

Aatmanirbhar Bharat in the Agricultural Sector: A Contemplative Study

Ram Krishna Mandal^{1,*}

Abstract

*Agriculture is one of the few sectors of the economy that expanded consistently after independence and successfully satisfied domestic demands. Since gaining independence, the agricultural sector has been the main driver of India's prosperity. **Objective:** The study's goal is to illustrate India's agricultural self-sufficiency (Aatmanirbhar). **Design and Methodology:** This study is mainly descriptive in nature, utilizing both quantitative and qualitative methods. Its design is based on secondary data. The information is gathered from secondary sources of Indian knowledge, including books, articles, websites, and online journals published over time. **Findings and Discussion:** Indian agriculture has experienced a remarkable metamorphosis since the nation's independence, transforming it from a largely agrarian society to a thriving agricultural superpower. Many laws, advancements in technology, and changes in society have all contributed to this change. In conclusion, the evolution of agricultural policies, practices, and initiatives over time demonstrates the adaptability and tenacity of Indian farmers and policymakers. India's joint efforts to promote innovative, inclusive, and sustainable farming practices will support growth and prosperity for many years to come. Adoption of new farming technologies that are environmentally sustainable and climate-resilient will be at the center of a second green revolution.*

Keywords: Domestic demand, self-sufficiency, Indian agriculture, agricultural superpower

INTRODUCTION

Since India gained its independence in 1947, its agriculture has advanced significantly. Early on, the nation produced enough food to feed itself for the most part, although there were several obstacles to overcome, such as low yields, inadequate irrigation, and restricted access to finance and inputs. Since gaining its independence in 1947, India's economy has been based primarily on the agricultural sector. It has seen major shifts, difficulties, and outstanding accomplishments over the years that have influenced the growth of the country. We will examine the history, present issues, and highlight achievements made to guarantee food security and economic growth as we examine the crucial role that agriculture plays in India. The 75th anniversary of India's independence is celebrated on “Azadi Ka Amrit Mahotsav,” a day filled with pride, joy, and honor. India is one of the lucky democratic nations in the world, commemorating its 75th anniversary of independence. Among the few industries that

*Author for Correspondence

Ram Krishna Mandal

E-mail: rkm_1966@yahoo.co.in

¹Professor, Department of Economics, Cooch Behar Panchanan Barma University, Cooch Behar, West Bengal, India

Received Date: April 12, 2024

Accepted Date: April 30, 2024

Published Date: May 07, 2024

Citation: Ram Krishna Mandal. Aatmanirbhar Bharat in the Agricultural Sector: A Contemplative Study. Research & Reviews: Journal of Agricultural Science and Technology. 2024; 13(1): 41–48p.

developed steadily after independence and effectively met national needs is agriculture. Since gaining its independence, India's prosperity has primarily come from its agricultural sector. Therefore, the narrative of India's successful transformational history would be incomplete without describing the country's agricultural transition from “ship to mouth” to “self-sufficiency and export.” India's agricultural achievements and necessity have gained recognition on a global scale. The last 75 years of India's post-independence history are chronicled in the book “Indian Agriculture after Independence.” Indian agriculture

has come a long way in spite of a number of obstacles, including unpredictable weather patterns, deteriorating soil quality, rising air temperatures, and the rise of dangerous pests and diseases. With the coordinated efforts of ICAR as a frontal organization, the country could go from being severely food insecure to being food exporting, thanks to the development and dissemination of technology, the creation of human capital, and the establishment of rural farm centers to support the farmers. We discussed the difficult yet fruitful journey of Indian agriculture. According to Mohapatra, Rout, and Pathak (2022), Indian agriculture illustrates the different revolutions in staple food, livestock, and fisheries that have transformed the country from a food-scarce country to a food-surplus and exporting nation. In addition to ranking second in the world for rice, wheat, oilseeds, fruits, vegetables, sugarcane, and cotton, India is the world's top producer of rice, wheat, oilseeds, fruits, vegetables, sugarcane, and cotton [<https://www.investindia.gov.in/team-india-blogs/indian-agriculture-investments-and-achieve-ments>].

In India, agriculture is primarily responsible for maintaining food and nutrition security. Agriculture's contribution to the country's output fell from 53% in 1950–1951 to 18% in 2019–2020. Roughly 50% of the workforce still makes their living from it. Research indicates that India's growing agricultural sector has a significant impact on reducing poverty (Ravallion and Datt, 1996 [1]; Thirtle et al., 2003). However, the income of farmers is comparatively lower than that of non-farm workers (Chand et al., 2017) [2, 3]. Therefore, increasing the income of agricultural households becomes essential to lowering the nation's rates of poverty and inequality. Following independence, agriculture underwent a substantial metamorphosis that resulted in India's economic transformation from one of food deficits to one of food surpluses and net exporters. The science-driven green revolution that began in the 1960s and received sufficient backing from the government marked a turning point in Indian agriculture. Following food grain self-sufficiency, the industry is currently headed towards commercialization. In order to better support farmers, the development agenda has recently moved from strategies that increase production to those that improve income (Pal, Suresh et.al., 2022) [4]. Indian agriculture, according to Mohapatra, Rout, and Pathak (2022) [4, 5], exemplifies the various revolutions in staple foods, livestock, and fisheries that have changed the nation from one that was food-scarce to one that was food-surplus and exporting. India is not only the world's second-largest producer of rice, wheat, oilseeds, fruits, vegetables, sugarcane, and cotton, but it also leads the world in all of these categories [<https://www.investindia.gov.in/team-india-blogs/indian-agriculture-investments-and-achievements>]. Every chance we get to move away from ineffective farming methods and towards long-term sustainability, efficiency, and resilience must be taken advantage of agriculture provides the best chance of any industry for environmentally sustainable green growth (Chand, 2019) [6].

What has been India's most remarkable post-independence achievement is that it marched from being a food aid-dependent nation to one that is self-sufficient in food production. Over the past 75 years, there has been a roughly six-fold increase in food grain production, a five-fold increase in rice production, a sixteen-fold increase in wheat and maize production, an eleven-fold increase in cotton and jute production, a six-fold increase in oilseed and sugarcane production, and a three-fold increase in pulse production. India leads the world in the production of pearl millet, cotton, pulses, and groundnuts. It is ranked second in terms of wheat, rice, groundnuts, rapeseed, mustard, and sugarcane. In recent times, the nation has become the leading exporter of rice. Technological advancements in the fields of irrigation, fertilizer, high-yielding varieties, and farm policies have made these kinds of accomplishments possible (Sharma et al, 2022) [7].

OBJECTIVE

The study seeks to present the self-sufficiency (Aatmanirbharata) of India in the agricultural sector.

METHODS AND MATERIALS

Design and Approach

This study uses a quantitative and qualitative approach and is primarily descriptive, drawing on secondary data for its design. Secondary sources of Indian knowledge, such as books, articles, websites, and online journals published at various points in time, are used to collect the data.

Analysis

The various materials gathered from the various sources have been examined, validated, and arranged methodically under the relevant headings to maintain the necessary presentation and conclusion.

RESULTS AND DISCUSSION

Following its independence, Indian agriculture has undergone an incredible transformation, taking the country from a predominately agrarian society to a thriving agricultural superpower. This transformation has been driven by a number of policies, technological developments, and societal shifts over time. Numerous significant accomplishments are covered in the sections below:

1. *Green revolution and agricultural modernization*: The mid-1960s saw the start of the Green Revolution, which was a paradigm shift in Indian agriculture. Productivity rose as a result of advances in fertilizer and irrigation, as well as high-yield crop varieties. Crop yields were transformed by the introduction of dwarf wheat and rice varieties, ensuring food security and lowering reliance on imports.
2. *Land reforms and rural development*: Following independence, land reform initiatives distributed land to the landless in an effort to end feudal landholding systems. Small-scale farmers gained authority as a result, and agricultural productivity rose. Through the improvement of agricultural infrastructure and the provision of credit facilities, the integrated rural development programme (IRDP) further concentrated on raising rural livelihoods.
3. *Technological innovations and mechanization*: Productivity and efficiency were increased by the development of agricultural technology, which included tractors, threshers, and irrigation systems. Utilizing contemporary machinery enhances output overall and decreases reliance on manual labor.
4. *Transition to horticulture and diversification*: India made this transition due to shifting dietary habits and increased demand worldwide. Fruits, vegetables, and floriculture gained popularity and made a substantial contribution to rural livelihoods and export earnings.
5. *Indian Agriculture's Challenges*: In spite of its advancements, Indian agriculture faced a number of difficulties that called for creative solutions.
6. *Land degradation and soil health*: Improper land management combined with overuse of pesticides and fertilizers causes soil degradation. To improve soil health, initiatives such as organic farming and sustainable agricultural practices have been implemented.
7. *Water scarcity and irrigation problems*: Agriculture was at risk due to erratic monsoon patterns and declining groundwater levels. To combat water scarcity, effective irrigation techniques, rainwater harvesting, and watershed management became crucial.
8. *Partially owned land and subsistence agriculture*: Economies of scale were hampered by the predominance of small, dispersed landholdings. To address this issue, agro-processing units, land consolidation, and cooperative farming promotion were implemented.
9. *Market access and price fluctuations*: Getting their produce into markets and getting fair prices were frequent problems for farmers. To guarantee greater compensation, e-markets, farmer-producer organizations (FPOs), and minimum support prices (MSPs) were introduced.
10. *Government initiatives and transformations*: Through the National Agricultural Policy (2000), the Indian government launched a number of initiatives to spur agricultural growth and address issues. This policy prioritized sustainable development and sought to encourage the effective use of resources, the adoption of new technologies, and the creation of jobs in rural areas.
11. *Pradhan PMKSY, or the mantri krishi sinchai yojana*: This program, which was introduced in 2015, was designed to improve irrigation effectiveness and encourage water-use efficiency in agriculture.
12. *The soil health card program*: This program was started to evaluate the nutrients in the soil and give farmers advice on proper fertilization techniques, which improved the productivity and health of the soil.

India's agricultural sector expanded rapidly during the Green Revolution thanks to the introduction of high-yielding wheat and rice varieties, as well as the application of chemical pesticides and fertilizers. Food production increased dramatically as a result of the Green Revolution, and India achieved its first-

ever food grain self-sufficiency. India's agricultural growth slowed down after the Green Revolution, but it still increased steadily. In addition to the government's ongoing investments in agricultural R&D, the private sector helped farmers gain access to markets and input. India's agricultural production has, therefore, more than doubled since independence. Indian agriculture has the potential to become a significant engine of economic growth and development if these issues are resolved. Significant changes have been made to India's agricultural policy since the country's economy was liberalized in 1991. By 2022–2023 [8], the government wants to double the income received by farmers. A framework of three-year action agendas has taken the place of five-year plans at the National Institution for Transforming India (NITI Aayog). A reform program for domestic agricultural marketing has been launched by the government. But there is still a lot of variation in how agricultural marketing reforms are implemented in each of India's states. [<https://www.linkedin.com/pulse/indian-agriculture-from-1947-present-nurturing-growth-shet>].

The worst mark left by colonialism in India most likely occurred during the last stages of the system, when Bengal experienced a severe famine in the early 1940s as a result of the British government's unjust policies against the backdrop of World War II. Looking back, the famine highlights India's extreme reliance on outside help, even to meet its basic food needs. Following its independence, India experienced a severe food shortage as a result of the wars that followed in 1948, 1962, and 1965. As a result, the country had to import a significant amount of food grains from the United States and other developed economies. Thus, former Prime Minister Shri Lal Bahadur Shastri coined the catchphrase “Jai Jawan, Jai Kisan.”

In 2022, agricultural exports from India reached a record-breaking USD 50 billion (FY 2021-22). For staples like rice, wheat, sugar, other cereals, and meat, exports reached all-time highs. The Directorate General of Commercial Intelligence and Statistics (DGCI&S) has released preliminary data showing that during 2021–2022, agricultural exports increased by 19.92% to reach \$50.21 billion. A number of significant actions taken by the central government in recent years to boost food grain production have contributed to this amazing achievement.

But the culinary tale of India's Atmanirbharta begins nearly fifty years ago. India had to import food grains in 1950–1951 due to a food shortage brought on by sporadic famines and droughts. Agriculture was under increasing strain due to the fast-expanding population, and productivity and food production could not keep up [2]. The fact that the agriculture sector was still contributing 50% of the GDP at this time indicated how reliant agriculture was on our economy.

The country was able to make tremendous advancements in its domestic food production and in agriculture and related fields thanks to the Green Revolution, which started in the 1960s. The movement's primary goals were to: (a) increase productivity on farms by mechanizing the process of replacing cattle with contemporary tractors and other machinery; (b) use hybrid seed varieties to improve yield; and (c) make better use of newly built dams that were built after independence to improve irrigation. It changed India's status from a country with a food deficit to one with a surplus of food.

Over the past few decades, India has become self-sufficient in producing food grains, which is a huge accomplishment for both the country's agriculture industry and the economy as a whole. India is currently the world's largest producer of sugar and comes in second only to China in terms of rice production. With a projected 14.14% global production share in 2020 [3], India ranks as the second-largest producer of wheat worldwide. India is likewise moving closer to producing its own pulses. In the country, food grain production is expected to reach 315.72 million tons in the 4th Advance Estimates, up 4.98 million tons from 2020–21 crop year production.

It is noteworthy that, while the entire world was reeling from the effects of COVID-19, our farmers managed to grow record amounts of food grains during the deadliest pandemic of the century. During

the lockdown, more than 2,067 agriculture markets were operational to help farmers. In order to make it easier for farmers and traders to transport produce from agriculture and horticulture, the Kisan Rath application was introduced in April 2020. The Indian government has been announcing the minimum support price for the Kharif and Rabi crops ahead of time, guaranteeing fair prices [9], in an effort to bolster farmer confidence. For the first time, the Indian government released a comprehensive agricultural policy statement in 2000 [6]. The National Agricultural Policy (NAP) lays out specific goals and actions for each of the major agricultural subsectors. The positive effects of this policy are being felt by the cultivators. Ensuring a price guarantee for all major crops grown in each state, either through minimum insured price (MIP) or MSPs, is one way to accomplish this. The paid-out cost or average price over the previous three or four seasons may serve as the foundation for the MIP. The MSP ought to be limited to basic staples like wheat and paddy, and it ought to be implemented in all the districts with a manageable surplus of the crops through a procurement mechanism. The MIP should extend to all other major crops (Arora, 2013) [8]. The domestic demand for food grains is predicted to rise from 207 million tons in 2004–05 to 235.4 million tons by the end of the eleventh five-year plan and then to 280.6 million tons by the end of 2020–21 [5, 4], according to Ramesh Chand, a member of NITI Aayog. Production of food grains in India since 1950–51 (in million tons) and its percentage growth are shown in Tables 1 and 2 with Figure 1.

Explanation from Table 1, and Figures 1 and 2: From Table 1 and Figure 1, it is clearly observed that the production of food grains in India since 1950–51 (in million tons) has been increasing. Starting from the production of food grains 50.82 million tons in 1950–51, it is 315.71 million tons increased by 6.21 times in 2021–22. Overall, the food grains have increased by more than 100 percent, on account of which the curve in Figure 1 is upwardly sloping starting from 1950–51.

Table 1. Production of food grains in India since 1950–51 (in million tons)

Year	1950–51	1960–61	1970–71	1980–81	1990–91	2000–01	2010–11	2020–21	2021–22*
Food grains	50.82	82.02	108.42	129.59	176.39	196.81	244.49	310.74	315.72

Source: Ministry of Agriculture & Farmers Welfare, November 2022. *Data for 2021-22 is from 4th Advance estimates of food grain production

Table 2. Percentage increase on the basis of the previous year of food grains in India since 1950–51 (in million tons)

Year	1950–51	1960–61	1970–71	1980–81	1990–91	2000–01	2010–11	2020–21	2021–22*
Food grains	50.82	82.02	108.42	129.59	176.39	196.81	244.49	310.74	315.72
% Increase	-	161.3932	132.1873	119.5259	136.1139	111.5766	124.2264	127.0972	101.6026

Source: Constructed on the basis of Table 1.

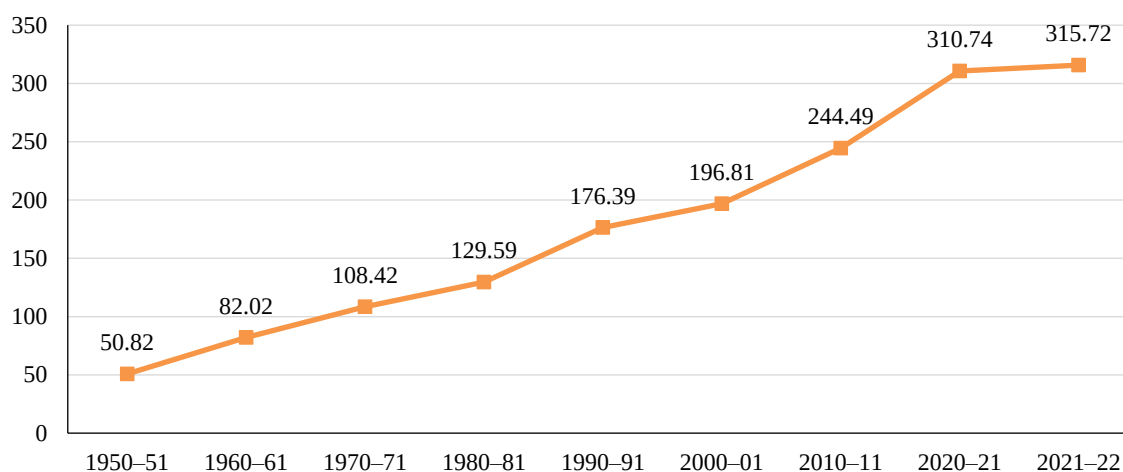


Figure 1. Food grains since 1950–51.

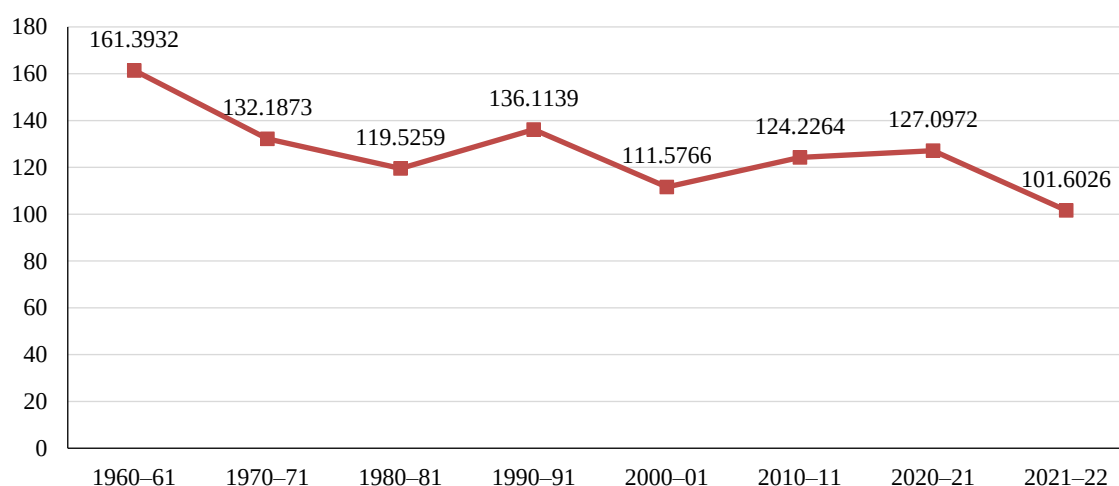


Figure 2. Percentage increase on the basis of the previous year of food grains.

In Table 2, the percentages increase on the basis of the previous year of food grains in India since 1950–51 (in million tons) are calculated and shown. Again, it is shown in Figure 2. In Figure 2, the curve is up and down, and overall, it is downward sloping. The highest increase in food grains was in 1960–61 because of Green Revolution in 1960 [1, 7].

India's economy still revolves mostly around agriculture, which is also the foundation of the nation's socioeconomic growth. About two-thirds of the population is dependent on it, and it contributes roughly 19% of the GDP. Because of its backward and forward links, the performance of agriculture greatly influences the growth of other sectors and the economy as a whole. In addition to providing food security and a means of subsistence for a sizable portion of India's population, it holds particular importance for the underprivileged, impoverished, and marginalized groups.

Good Fruits of Different Schemes Laid by the Government

The estimated average monthly income of an agricultural household grew from Rs. 6426 in 2012–13 to Rs. 10,218 in 2018–19, according to the national sample survey. Several focus areas have been the focus of government initiatives aimed at increasing farmer income. The Pradhan Mantri Fasal Bima Yojana ensures crop insurance, the Pradhan Mantri Krishi Sinchai Yojana ensures irrigation facilities, and the PM KISAN Scheme offers farmers income support. The kisan credit card and other channels offer access to institutional credit. Farmers can now access markets all over the country to sell their produce and receive more lucrative prices, thanks to the e-NAM initiative. In addition to maintaining a strong procurement system, the overarching Pradhan Mantri Annadata Aay SanraksHan Abhiyan (PM-AASHA) program guarantees farmers the minimum support price (MSP) for a variety of Kharif and Rabi crops. Additionally, the government has declared that it will turn over 3.25 lakh fertilizer stores into Pradhan Mantri Kisan Samruddhi Kendras across the nation. These will be locations where farmers can purchase seeds and fertilizers, as well as conduct soil tests, and obtain helpful knowledge regarding agricultural methods. Furthermore, the implementation of one nation, one fertilizer under the “Bharat” brand name nationwide will enable a decrease in price and an increase in the availability of fertilisers. Initiatives like the national mission for sustainable agriculture [9], the advancement of scientific warehousing, and the use of drone technologies have been implemented in order to prepare Indian agriculture for the future. Additionally, the government has established an Agri-Tech infrastructure fund, launched the Paramparagat Krishi Vikas Yojana to encourage organic farming, and established the long-term irrigation fund and micro irrigation fund in an effort to boost investment in the agriculture sector. Establishing qualified infrastructure projects is advantageous for organizations like farmers, startups, government agencies, and local governments under the agriculture infrastructure fund. Grants-in-aid are awarded to state governments under the Rashtriya Krishi Vikas Yojana (RKVY) Scheme based on the projects that are approved in the state level sanctioning committee meeting (SLSC) [10].

Farmers are at the center of agriculture, which is the nation's path to Aatmanirbharta, or self-reliance. Significant action has been taken by the central government to improve, empower, and stabilize farmers in a comprehensive way. The agriculture industry will soon undergo a significant transformation as a result of ongoing government investments and initiatives [<https://pib.gov.in/FeaturesDeatils.aspx?NoteId=151185&ModuleId%20=%202>].

SUGGESTIONS

It is important to conduct an efficient exploration of scientific development, which will require promptly implementing participatory research approaches and bolstering well-organized extension activities. The verification of technologies and their sustainable implementation hinge heavily on the equal participation of scientists, extension workers, and farmers. Even though trade with the region's neighbors still predominates, trade with OECD countries is growing in significance, particularly for exports of high-value food items. The agricultural policy directions that are currently being developed include liberalizing the sector by lowering tariffs and eliminating QRs; globalizing agriculture by giving it an external perspective; and putting an unprecedented emphasis on the commercial aspects of agriculture (Arora, 2013) [8].

CONCLUSION

Since independence, India's agricultural sector has advanced significantly. The nation has come a long way towards becoming food-grain self-sufficient and raising agricultural productivity. Notwithstanding, the industry still confronts a number of obstacles, such as guaranteeing food security, advancing novel technologies, and augmenting farmers' earnings. Although the government has started a number of reforms to address these issues, it is still difficult to put them into practice. Indian agriculture is a testament to the amazing journey of a country dedicated to providing for the needs of its people and fostering economic growth. The way that agricultural practices, policies, and initiatives have changed over time highlights how flexible and resilient Indian farmers and policymakers are.

India's collective efforts to advance inclusive, inventive, and sustainable farming methods will fuel prosperity and growth for many generations to come. A second green revolution centered on the adoption of new farm technologies that are climate resilient and environmentally sustainable, the creation of a market for land consolidation, improvements to post-harvest practices, and a revitalization of the cooperative movement through the establishment of Farmer Producer organizations (FPOs) would be necessary to address these issues. This can help realize the full potential of Indian agriculture and stop the volatility in food prices and farmer income.

REFERENCES

1. Ravallion M, Datt G. How important to India's poor is the sectoral composition of economic growth? *World Bank Econ Rev.* 1996;10(1):1–25. doi:10.1093/wber/10.1.1.
2. Chand R. Demand for foodgrains. *Econ Political Wkly.* 2007;42(52):10–13.
3. Chand R, Srivastava SK, Singh J. Changes in rural economy in India, 1971 to 2012: lessons for job-led growth. *Econ Political Wkly.* 2017;52(52):64–71.
4. Suresh P, et al. Investment, Policy and Entrepreneurial Ecosystem for Agricultural Development. In Pathak H. et. al, editors. *Indian Agriculture after Independence.* New Delhi: Indian Council of Agricultural Research; 2022. 380–382.
5. Mohapatra T, Rout PK, Pathak H. Indian Agriculture: Achievements and Aspiration. In Pathak H, et. al editors. *Indian Agriculture after Independence.* New Delhi: Indian Council of Agricultural Research; 2022. 1–25.
6. Chand R. Transforming agriculture for challenges of 21st century: presidential address. 102 Annual Conference Indian Economic Association (IEA). Surat, (Gujarat): AURO University; 2019, Dec 27-29. 1–25.
7. Sharma TR. et al. Achievements in Field Crops in Independent India. In: Pathak H, et al, editors. *Indian Agriculture after Independence.* New Delhi: Indian Council of Agricultural Research; 2022. 1–40.

-
8. Arora VPS. Agricultural policies in India: retrospect and prospect. *Agric Econ Res Rev.* 2013;26(2):135–157.
 9. Thirtle C, Lin L, Piesse J. The impact of research-led agricultural productivity growth on poverty reduction in Africa, Asia, and Latin America. *World Deve.* 2003;31(12):1959–1975. doi:10.1016/j.worlddev.2003.07.001.
 10. Pib.gov. (2022, Nov 11). Achieving Aatmanirbharta in Agriculture [Online]. Ministry of Agriculture & Farmers Welfare. Available from: <https://pib.gov.in/FeaturesDeatils.aspx?NoteId=151185&ModuleId%20=%202>.