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Agriculture as a Production Engine

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Agriculture is the backbone of the Indian economic growth and development. In recent years, the agriculture sector has been paralyzed with low productivity, soil erosion, environmental degradation, greenhouse gases, adversities in biodiversity, uneconomic operations, increasing use of unhealthy means in farming etc. This has ignited a debate on the sustainability of the agricultural sector. The recovery of the farming community is critical to the recovery of the Indian economy. The mechanism of Minimum Support Price (MSP) for their produce is the single most essential tool for empowering farmers. Agriculture aids in the growth of exports, the creation of jobs, and the emancipation of subsistence farmers.

Introduction

Agriculture is essential for long-term growth. Around 70% of the poor, in developing countries, live in rural regions and rely on agriculture in some form for their survival and existence. As a result, agricultural progress is the best safety net against poverty and hunger that plague many countries around the world. It has the potential to make a unique contribution to a more sustainable society. Not only can it assure the continued development of an environmentally-sound supply of food to meet the needs of the rapidly expanding world population, it can also provide for the conservation of the rural environment with its habitat, genetic biodiversity, landscapes and cultural traditions. Because of its important role in the economy of most developing countries, sustainability of agriculture is identified as an engine for development.

Agricultural Development in India

The growth of agriculture in independent India can be classified into three phases. Phase I began in 1950, with native cultivars, indigenous technologies and green manuring as the inputs and minimal expectations for output. Alarming rise in the population rate forced the scientists to think of alternatives to the local cultivars with higher response to fertilizers and jump in yield levels. This marked the beginning of Phase II (1965), wherein high yielding varieties, fertilizers, mechanization and irrigation were used as the inputs and production increase was lucrative. This phase was popularly known as 'Green Revolution' in the history of Indian Agriculture. But after 20-25 years the impact of high input technology was reflected in the degradation of agro-ecosystem and once again forced the scientists to think of a viable option to keep intact the resource base and to harvest more sustain yield levels to feed the

burgeoning population. This being the third phase is popularly called as phase of sustainable agriculture started from 1980's onwards.

Need for Sustainable Agricultural Development

Historically, agriculture played an important role in human development. It faces daunting challenges because of increasing population growth and changing food consumption patterns, natural resource scarcity, environmental degradation, climate change, and global economic restructuring. To feed the world and to feed it well, global food production will need to double by 2050. The problem, however, is that half of the habitable land on Earth is already used for farming. As resources are limited, the challenge is to achieve global food security while having a positive impact on the environment and society. Sustainable agricultural practices provide the solution.

Sustainable Agriculture

Sustainable agriculture is both a term and a concept whose definition has varied a great deal. As it pertains to agriculture, sustainable describes farming systems that are "capable of maintaining their productivity and usefulness to society indefinitely. Such systems must be resource conserving, socially supportive, commercially competitive, and environmentally sound (Ikerd, 1990). Sustainable agriculture can be defined in many ways, but ultimately it seeks to sustain farmers, resources and communities by promoting farming practices and methods that are profitable, environmentally sound and good for communities. Sustainable agriculture fits into and complements modern agriculture. It rewards the true values of producers and their products. It draws and learns from organic farming. It works on farms and ranches large and small, harnessing new technologies and renewing the best practices of the past.

Components of Sustainable Agriculture

Sustainable agriculture has environmental, social and economic dimensions – and all three must be considered together. Focusing on one or two in isolation will not give the desired results.

- ❖ Protecting and improving the natural environment are fundamental, and issues like climate change, energy, water scarcity, and biodiversity and soil degradation need to be addressed.
- ❖ The social dimension covers labor rights and the health of communities, including access to and affordability of food, labor rights and community health. Food quality, safety and animal welfare are also important social aspects.
- ❖ On the economic side, sustainable agriculture is productive, efficient and competitive. The benefits should be seen in farm profitability, thriving local economies and throughout the whole value chain.

Sustainable Agricultural Practices for Sustainable Development

In recent years, the agriculture sector has been paralyzed with low productivity, soil erosion, environmental degradation, greenhouse gases, adversities in biodiversity, uneconomic operations, increasing use of unhealthy means in farming, etc. This has ignited a debate on the sustainability of the agricultural sector. With the growing earth imbalances, the concept of sustainable agriculture has received international attention. Sustainable agriculture integrates environmental, economic and socio-cultural considerations in agricultural practices. Initiatives towards sustainable agriculture have provided a wide vision for present and future needs of the society. It has the potential to provide solutions on the emerging issues related to livelihood, social, cultural, economic and environmental problems. Issues like increasing cost of farming, declining fertility of soil, land use patterns, competitive pricing of the agricultural produce, growing imbalances in the natural ecological settings, issues in biodiversity,

commercialization of agriculture etc. can well be addressed through sustainable agriculture practices. Sustainable agricultural practices include (United Nations Environment Programme, 2015)

- ❖ Crop rotation that alleviate weed, diseases, and insect problems; increase available soil nitrogen, reduce soil erosion and reduce the need for synthetic inputs.
- ❖ Integrated Pest Management reduces the requisite for pesticides by crop rotations, scouting, and timing of planting, biological pest controls.
- ❖ Management systems to improve plant health and crops abilities to resist pests and diseases.
- ❖ Soil conserving tillage.
- ❖ Water conservation and water harvesting practices.
- ❖ Planting of leguminous crops and use of organic fertilizers for improving soil fertility.

Strategies to Promote Agricultural Sustainability

The major objective of sustainable agriculture is to increase food production in a sustainable way and enhance food security (Bhatnagar and Bhatnagar, 2012; United Nations Environment Programme, 2015).

- 1) This will involve education initiatives, utilization of economic incentives and the development of appropriate and new technologies, thus ensuring stable supplies of nutritionally adequate food, access to those supplies by vulnerable groups, and production for markets; employment and income generation to alleviate poverty; and natural resource management and environmental protection.
- 2) The priority must be on maintaining and improving the capacity of the higher potential agricultural lands to support an expanding population. However, conserving and rehabilitating the natural resources on lower potential lands in order to maintain sustainable man/land ratios is also necessary sustainable agriculture.
- 3) The main tools are policy and agrarian reform, participation, income diversification, land conservation and improved management of inputs. The success of sustainable agriculture will depend largely on the support and participation of rural people, national Governments, the private sector and international cooperation, including technical and scientific cooperation.

Conclusion

Agriculture must address its issues by increasing productivity on existing land and limiting future encroachment on territory that is only marginally suited for cultivation. Keeping in mind the country's overall socio-economic development trajectory, fostering rapid, sustainable, and broad-based agricultural growth is a top goal. To provide the circumstances for sustainable agriculture development, major changes in agricultural, environmental, and macroeconomic policy are required at both the national and international levels, in both developed and developing countries. Especially in the light of existing vulnerabilities that relate to a shrinking land resource base, additional stresses arising from the non-agricultural sector and issues emerging due to changing climate.

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