



## SUSTAINABLE DEVELOPMENT IN INDIAN AGRICULTURE

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### ABSTRACT

Sustainable development is a process of change in which exploitation of resources, the direction of interests, orientation of technological development and the institution change are in harmony and enhanced both current and future potential to meet human needs and aspirations. Sustainable agriculture is the system of raising crops for greater human utility through utilization of resources with better efficiency with out disturbing, imbalancing or polluting the environment. India has achieved green revolution due to the increased use of high yielding variety seeds. But intensive use of land without taking enough care to maintain its productive capacity leads to loss of top solid due to erosion, loss of organic matter, loss of poras soil structure and water logging and build up of toxic salts and chemicals. Over use of pesticides caused localized health hazards. Indiscriminate use of modem technology may endanger ecological security and imbalance the environment. The paper highlights the sustainability in Indian agriculture through the prevention of diversification of land suitable for farming to non farm uses, integrated forest management, through preserving genetic resources and management of marine resources. To achieve sustainable agricultural development in India some policy measure are suggested.

**Keywords:** Sustainable development, technological development, Indian agriculture, agricultural development, investment on irrigation, green revolution

### INTRODUCTION

Sustainable development means, development at present meets the needs of the present generation without compromising the ability of future generation to meet their own demand. Sustainability in agriculture means the land and resources that use for agriculture today should be handed over to the future generations in a sustainable form so that they can continue to practice agriculture and have food security. This means that we have to use lands, water resources, etc in such a manner that the future generations are also will be able to have sustainable development. Sustainable agriculture is the system of raising crops for greater human utility through utilization of resources with better efficiency without disturbing imbalancing or polluting the environment. Sustainable agriculture is ecologically sound, economically viable, socially just and human. Status of Agricultural Development in India After independence, India has achieved phenomenal increase 10 agricultural production. In India, the expected GDP growth rate of 9.3 percent registered in the first quarter of 2007-2008 is partly attributed to a modest revival in agriculture. According to

India is expected to be the most populous of the world by 2050 if the present growth rate perpetuates. In order to meet the growing needs of the expanding population, it is compelled to produce more than 210 million tonnes of food grains per year.

India has not only met its domestic requirement but is also exporting to other countries. It also has a respectable buffer stock of about 40 million tonnes of food grains. The achievement of green revolution was due to the increase in yields through the increased use of high yielding variety seeds. But intensive use of land without taking enough care to maintain its productive capacity leads to loss of top soil due to erosion, loss of Organic matter, loss of porous soil structure and water logging and build up of toxic salts and chemicals. Deficiencies in micro nutrients such as zinc, iron, and manganese have also increased in Indian soil. Overuse of pesticides have caused localized health hazards. Indiscriminate use of modern agriculture technology may endanger ecological security and imbalance the environment.

Both farmers and government have made huge investment on irrigation. These investment have not only brought inadequate results but also the use of its improper management system has led to enormous water losses and problems such as soil erosion and compaction, water salinity, acidity and alkalinity. Though we have more than 100 million holdings hardly 4 percent of the total area is under pasture and grasses. The area under forest, pasture and grazing land has considerably declined over the times.

The present social forestry programmes often have tended to be government foresting for the people rather than people own foresting for meeting their needs. Thus Indian agriculture has problems related to sustainability viz. Marketed deterioration of renewable resources and of environment and (ii) levelling of agricultural yield despite increasing doses of new inputs and high yielding technology.

### **Improving the Sustain Ability in Indian Agriculture**

#### **1. Agriculture**

Diversification of land suitable for farming to non-farm uses should be prevented by legislation. The soil with diminishing biological potentials should be improved through the efficient adoption of the principle of restoration of ecology. Uncultivated land must be revegetated. Efforts must be taken towards arresting soil erosion, conservation of water and biological diversity. The consumption of mineral fertilizers and chemical pesticides must be reduced. The integrated pest management system involving crop rotation, green water potentials must be effectively used to save research and training to achieve sustainability in agriculture, think nationally but plan and act locally.

Forest A Scheme of integrated forest management which can take care of the triple needs of conservation, community needs and commercial needs will have to be developed.

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3. Protecting Environment Measures such as removal of subsidies on pesticides, development of pest resistant varieties and implementation of integrated pest management must be adopted by the Government.
4. Preserving Genetic Resources A special programme is necessary for the collection, conservation, evaluation and enhancement of crop genetic resources directly related to the promotion of sustainable advances in crop productivity.
5. Other Needs a) Removing subsidies which encourage excessive use of fossil fuels, irrigation water pesticides and excessive logging. b) Acceleration of provision of sanitation and clean water, agricultural extension credit and research.

6. Aquaculture Use of eco-system approach to the management of marine resources. No single satisfactory indicator is available to study the short run progress towards sustainable agricultural development, because it involves value judgements such as the level of genetic diversity necessary to ensure crop security and the level of soil microbiological activity necessary for the health of the soil, However indicators like soil organic matter can be used for long-term measurements. To achieve sustainable agriculture development in India the following policy measures are suggested.

### **SUSTAINABLE AGRICULTURE DEVELOPMENT**

The issues of sustainable development can be discussed under three broad types of farming systems viz. traditional production system, modern agriculture system and sustainable agriculture system. Further, we can compare them across three dimensions, ecological, economic, and social sustainability.

#### **Social Sustainability**

Social sustainability in farming techniques is related to the ideas of social acceptability and justice. Development cannot be sustainable unless it reduces poverty. The government must find ways to enable the rural poor to benefit from agriculture development. Social injustice is where some section of the society is neglected from development opportunities. But having robust system of social sustainability can bridge the gap between “haves” and „have-nots”. Many new technologies fail to become applicable in agriculture sector due to lack of acceptability by the local society. Sustainable agriculture practices are useful because it is based on local social customs, traditions, etc. Because of being familiar, the local people are more likely to accept and adopt them .Moreover, sustainable agriculture practices are based on traditional know-how and local innovation. Local people have the knowledge about their environment crops and livestock.

### **INDIAN AGRICULTURE SECTOR**

Agriculture is one of the most preeminent sectors of the Indian economy. It is the source of livelihood for almost two third of the rural population workforce in the country residing in rural areas. Indian agriculture provides employment to 65% of the labor force, accounts for about 27% of GDP, contributes 21% of total exports and raw material to several industries. The livestock sector contributes an estimated 8.4% to the country GDP and 35.85% of the agriculture output In India about 75% people are living in rural areas and are still dependent on agriculture, about 43% of India’s geographical area is used for agriculture activities. The estimated food grain production is about 211.17 metric tons in the country.

The total geographical area comes under the agriculture are 329 MH out of which 265MH represent varying degree of potential production. The net sown area is 143 MH out of which 56MH are net irrigated area in the country. India is a vast country with variety of landforms, climate, geology, physiography, and vegetation. India is endowed with regional diversities for its uneven economic and agriculture development because of

1. Agro-Climate Environment.
2. Agro-Ecological Regions.
3. . Agro-Edaphic regions.
4. Natural resource Development.
5. Human Resource Development. . Level of Investment.
6. Technological Development.

## **AGRICULTURAL PRODUCTION IN INDIA**

Indian Agriculture production in most part of the country is close related to the optimum use of available natural and human resources of the country. Therefore, riding on the back of agro climatic condition and rich natural resource base, India today has become the world's largest producer of numerous commodities. The country is a leading producer of coconuts, mangoes, milk, bananas, dairy products, ginger, turmeric, cashew nut, pulses and black pepper. It is also the second largest producer of rice, wheat, sugar, cotton, fruit and vegetables.

Indian agriculture production is closely related to sufficient and wise water management practices. Most of the agriculture practices in India confined to a few monsoon months. During the monsoon season, India is usually endowed with generous rainfall; although not infrequently, this bountiful monsoon turns into terror, causing uncontrollable floods in different parts of the country and ultimately affecting agriculture production.

### **Policy Measures**

1. Declare a National policy for sustainable agriculture.
2. Establish a National strategy for integrated pest management.
3. Prioritize research into sustainable agriculture.
4. Grant farmers appropriate property right.
5. Direct subsidies and grants towards sustainable technologies.
6. Link: support payments to resources conserving practices.
7. Penalize polluters.
8. Provide better information for the consumers and the public.
9. Encourage the adoption of natural resource accounting.
10. Establish appropriate standards and regulations for pesticides.
11. Support farmers' training schools.
12. Strengthen the capacities of NGOs to scale up.
13. Rethink: the project culture.
14. Scientific method of cultivation with best inputs including credit must be provided.

### **What is Sustainable Agriculture?**

Sustainable agriculture integrates three main goals- environmental health, economic profitability, and social and economic equity. A variety of philosophies, policies and practices have contributed to these goals. People in many different capacities, from farmers to consumers, have shared this vision and contributed to it. Despite the diversity of people and perspectives, the following themes commonly weave through definitions of sustainable agriculture. Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, stewardship of both natural and human resources is of prime importance. Stewardship of human resources includes consideration of social responsibilities such as working and living conditions of laborers, the needs of rural communities, and consumer health and safety both in the present and the future. Stewardship of land and natural.

### **Farming for Sustainable Agriculture:**

Intensification of agriculture through massive adoption of high yielding cultivation, increased use of synthetic inputs like chemical fertilizers and pesticides, greater exploitation of irrigation potentiality of surface and ground water resources and

farm mechanization have largely been responsible for a spectacular achievement in the food grain production that we have achieved over past three decades. Paradoxically however overexploitation of natural and renewable resources and indiscriminate and irrational use of synthetic inputs like inorganic fertilizers and pesticides in view of producing more and more from unit piece of land are being increasingly realized to seriously impair the ecological balance and putting the environment .

### **Sustainable Agriculture in India:**

The sustainable agriculture may be defined as any set of agronomic practices that are economically viable, environmentally safe, and socially acceptable. If a cropping system requires large inputs of fertilizer that leak from the system to pollute ground water, drinking supplies and distant coastal fisheries, the system may be sustainable economically as the long-term supply of fertilizer is stable and the economic cost of fertilizer is easily borne by larger grain production but it is not sustainable environmentally or socially, since it does not cover the cost of environmental damage or social costs. The organic agriculture focuses on "living soil", on optimizing the use of biological processes and on avoiding the use of synthetic chemicals and fertilizers. Advocates of sustainable agriculture agree with biological focus and hope to reduce but not necessarily eliminate chemical use. In the context of sustainable agriculture another term "alternative agriculture" has been prominently used.

### **Conclusion**

The conditions for development of sustainable agriculture are becoming more and more favorable. New opportunities are opening the eyes of farmers, development workers, researchers and policy makers. They now see the potential and importance of these practices not only for their direct economic interest but also as the basis of further intensification and ecological sustainability. This does not mean that agrochemicals can be abandoned. Also, research has an important role to play. Bankers and funders should think of how best to provide incentives and credits, accessible to poor farmers and women, to make investment in dry land farming possible. As conditions for farming will continue to change, the key to sustainable agriculture is the capacity of farmers and all other actors in agricultural development, as well as the wider society, to learn, experiment, adapt and cooperate in an effective way. To conclude, a small farm management to improve productivity, For achieving success in promoting sustainable development in agriculture attention must be focused on land, water energy, nutrient supply, genetic diversity, pest management, systems approach and location of specific research and development.

The agricultural technology needs to move from production oriented to profit oriented sustainable farming. The conditions for development of sustainable agriculture are becoming more and more favorable. New opportunities are opening the eyes of farmers, development workers, researchers, and policy makers like agro related businesses, dairy farming, poultry farming cattle farming and fisheries. Now the time is to see the potential and importance of these practices not only for their economic interest but also as the basis for further intensification and ecological sustainability. To conclude, a small-farm management to improve productivity, profitability and sustainability of the farming system will go a long way to ensure all round sustainability.

### References

1. Narasimmalu: "Globalization and Agricultural sustainability In India"
2. Chellam Subramanian: "Sustainable Development Indian Agriculture"
3. Hindu: Dated September
4. Thilochan, Thiruppathi, "Indian Journal of Agricultural Economics
5. Economic Survey (Various Issues).
6. Kanchan Chopra, "Sustainability of Agriculture",
7. N.B.Shete, "Sustainable Rural/Agricultural Development: Some views, "Indian Economics Panorama,