agriculture. This also applies to Haryana. The net area cultivated did not experience as significant of an increase as the area that was cultivated multiple times. The Karnal, Kaithal, and Jind districts experienced the maximum intensity of the Agricultural reformsduring the 1989-90 period. The Rohtak, Rewari, and Gurgaon districts have a low level of intensity in implementing the reforms process. In 2011-12, the districts of Bhiwani, Jind, Faridabad, Karnal, and Panipat experienced the maximum level of intensity during the Gre. The minimum intensity recorded in Gurgaon, Mewat, Rewari, Rohtak, and Yamunanagar. The disparity in intensity of the Agricultural reforms is 16 during the specified study period. The region with the least intensity is the industrial and sugarcane belt of Haryana, where the Paddy-Wheat rotation has a lesser significance.

In contrast, Rewari district stood out as the one with a minimal rise in the amount of land cultivated many times. Panchkula district exhibited the same characteristics. In both cases, the level of intensity of the Agricultural reformshas been low. The

absence of irrigation, combined with the uneven terrain and deep water table, restricted the potential for implementing multiple cropping.

Conclusion

The agricultural reforms in Haryana are comprehensive and multifaceted, addressing various challenges faced by the farming community. These reforms aim to modernize agriculture, promote sustainable practices, and enhance farmers' livelihoods. Through continuous efforts and innovative approaches, Haryana is striving to achieve agricultural prosperity and sustainability for its farmers. Significant advancements were achieved in agricultural productivity within the state of Haryana. The aforementioned analysis indicates that the State of Haryana has experienced remarkable economic growth with the use of modern farming technologies. Haryana, which covers 1.34% of the country's total geographical area, is providing approximately 11.8 million tonnes of wheat and 3.4 million tonnes of rice to the national pool. The agriculture sector is significantly influencing the structural composition of the economy and making a substantial contribution to the Gross State Domestic Product (GSDP) and employment. The farmers in Haryana are utilizing every component of the land for agricultural purposes. Therefore, the cultivated land area in Haryana is more than that in other regions of the country. After the use of new farming techniques, the cropping intensity in Haryana reached its maximum level. The production relations in Haryana's agriculture have undergone a complete transition from traditional to modern agriculture. The expansion of irrigation infrastructure and implementation of minimum support price policy significantly boosted the yield of wheat and rice, resulting in a three to fourfold rise in productivity. The aggregate yield of primary crops, namely wheat and rice, experienced a substantial and rapid growth. Haryana's significant advancements position it as one of the most affluent states in economic terms.

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