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AGRICULTURE REFORMS IN INDIA

Dr Arun Ramrao Chavan ,

Assistant Professor, K.G.Uran College of Commerce & Arts, Uran, Maharashtra.

Abstract:

India is mainly an agricultural country. Agriculture is the most important occupation for most of the Indian families. In India, agriculture contributes about sixteen percent (16%) of total GDP and ten percent (10%) of total exports. Over 60 % of India's land area is arable making it the second largest country in terms of total arable land. Agricultural products of significant economic value include rice, wheat, potato, tomato, onion, mangoes, sugar-cane, beans, cotton, etc. Agriculture is the backbone of Indian economy. Though, with the growth of other sectors, the overall share of agriculture on GDP of the country has decreased. Still, Agriculture continues to play a dominant part in the overall economic scenario of India. Food is essential for life. We depend on agricultural outputs for our food requirements. India produces large quantity of food grains such as millets, cereals, pulses, etc. A major portion of the food-stuffs produced is consumed within the country. Our farmers work day and night to feed our population that counts over 1.21 billion. Besides agriculture with a commercial bias, subsistence agriculture with its emphasis on the production of food for the cultivator's family is widespread. Traditionally, Agriculture is followed as the simplest method of obtaining food for the family.

Seeds, Fertilizers, Pest Control, Extension Services, Kisan Call Centre, Kisan Credit Card, and Information Technology etc. seem to be improving the agricultural sector.

Keywords: *Traditional Agriculture, Modern Agriculture, Agriculture Reforms, Agricultural Engineering.*

Introduction:

The Government of India brought two new laws and amended an earlier one, all the three dealing with Agriculture in India, in 2020. The two new laws seek to promote barrier-free interstate and intra-state trade in agricultural produce and allow farmers to engage with processors, aggregators, wholesalers, large retailers, exporters in the form of contract farming. The third is an amendment to the Essential Commodities Act to liberalize the regulatory environment around stock holding limits for food items. These changes seek to pave the way for greater private investment in agriculture value chains and modernize Indian agriculture. The government of India claims that these reforms were long pending and will hugely benefit Indian farmers while some farmers' groups vehemently contest these claims. In this paper, we detail the issues involved and review both sides of the argument. We find strong rationale behind these reforms and believe that these reforms are a step in the right direction for the future of Indian farmers.

Indian Agriculture Sector had reached the stage of development and maturity much before the now advanced countries of the world embarked on the path of progress. At the time, there was a proper balance between agriculture and industry and both flourished hand-in- hand. This situation continued till the middle of the eighteenth century. The interference from the alien British government and its deliberate policy of throttling the village handicrafts and cottage industries destroyed the fibre of balance and the economy of the country was badly shattered. Britishers pursued a typical colonial policy in India and did nothing to develop or restore agriculture. Instead, they created a class of intermediaries known as zamindars who sucked the very blood out of the rural poor. A substantial part of the produce was taken away by this parasitic class and the actual cultivator was left only with subsistence income. The cultivators had neither the resources nor the incentive to invest in agriculture.

Traditional Agriculture:

Perhaps the most important difference between the categories is the way farmers see themselves and their roles. Traditional farmers, for example, often say that they seek to work effectively with resources at hand. That is, they use the land, rainfall, seeds, tillage methods and power sources they have to produce what nature offers. Conventional processes are used to till the land, select and plant seeds, protect plants from competing plants and animals and gather the harvest. Surpluses are marketed through nearby outlets. Such producers frequently report only limited capacity to change these processes and some seek to avoid change.

The productivity of such systems depends primarily on the natural fertility of the soils enhanced by skillful care and on the climate. The technology and management systems involved are often characterized by lack of access to, or reluctance to use new information about production and/or management, or public or commercial assistance. Their productivity tends to grow slowly, often in response to outside developments that reduce producer isolation, increase access to markets or support investment in water and land.

Modern Agriculture:

In modern agricultural systems farmers believe they have much more central roles and are eager to apply technology and information to control most components of the system, a very different view from that of traditional farmers. In contrast to the isolation inherent in traditional arrangements, modern agriculture tends to see its success as dependant on linkages access to resources, technology, management, investment, markets and supportive government policies. As a result, much of the success of modern systems depends on the development and maintenance of soil fertility through the specific provision of nutrients when they are depleted; of machine power and technology to create soil conditions necessary to promote plant growth with minimal disturbance and minimal soil loss; of the use of improved genetics for crops and livestock to enhance yields, quality and reliability; and, on modern genetic and other techniques to protect plants and livestock from losses to competing plants, diseases, drought insects and other threats. This success also depends on access to efficient, effective irrigation to supplement rainfall in many climates; on advanced harvesting, handling and storage equipment and techniques to prevent losses and to market commodities efficiently. It depends, in turn, on both public and private investment to provide access to technology, equipment, information and physical facilities throughout the production-marketing system. And, it depends on well supported commercial and financial systems and broad public policies that support effective commercial markets at all levels that generate economic returns throughout the system. Modern agriculture in developed countries including the United States involves far more than farms and farmers it depends on enormous, highly sophisticated systems that move, store and processes producers' output throughout an extensive value chain that extends to food products and final consumers.

In the 1960s, Indian agriculture underwent transformation in method of cultivation with the help of technology and

a number of supporting changes. The term new strategy refers to the application of scientific knowledge for practical purposes. It is a branch of knowledge concerned with applied sciences.

Agriculture Reforms:

1. **Cultivation:**
   A new method of cultivation specially in rice was introduced, based on the Japanese method of cultivation. In wheat cultivation too significant changes were introduced. These changes have resulted in more output per hectare as well per labour. Qualitative improvement in inputs has been one of the important aspect technological changes
2. **Seeds:**
   Seed is the basic input for enhancing agricultural production and productivity. Efficacy of all other agricultural inputs is largely determined by the quality of seed used. It is estimated that the quality of seed accounts for 20-25 percent of agricultural productivity. High Yielding Variety (HYV) seeds were used specially for rice and wheat cultivation. HYV seeds brought along with them changes in method of cultivation, duration and yield per hectare. India has developed an institutional framework to generate quality seeds. It includes the participation of central and state governments, Indian Council of Agricultural Research (ICAR), State Agricultural Universities (SAU), Public sector, corporate sector and Private sector institutions. Besides the above-mentioned institutions, we have National Seed Corporation (NSC), State Farms Corporation of India (SFCI), 15 State Seed Corporations (SSCs) and about 100 major seed companies. The system involves generation of seeds, safeguards for quality and purity of variety, as seeds are transferred from the breeders to the farmers.
3. **Irrigation:**
   The method of irrigation where water is one of the most essential inputs has undergone a change. Major and minor dams, bore wells and pump sets are widely used. Drip and sprinkler system has been developed specially for plantations. However, only 40% of the cultivated area is irrigated having 60 percent for rain fed cultivation.
4. **Fertilizer:**
   The green revolution was the outcome of HYV seeds, better irrigation and use of fertilizer. India is the third largest producer and consumer of fertilizers in the world after china and USA. The all-India average fertilizer consumption is 116.5 Kg/ha but it varies from 212 kg/ha in Panjab to less than 5 kg/ha in states like Arunachal Pradesh and Nagaland.
5. **Pest Control:**
   Pest control methods have been developed through Integrated Pest Management (IPM). Plant protection is provided through the use of chemicals with residue not exceeding toxic limits. New methods for rodents, birds, nematodes and mite controls have been developed. Effective IPM packages are designed and developed for rice, cotton, sugarcane, pulses and oilseeds.
6. **Extension Services:**
   Agricultural Universities and Agricultural Research center with the support of central and state governments have been providing extension services. Farmers have been trained in the use of modern inputs in cultivation specially the use of various types of machines. In 2005-06 a new extension system was launched. The new system is farmer driven and farmer accountable by way of new institutional arrangement for technology dissemination in the form of an Agricultural Technology Management Agency at district level to operationalize the extension reforms. The NSSO 70th round survey indicates that about 59 percent of farmers do not get much technical assistance and know-how from government funded extension services.

7. **Kisan Call Centre:**

Since January 2004, Kisan call center have been functioning in 25 different locations covering almost all the states of the country. At present 144 call center Agents have been engaged in KCCs for answering farmer's queries in 21 local dialects. All KCC locations are accessible by dialing single toll-free number 1551 and 1800-180-1551 from 6.00 A.M. to 10.00 P.M. on all 7 days a week nationwide. The department of agriculture and co-operation has developed a data structure in the form of Kisan Knowledge Management System (KKMS) to help he KCCs to provide correct answers to the Farmers queries.

8. **Kisan Credit Card:**

Honorable Union Finance Minister announced in his budget speech for 1998-99 that NABARD would formulate a model scheme for issue of Kisan Credit Cards to farmers, on the basis of their land holdings, for uniform adoption by banks, so that the farmers may use them to readily purchase agricultural inputs such as seeds, fertilizers, pesticides, etc. and also draw cash for their production needs. As a pioneering credit delivery innovation, Kisan Credit Card Scheme aims at provision of adequate and timely support from the banking system to the farmers for their cultivation needs including purchase of inputs in a flexible and cost-effective mane.

Kisan Credit Card is a pioneering credit delivery innovation for providing adequate and timely credit to farmers under single window. It is a flexible and simplified procedure, adopting whole farm Approach, including short-term, medium-term and long-term credit needs of borrowers for agriculture and allied activities and a reasonable component for consumption need. Under the scheme, beneficiaries are issued with a credit card and a pass book or a credit card cum pass book incorporating the name, address, particulars of land holding, borrowing limit, validity period, a passport size photograph of holder etc., which serves both as an identity card and facilitate recording of transactions on an ongoing basis.

9. **Information Technology:**

To make all the information available to the farmers, State government have introduced e-governance. Development of websites and portals are undertaken for providing all the information concerning agriculture. Information technology is also used to update the land ownership records and provide them on demand without delay.

Major technological changes have occurred in India during 1960s. The food problem India faced in the 1960s and early 1970s motivated India to improve its agricultural sector. Food problem which declined to 63.3 million tonnes in 1966 has registered good progress thereafter. In the last two years India has exported nearly 40 million tonnes of cereals. In 2013-2014 food grains production was 265.6 million tonnes.

10. **GM and Other Technologies:**

Genetically modified (GM) seeds have emerged as a powerful new technology promising high productivity and lower use of fertilizers, Weedicides and pesticides in the last one to two decades and have gained increasing acceptance among farmers around the world. They are likely to play increasingly important role in addressing many of the current problems in agriculture. The most important and so far, the only example of this technology in India has been Bt cotton.

11. **Agricultural Engineering:**

Several new tools and equipment have been developed to improve efficiency in agriculture. Women friendly tools and implements have been introduced. Suitable tractor operated three-row weepers with reduction in human drudgery have also been developed. For processing fruits and spices suitable machines have been introduced.

Indian Council of Agricultural Research (ICAR) has designed a variety of marketable implements and machines

for field operations. Zero tillage seed drill has been developed for planting wheat immediately after rice cultivation to improve wheat productivity by overcoming delays in sowing. Other machines include eight row rice transplants and pre-germinated rice seeders, sugarcane planter, groundnut decorticator, mini dal mill and high capacity multi-crop thresher. Machines for multi-crop percent in developed countries.

Conclusion:

It is apparent that the tasks of meeting the consumption needs of the projected population are going to be more difficult given the higher productivity base than in 1960s. There is also a growing realization that previous strategies of generating and promoting technologies have contributed to serious and widespread problems of environmental and natural resource degradation. This implies that in future the technologies that are developed and promoted must result not only in increased productivity level but also ensure that the quality of natural resource base is preserved and enhanced. In short, they lead to sustainable improvements in agricultural production. Productivity gains during the 'Green Revolution' era were largely confined to relatively well endowed areas. Given the wide range of agro-ecological setting and producers, Indian agriculture is faced with a great diversity of needs, opportunities and prospects. Future growth needs to be more rapid, more widely distributed and better targeted.

Responding to these challenges will call for more efficient and sustainable use of increasingly scarce land water and germ plasma resources. New technologies are needed to push the yield frontiers further, utilize inputs more efficiently and diversify to more sustainable and higher value cropping patterns. These are all knowledge intensive technologies that require both a strong research and extension system and skilled farmers but also a reinvigorated interface where the emphasis is on mutual exchange of information bringing advantages to all. At the same time potential of less favored areas must be better exploited to meet the targets of growth and poverty alleviation. These challenges have profound implications for products of agricultural research. The way they are transferred to the farmers and indeed the way research is organized and conducted. One thing is, however, clear the new generation of technologies will have to be much more site specific, based on high quality science and a heightened opportunity for end user participation in the identification of targets. These must be not only aimed at increasing farmers' technical knowledge and understanding of science based agriculture but also taking advantage of opportunities for full integration with indigenous knowledge. It will also need to take on the challenges of incorporating the socio-economic context and role of markets. With the passage of time and accelerated by macro-economic reforms undertaken in recent years, the Institutional arrangements as well as the mode of functions of bodies responsible for providing technical underpinning to agricultural growth are proving increasingly inadequate. Changes are needed urgently to respond to new demands for agricultural technologies from several directions. Increasing pressure to maintain and enhance the integrity of degrading natural resources, changes in demands and opportunities arising from economic liberalization, unprecedented opportunities arising from advances in biotechnology, information revolution and most importantly the need and urgency to reach the poor and disadvantaged who have been by passed by the green revolution technologies.

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