



AGRICULTURAL DEVELOPMENT AND ENVIRONMENTAL SUSTAINABILITY

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The Development process is normally uneven across regions, sectors and persons. The degree of un-evenness is more severe in the economy, which is heavily depending on agriculture. Ensuring environmental sustainability is one of the millennium Development Goals which emanated from the UN Millennium Development in 2000. It requires achieving sustainable development patterns and preserving the productive capacity of natural ecosystems for future generations. Human well-being depends on natural resources and environmental services that help, among others, produce food. Incessant population growth and its necessary concomitants in terms of industrialization and urbanization, apart from compromising the environment, imply continually declining availability of land and water for agricultural use, hence, food production. Thus in order to increase agricultural production in a sustained manner, it is necessary that our future agricultural practices should make economical and efficient use of scarce land and water resources and protect the environment. The existing agricultural practices, especially in areas that have experienced Green Revolution (GR), have led to a vast and quick degradation of non-renewable resource, i.e., land. The sources of degradation are many and there is an alarming need to check this deterioration. Over exploitation of natural resources to satisfy the human needs for food, fibre and shelter and the excessive production of emissions and wastes are threatening the earth ecosystem.





Sustainable development conserves land, air, water, plant and animal genetic resources. It is environmentally non-degrading, technically appropriate, economically viable and socially acceptable. There is an evidence at the global and regional level, as also for India and Punjab, that the use of two most important inputs of agriculture viz., land soil and water is not in conformity with sustainable development. In view of this, with an ever increasing population, reaching 1.9 billion by 2050, achieving food security will be a major challenge; which can be met only through sustained increases in the productivity of factors such as land, water, energy etc.

Thus in order to increase agricultural production in a sustained manner, it is necessary that our agricultural practices make economical and efficient use of scarce land and water resource, and protect our ecosystem and quality of life of the people.

The methods employed so far for increasing agricultural productivity through increased rate of input use like electricity, fertilizers, pesticides and chemicals, etc. beyond a certain level would be environment threatening.

Therefore it is essential to formulate state policies integrating the environmental concerns with developing appropriate agricultural technologies which are sustainable: economically as well as environmentally.

In India modern methods of cultivation were adopted as a part of the packages of new agricultural strategy or, as it is popularly known, the Green Revolution. This was introduced in northwest India in the mid 1960s. Its application included the adoption of high yielding varieties (HYVs) of seeds mainly of wheat and rice; increased use of fertilizers, insecticides, pesticides; and the use of modern techniques of production along with assured irrigation. The spread of this technology converted India from a food deficit to a food surplus economy and the





north western states reached the highest levels of per capita incomes. However, the expansion of area under wheat-rice rotation resulted in a chain of adverse effects on environment and ecological balance. The area under coarse grains, pulses, oilseeds and sugarcane declined resulting in imbalances in the soil nutrients necessitating further increase in the use of fertilizers causing soil and water degradation. Several studies conducted over the last one and a half decade have brought out the serious environmental and socio-economic ramifications of this agricultural phenomenon.

Keeping in view the widespread environmental problems associated with GR in Punjab, it is important for other states to learn lessons. The ecological factors must be so managed as to bring sustainability to agriculture for creating an ecological balance and a micro-environment suitable for health and growth of farm workers, plants and animals. The agri-development model of Punjab provides lessons for the rest of the country to find out regionally suited agricultural practices to manage the existing resources for sustainability of agriculture. The effective implementation of integrated crop management practices (pest, weed and nutrient management) and application of biotechnology are of vital significance to maintain the sustainability of agro-system in India as a whole and different agro-climatic zones in particular.

