

Agriculture and Sustainable Development in India

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Abstract

Agriculture for Sustainable Development is not only raises the serious ethical and social issues underlying these huge environmental problems, but also aims at presenting successful experiences from all over the world in relation with sustainable farming, sustainable management of water and land resources, and innovative processes in livestock production. It also aims at providing inputs to decision making processes and encouraging the transfer of relevant know-how, technologies and expertise to different countries where similar agro-climatic conditions may exist; thus saving precious resources and promoting sustainable agricultural development as a relevant approach to tackle the food security challenge. Sustainability in agricultural systems centre on the need to develop technologies and practices that do not have adverse effects on environmental goods and services, are accessible to and effective for farmers, and lead to improvements in food productivity. Despite great progress in agricultural productivity in the past half-century, with crop and livestock productivity strongly driven by increased use of fertilizers, irrigation water, agricultural machinery, pesticides and land, it would be over-optimistic to assume that these relationships will remain linear in the future.

Due to many challenges (i.e. climate change, energy, water and land shortage, high demands on food, land grabbing, etc.), agriculture production potential is expected to be seriously affected; thus, increasing food insecurity and hunger in many already affected regions (especially in Africa). In this context, sustainable agriculture is highly recommended as an eco-system approach where soil, water, plants, environment and living organisms live in harmony. Innovative technologies and research should be developed to ensure sustainable agriculture and productivity using modern irrigation systems, improved varieties, improved soil quality, etc. In the meantime, the preservation of natural environment should be based on resource conservation technologies and best management practices.

Keywords: Agriculture; employment; role of agriculture; Indian economy, sustainability, Ecological, Water Resources, Bio-Diversity.

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Introduction:

Sustainable agriculture development integrates three main goals- Environmental health, economic prosperity and livelihood sustainability. In other words, 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 farm families, the needs of rural communities, and consumer health and safety both in the present and the future. Stewardship of land and natural resources involves maintaining and enhancing this vital resource base for the long term. The role of agricultural sector in Indian economy can be seen through its contribution to GDP (Gross domestic Product) and employment. This sector also contributes significantly to sustainable economic development of the country. The sustainable agriculture development of any country depends upon the judicious mix of their available natural resources. In fact agriculture determine the fate of a country like India where about two-thirds of the population still lives in rural India with agriculture as its livelihood, in spite of the increasing urbanization that has been taking place since many decades. Therefore if agriculture goes wrong, it will be really bad for the economy as the falling of agricultural growth not only affects employment but GDP too (thus increasing poverty). The larger objective for the improvement of agriculture sector can be realized through rapid growth of agriculture, which depends upon increasing the area of cultivation, cropping intensity, and productivity. But for a country like India, increasing productivity is more important than the rest of the two. This is simply because of increasing urbanization, industrialization and the limited land size of the country. The productivity can be increased by two ways-

First is increasing output by efficient utilization of available resources. Second is increasing output by variation of input. The first method is better with respect to productivity and sustainability. But due to increasing population, this method cannot provide a permanent solution. Thus, we can go for the second method, which may potentially cause environmental degradation in the economy and affect its sustainability. Therefore there is need to tackle the issues related to sustainable agriculture development.

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 labour 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.

Indian Agriculture Production

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.

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.

Ecological Sustainability

Most of the traditional and conventional farm practices are not ecologically sustainable. They misuse natural resources, reducing soil fertility causing soil erosion and contributing to global climatic change. But sustainable agriculture has some major advantages over traditional practices.

Soil Erosion

Soil erosion is the major problem in the agricultural sector. This can be rectified with the practices of sustainable development.

Water Resources Irrigation is the biggest consumer of fresh water, and fertilizer and pesticides contaminate both surface and ground water. Sustainable agriculture increase the organic matter content of the top soil, thus raising its ability to retain and store water that falls as rain.

Biodiversity

Sustainable agriculture practices involve mixed cropping, thus increasing the diversity of crops produced and raising the diversity of insects and other animals and plants in and around the fields.

Health & Pollution

Use Chemicals, pesticides, and fertilizers badly affect the local ecology as well as the population. Indiscriminate use of pesticides, improper storage etc. may lead to health problems. Sustainable agriculture reduces the use of hazardous chemical and control pests.

Land use Pattern

Over-exploitation of land causes erosion, landslides, and flooding clogs irrigation channels and reduces the arability of the land. Sustainable agriculture avoids these problems by improving productivity, conserving the soil etc.

Climate

Conventional agriculture contributes to the production of greenhouse gases in various ways like reducing the amount of carbon stored in the soil and in vegetation, through the production of Methane in irrigated field and production of artificial fertilizers etc. By adopting sustainable agriculture system, one can easily overcome this problem.

Economic Sustainability

As agriculture is the main source of employment in rural areas. It should focus on specialization of the skills. Specialization will help in enhancing the efficiency level and greater production viz. in other words productivity will increase. It is an illusion that by producing the specific commodity production will contribute to earn more. Cheap products from the developed countries are demanded more as they are good in quality. Sustainable development of agriculture tries to accomplish this objective through the production of quality and environment friendly product. Sometimes governments are inclined to view export-oriented production systems as more important than supply domestic demands. This is not right.

Social Sustainability

The sustainable development aims at increasing the productivity as well as increasing the level of employment in the country. Development is meaningless if it

is not able to reduce the level of poverty. Many modern technologies are failed because of their limitation like complexities in use and are not easily accessible to poor farmers. In old method of agriculture the women's had more burden of work. 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.

Issues&Challenges

The central issue in agricultural development is the necessity to improve productivity, generate employment, and provide a source of income to the poor segments of population. Studies by FAO have shown that small farms in developing countries contribute around 30-35% to the total agricultural output. The pace of adoption of modern technology in India is slow and the farming practices are too haphazard and unscientific. Some of the basic issues for development of Indian agriculture sector are revitalization of cooperative institutions, improving rural credits, research, human resource development, trade and export promotion, land reforms and education.

Future Prospectsand Solutionfor India

Agriculture sector is an important contributor to the Indian economy around which socio-economic privileges and deprivations revolve and any change in its structure is likely to have a corresponding impact on the existing pattern of social equity. Sustainable agricultural production depends upon the efficient use of soil, water, livestock, plant genetics, forest, climate, rainfall, and topology. Indian agriculture faces resource constraints, infrastructural constraints, institutional constraints, technological constraints and policy induced limitations. Sustainable development is the management and conservation of the natural resource base and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for the present and future generations.

Such sustainable development (in the agriculture, forestry and fisheries sector) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable. Therefore, to achieve sustainable agriculture development the optimum use of natural resources, human resources, capital resources and technical resources are required. In India, the crop yield is heavily dependent on rain, which is the main reason for the declining growth rate of agriculture sector. These uncertainties hit the small farmers and labours worst, which are usually leading a hand to mouth life. Therefore, something must be done to support farmers and sufficient amount of water and electricity must be supplied to them as they feel insecure and continue to die of drought, flood, and fire. India is the second largest country of the world in terms of population; it should realize it is a great resource for the country. India has a huge number of idle people. There is a need to find ways to explore their talent and make the numbers contribute towards the growth. Especially in agriculture, passive unemployment can be noticed. The sustainable development in India can also be achieved by full utilization of human resources. A large part of poor population of the country is engaged in agriculture, unless we increase their living standard, overall growth of this country is not possible. If we keep ignoring the poor, this disparity will keep on increasing between classes. Debt traps in country are forcing farmers to commit suicides. People are migrating towards city with the hope of better livelihood but it is also increasing the slum population in cities. Therefore, rural population must be given employment in their areas and a chance to prosper. India has been carrying the tag of “developing” country for quite long now; for making the move towards “developed” countries, we must shed this huge dependence on agriculture sector.

Conclusion

It has been observed that for a growing country like India the practice of sustainable agriculture is of quite importance as it accelerates the productivity, efficiency, employment, and providing guidance to reduce the practices which affect the quality of soil, water resources and degradation of other natural resources. It basically aims at adopting specialization and using environment friendly tools to protect and preserve the environment as well as to enhance the level of production without harming to the environment. As we see the performance of agricultural sector of India we will be easily recognize that performance have been increased in a significant manner over the years. Despite of many challenges like urbanization, Growth of secondary sector etc. it has achieved a significant growth.

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