India's Sustainable Agriculture Approach: An Analysis of Government Measures

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Abstract

There are two big concerns for Indian agriculture: ecological and economic. Agriculture has a crucial role in both the Indian economy and society, providing job and livelihood opportunities. Agriculture covers around 43% of India's land area. The sector supplies food, fodder, and raw materials to several industries. The Indian government has implemented programmes at both national and regional levels to promote agricultural development. Agriculture's contribution to GDP has fallen significantly in recent years. Indian farmers face several challenges, including high input costs, poor profitability, soil degradation, dwindling water tables, and climate change-related concerns.

Sustainable agriculture may address many socioeconomic and environmental issues caused by unsustainable farming methods. Sustainable agriculture aims to achieve three goals: environmental health, economic profitability, and socioeconomic equality. The Indian government has implemented policies and plans to address the sustainable supply of essential inputs. This study evaluates India's key efforts, including the National Mission on Sustainable Agriculture, Parampragat Krishi Vikas Yojna, PM Krishi Sinchayi Yojna, PM Fasal Bima Yojna, and Soil Health Card Scheme. The research aims to analyse India's strategy to developing sustainable agriculture.

Keywords: Ecological balance, food security, initiatives, degradation, economics, farmer welfare, and strategy all relate to sustainable agriculture.

1. Introduction

India's great geographical and cultural variety makes it a special place from an agricultural perspective. Indian agriculture is firmly founded on the country's vast expanses of flat plains, fertile soils, diverse climate, and extended growing season. When considering the agricultural industry's total performance over the last six decades, it seems to be a very excellent success story. Food grain, cash crop, and related product output has increased dramatically. Despite this, the agricultural sector's contribution to GDP has decreased from 53.1% to 14.0% throughout this time. One of the biggest issues facing the government is boosting agricultural output while preserving the few natural resources in a sustainable way to guarantee food security and provide farmers a stable income.

The Green Revolution has had a significant impact on how Indian agriculture has developed, both

positively and negatively. It has had a significant influence on regional development and environmental circumstances in addition to producing excess food grains. Land degradation affects a startling 37% of India's 328.32-million-hectare total geographical area, according to ICAR data. Likewise, the nation's water supplies are deteriorating. Just around 47.6% of the net planted area is irrigated, with ground water making up 60% of the nation's irrigated land. Groundwater and energy were wasted as a result of the power subsidies. As a result, the water table has been reduced and the quality of the water has declined. Finding solutions for the socioeconomic and environmental issues brought on by unsustainable farming techniques has become crucial. Chemical fertilizer-based farming has negative social, economic, and environmental effects that may be lessened by sustainable agriculture.

2. Objectives

This investigation is predicated on secondary sources, including government publications, newspapers, magazines, journals, and online portals, among others. The following questions are the focus of the research:

(i) What is promoting sustainable agriculture necessary?

(ii) What strategy has the Indian government used to promote sustainable agriculture?

(iii) What significant actions have been made to date to further it?

3. Sustainable Agriculture Concept

The notion of "sustainable agriculture" upholds the same sustainability tenet: we must satisfy current demands without jeopardising the capacity of future generations to satisfy their own. The preservation of natural resources is essential for the agricultural industry as well as for the continuation of life on Earth.

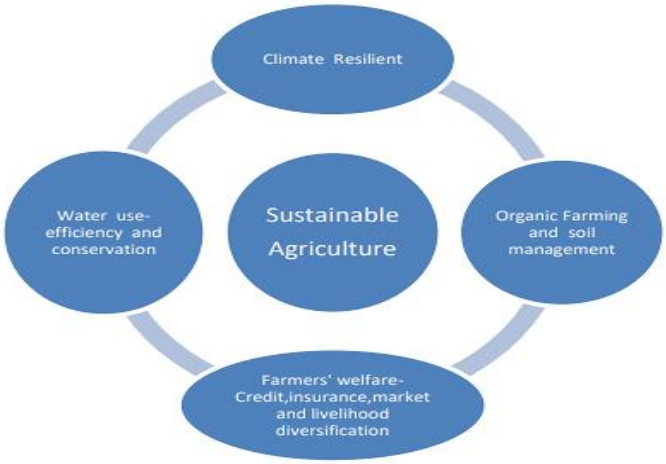
Producing food, fibre, plants, or animal products using agricultural practices that safeguard the environment, public health, and the welfare of people and animals is known as sustainable agriculture. It combines a number of energy- and toxic-efficient, ecologically safe farming techniques with high production and profitability. Examples of such agricultural approaches include crop rotation, organic farming, mixed farming, strip farming, and diversified cropping. Organic farming is seen to be the most well-liked and successful of them.

4. India's Strategy and Proposals

Global issues such as climate change, global warming, environmental degradation, population growth, and widespread food insecurity are of concern to the whole globe. In light of this, India has adhered to a comprehensive policy for both environmental preservation and citizen welfare in order to fulfil its obligations under international accords such as the 2015 Paris Climate Change Agreement. India has implemented a multi-pronged plan that would, either directly or indirectly, contribute to

the development of sustainable agriculture as well as aid in the rehabilitation of the agricultural sector.

Figure No. 1-Key Areas of India's Approach



India's strategy focuses on important elements such as the local climate, the physiography of the area, the availability of water resources, and readily available technology. focuses mostly on creating climate-resilient agriculture that is appropriate for the region's environment, bringing back traditional farming practices like crop rotation, organic farming, and mixed farming, as well as using India's dry land and rain-fed agricultural potential. In addition, by promoting micro-irrigation methods, the Indian government has placed a greater emphasis on the sustainable development of irrigation systems with efficient water usage.

In addition, the government encourages farmers to diversify their operations and take up new ones including goat farming, beekeeping, animal husbandry, poultry, and wood plantations. Financial assistance is given to farmers in mountainous areas, particularly in North-Eastern India and the Western Himalayan states, to enable them to engage in sustainable horticultural practices. Farmers' reliance on agriculture is lessened by programmes pertaining to infrastructural development, food processing, and dairy farming.

The National Mission for Sustainable Agriculture

It is included as one of the National Action Plan for Climate Change's eight missions. The Mission aims to tackle concerns related to "Sustainable Agriculture" in light of the hazards posed by climate

change.By developing appropriate adaptation and mitigation strategies for ensuring food security, equitable access to resources, and improved livelihood opportunities that lead to economic stability at the national level, it aims to transform agriculture into an ecologically sustainable and climate-resilient production system. Ten essential characteristics have been identified by the mission to support the adoption of sustainable agriculture practices via the implementation of a Plan of Action (PoA) that addresses both mitigation and adaptation strategies.

It is centred on four functional areas: infrastructure, capacity building, products and practices, technologies, and research and development.

PMKSY, or Pradhan Mantri Krishi Sinchai Yojna,

The Union Government introduced this programme on July 1st, 2015, with the slogan "Har Khet Ko Paani." The PMKSY plans to combine current programmes such as the On Farm Water Management, Integrated Watershed Management, and Accelerated Irrigation Benefit Programme. It seeks to provide complete irrigation supply chain solutions, including water resources, distribution systems, and farm-level applications. In addition to providing sources of guaranteed irrigation, it also focuses on producing protective irrigation by using "Jal Sanchay" and "Jal Sinchan" to collect rainfall at the micro level. PMKSY aims to decrease water waste by increasing cultivable land under guaranteed irrigation, improving on-farm water usage efficiency, and achieving convergence of irrigation investments at the field level. It also emphasises boosting the use of water-saving technology like Per Drop, More Crop, and precision irrigation, improving aquifer recharge, and introducing sustainable water-use reduction measures.

The National Micro-Organization

Irrigation: The goal of its inception was to advance and expand micro-irrigation infrastructure. The area under micro-irrigation has almost quadrupled under this scheme, rising from 3.09 million hectares in 2005 to 6.14 million hectares in 2012.By conserving water, micro-irrigation lowers the total cost of irrigation by reducing the need for labour, power, and other inputs while also increasing crop output via a variety of techniques. Among the methods of micro-irrigation are sprinklers and drip irrigation. Consequently, another strategy for advancing sustainable agriculture is micro-irrigation.

Soil Health Card Scheme-

In 2015, the government initiated the Soil Health Card programme, which aims to revitalise India's depleted soils nationwide. Farmers who participate in this programme get soil health cards with crop-specific recommendations for nutrients or fertilisers. In order to improve soil health and production, it strives to promote Integrating Nutrient Management (INM) by the prudent use of chemical fertilisers, including secondary and micronutrients, in combination with organic manures and biofertilizers.

PradhanMantri Fasal Bima Yojna:

This flagship programme was introduced by the Indian government in 2016 to assist farmers in dealing with crop losses. In the event that farmers experience crop losses due to weather-related events, natural disasters, or climate change, it aims to provide them a consistently low premium that will enable them to continue farming. The PMFBY seeks to promote sustainable production in the agricultural sector by providing financial assistance to farmers who have experienced crop loss or damage from unanticipated circumstances. Additionally, it motivates farmers to use cutting-edge techniques in order to stabilise their earnings and advance sustainable agriculture.

Role of Organic Farming-

Organic farming has become a viable alternative agricultural system that not only solves sustainability and quality issues, but also guarantees lucrative economic options for India's rural communities. The strict dependence on chemical pesticides and fertilisers calls into question the very idea of sustainability. It damages the food chain and the ecosystem. Organic farming steers clear of any methods that harm the agricultural ecology. In addition to producing wholesome food, it creates an ecological balance that guards against insect issues and low soil fertility. India is endowed with all the people and environmental resources needed to advance organic farming. As a result, the government is focusing on organic farming as a means of advancing sustainable agriculture.

Parampragat Krishi Vikas Yojna (PKVY) -

The campaign is cluster-based and aims to persuade farmers to switch to organic agricultural practices. A group of at least fifty farmers with 50 acres of land is created under this scheme to start organic farming. In this manner, 10,000 clusters totaling 5 lakh acres of organic farming would be established over the course of three years. The promotion of organic farming will be achieved via the environmentally beneficial use of conventional resources.

5. Conclusion

The Indian government undoubtedly offers a wide range of well-defined programmes to address almost all of the demands and problems associated with the advancement of sustainable agriculture. However, the smooth execution of these initiatives is the key to the answer and its achievement. Since agriculture is a state topic in India, related activities and solutions have been politicised and fragmented. At the federal level, states must come to an agreement in order to carry out a national agenda on sustainable agriculture. Furthermore, by teaching and assisting farmers in adopting sustainable agricultural techniques, higher education institutions might support environmentally sustainable agriculture. The growth of organic farming is increasingly important to the advancement of sustainable agriculture. It's time to move decisively and effectively to remove the obstacles that organic farming faces. A thorough framework that combines bottom-up solutions with organic farming is required. It should also deal with the mutual exchange of information from agricultural

institutions about the dissemination of technology.

The Indian government has announced its intention to use a seven-point approach to double farmers' income by 2022. The strategy's main points of emphasis include marketing, insurance, post-harvest management, irrigation, high-quality seeds, and auxiliary activities. The tenets of sustainable agriculture must be integrated into this plan in order to assist achieve the objectives of socioeconomic justice, environmental health, and financial success.The adoption of climate smart agricultural practises, which include the use of renewable resources like solar and biofuels, nitrogen-smart nutrient management, organic farming, agroforestry, ICT-based agro-advisories, and organic farming, must happen quickly in India.

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