UGC CARE LISTED
ISSN No.2394-5990

संशोधक

• वर्ष : ९२ • मार्च २०२४ • पुरवणी विशेषांक ०२

उत्सव

प्रकाशक : इतिहासाचार्य वि.का.राजवाडे संशोधन मंडळ, धुळे

अनुक्रमणिका

ISSN No. 2394-5990

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ISSN No. 2394-5990

INNOVATIONS IN INDIAN AGRICULTURE

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Abstract :

Agriculture is the main stay of the Indian economy which plays the most decisive role in the development of the country. Its focus on innovation in agriculture is essential to achieve self-reliance in this sector and also ensure food security. In 1950-51,it was 56.5 per cent share in national income; in 2013-14 it declined to 13.9 per cent. The new innovations in agriculture have shown us how technology can help us build a more sustainable food system and improve security. The Innovations in agriculture need to focus on the untapped growth potential in agriculture including strengthening infrastructure, promotion of agri-business, subsidiary farm enterprises,creation of more employment and digital innovations. Agricultural innovation is need for interventions in seed and planting material,farm mechanization, horticulture, disease diagnostics, labour market, Climate resilient technologies and strengthening of market linkages; new initiatives such as interaction with farmers through video conferencing for disseminating of information on various technologies to be adopted throughout the country, This paper discusses various innovations that took place in Indian agriculture at the time of independence and afterwards. Further, the decisive paper focuses on the role of agriculture in India, need of agriculture innovations, effects of agricultural innovation toward rural development and to study the problem associated with the agricultural innovation.

Introduction :

Agriculture is a way of life for the majority of Indian peoples in India. Continued focus and innovation in agriculture is essential to achieve self-reliance in this sector and also ensure food security after independence excluding one or two decades in India, falling share of agriculture and allied activity. In 1951 share of agriculture in GDP was as much as 56% but declined steadily over the decades. In 2012-13 it declined to 13.9%. If agriculture and allied sectors can grow at least at the rate of 4% per annum then the overall GDP growth of over 9 to 10% can become a reality. To Achieve 4% growth of the agriculture sector India needs to have a viable and innovative agriculture policy. Innovations in agriculture policies are required for enhancing the agriculture production and productivity. The innovations in agriculture need to focus on the vast untapped growth potential in agriculture including strengthening of rural infrastructure, promotion of agribusiness, allied activities and creation of more employment to avoid migration from rural areas to urban areas. Climate change and rising temperature is an inevitable process in India. We need to focus on development of rot resistant, less water intensive and short duration crops in drought prone regions of the country. India can adopt many of the cost effective innovative irrigation techniques developed by Israel. It is essential to adopt innovative practices in enhancing soil moisture conservation techniques developed by various institutions within the country. The need of the

hour is to build confidence of small and marginal farmers in India through right policies by ensuring easy credit availability, remunerative prices for agriculture products, supply of drought resistant varieties and short duration high yielding varieties, establishment of self help groups and encouraging direct marketing and selling of agriculture produce by the farmers.

In India the remarkable success stories of the post independence era through the association of Green revolution Technology green revolution contributed to the Indian economy by providing food self efficiency and improved rural welfare. Green Revolution helpful for agriculture innovation typically arises through dynamic interaction among the multitude of actors involved in growing, processing, packing, distributing and consuming or using agriculture products.For Innovation to occur,interactions among these divorce stakeholders need to be open and to draw upon the most appropriate available knowledge. Aside from a strong capacity in Research and Development,the ability to innovate is often related to collective action, coordination, the exchange of knowledge among diverse actrs,the incentives and resources available to form partnerships and develop businesses and conditions that make it possible for farmers to use the innovations.

Objectives of the study :

1) To analyse the role of innovations in Indian agriculture.
2) To examine the effects of agricultural innovation towards economic development.
3) To examine the problems of agricultural innovation.

Research methodology :

The present study is based on secondary data were collected from various Government Reports, Books and Journals Newspapers, Articles, websites data, etc. The study used simple analyti Agriculture is an important sectorcal tools for analysis.

The Role of Agriculture Sector in Indian Economy of Indian economy as it contributes about 13.9% to the total GDP and provides employment to over 50% of the population. The food grain production has increased from 51 million tons in 1950-51 to 329.68 MT during 2022-23. Agriculture is the backbone of the economic system of any country. Agriculture sector providing foods,raw material and employment to the population. The economic importance of agriculture in the field of national income, providing raw material to industry, capital formation, market for industrial products etc.

Agriculture development in the time of independence :

Famines were more frequent during the British era in India. Since 1850, several famines nearly 20 million people have died in India. India had to face food shortage during the colonial era as the British were interested in growing only the cash crops like cotton,jute etc. In order to supply raw material for their factories back in England. The world's worst food disaster happened in 1942-43 in British -ruled India. In 1943,about 2 million people were died due to famine in Bengal. It was therefore the food security was a prime objective of independent India. In the first five year plan, emphasize was given on the agricultural development as there was acute food shortage along with irrigation,fisheries, animal husbandry and marketing. Food production increased substantially from 54MT to 65.8 MT by the end of the first plan. In the third five year plan emphasis was laid on agriculture to make the country self-sufficiency in food grain production due to Green Revolution.

Under British rules, the main source of revenue was from the tax on land. But after

ISSN No. 2394-5990

independence land taxes have steadily declined as a share of revenues and completely replaced by sales taxes. During this period some special programs were implemented by the government to focus on supply of food and cash crops. All Five year plans were oriented towards agriculture development especially on land reclamation and development, farm mechanization, electrification etc. Various Institutions for agricultural research were founded under the Indian Council of Agriculture Research, New Delhi.

Agriculture Development after Green Revolution:

Due to shortage of food grain in India, imported food grains from the US under PL-480 Scheme. Under the critical situation of lower level of agriculture production combined with increased population. India needed to increase its food grain production remarkably. Production of high yielding varieties of some crops revolutionized the Indian agriculture scenario. The first high ending variety in rice was released in 1968 as Jaya. In wheat, Lerma Rojo 64A and Sonora 64 were introduced directly from Mexico, later two varieties namely kalyan sona and Sonalika were released for cultivation. Because of this crop innovation the photogra and production in the country increased to 108.46 MT in 1970-71 to 176.4 MT in 1990-91. Therefore, the Green Revolution has changed the face of Indian agriculture and the country has become self-sufficient in food grain production.

Agricultural development after economic reforms:

In 1991, economic reforms were introduced in India. This has got a tremendous impact on Indian agriculture. During 1991 to 1999 slow down agriculture growth especially crop production, livestock, fruits and horticulture. Considering the period 1980-1990,the yield of the grains was increased at 3.2% per in the next decade that is 1990-2000, the growth has slowed down to 2.9%. During the 2000-2010, food grain production has increased only by 1.2%. Critical analysis of the above situation, climate constraints contribute significant yield loss in India. Even now, the agriculture sector remains the principal source of livelihood for more than 52% of the population.

Many reasons are attributed for the declining agricultural growth that is reducing investment in agriculture, lack of agriculture research, inefficient credit facilities, lack of technology. Other factors such as lack of rural infrastructure and market, pricing policy, outdated landreform laws, land fragmentation etc. were also said to be responsible for agrarian crisis in the country. For achieving sustainable food grain production we need to make use of innovative technologies viz., nanotechnology, biotechnology, weather modelling remote sensing, market technology etc. to come out with solutions for ever increasing demands in food production. Therefore food production and food security can be achieved through effective agriculture innovation.

Effects of Innovation On Agricultural Development

Indian,s green revolution programme adopting high-yielding varieties of seeds, modern farming method, irrigation development, agrochemicals and fertilizers. It all began after discovering high yielding varieties of seeds. It was first introduced in India in1966 thereafter, India has become self-sufficient in food grains production. In the World,India ranks among the top two producers in several agricultural products. India counts among the top two producers in the world of wheat, rice, sugarcane, cotton, milk, fruits, vegetables and spices.

Farmers have acted entrepreneurially to favorably influence cropping intensity and crop diversification, adoption of better technology in nutrients, high quality seeds, paste management and small-farm tractors have been usually advantages to agriculture development.

Application of innovations in agriculture sector, the biggest successes achieved by India post-independence has been its ability to move from facing food shortage and food imports to that of self-sufficiency and export of food grains to other country.Indian agriculture has also moved away from subsistence farming to intensive and technology-led cultivation.

Limitations on application of innovation in Indian agriculture :

- In India,large population dependent on agriculture
- Due to weather and other factors like market linkage, application of fertilizer, use of chemicals output uncertainty exists in Indian agriculture.
- More than 75% of farmers in India are marginal and small therefore, there are some limitations on application of innovation in agriculture
- Lack of institutional credit for agriculture, nearly 40% of loans come from informal sources.
- India has very poor infrastructure, poor rural roads,affecting timely supply of inputs and timely transfer of output from agriculture.
- Other factors like, lack of irrigation facilities, poor seeds quality, lack of cold storage, regional floods, inefficient farming practices adversely affected agriculture development.

Conclusion :

Agriculture is a way of life for the majority of farmers in India.it has Influence the significantly socio- economic development of the society innovation in agriculture essential to achieve self-reliance in this sector and also ensure food security.Agriculture development as well as rural development of Indian economy, India need to have a viable and innovative agriculture policy. The innovations in agriculture programs are required at the national level as well as at the regional level for enhancing the agriculture production and productivity. On the other hand, overcoming the pitiable plight of the farmers. The innovations in agriculture need to focus on the vast untapped growth potential in agriculture including strengthening of rural infrastructure, promotion of agribusiness and subsidiary farm enterprises and creation of more employment to avoid migration from rural and urban areas.

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