

Sustainable Agriculture-Past, Present and Future

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Summary

Sustainability is the prime requirement for agriculture, as it is an essential means for humankind to secure their food to survive. Until the dawn of the 20th century, agriculture throughout the world had been basically sustainable. Animal-based mixed farming with crop rotational systems sustained the civilization of the western world. Thorough recycling of nutrient resources in rice-based crop production systems in Monsoon Asia was another example of sustainable agriculture. Even the fallow long enough as represented by shifting cultivation was quite sustainable with a natural fallow long enough to replenish soil fertility. In this way agriculture did not disrupt the environment significantly and conformed to the order of nature.

Introduction of external inputs, particularly powerful machinery at the turn of the 19th to 20th century, created momentum towards agricultural innovation in the western world. Draft animals lost their role on the farm and fodder crops were eliminated from crop rotation. Animal husbandry was separated from the farms that specialized in food crop cultivation. Pursuit of economic efficiency and scale merits in the farm operation tended to force the farmers to take the path to monoculture. This tendency had become more and more prevalent in the latter half of the 20th century. All the agricultural technologies were mobilized to push up labor and land productivity in commercialized monoculture systems. Ample use of chemical fertilizers and synthetic pesticides helped to suppress stress caused by monoculture. Government farm policies and social as well as economic facilities were also geared to encourage monoculture systems to attain high productivity. Thus, the traditional mixed farming system in the western world underwent a complete transfiguration, disregarding sustainability for the benefit of productivity.

All these changes that occurred in agriculture after 1950 have increased the negative impacts of agriculture on the environment, such as soil erosion and degradation, water and soil pollution, and even health hazards to people through the food and water. As such undesirable effects became obvious, the people and governments in developed countries gradually came to recognize the environmental hazards of modern high-input agriculture.

In the U.S. and EU countries, the timing of recognition of the adverse effects induced by intensive agriculture coincided with that of economic stress caused by the overproduction of cereals in the early 1980s. This became the opportunity to direct the public concerns to the restoration of sustainability in agriculture. The USDA's Program of Low Input Sustainable Agriculture (LISA)

started in 1988 as an implementation of the 1985 Farm Bills. In EU (formerly EC), too, policies to encourage deliberate extensification or fallowing in agriculture started in 1985 and later in 1985 and later in 1992 regulations encouraging agricultural practices to conserve the environment and rural landscapes were enacted. People in the western world now realized that agriculture is situated in the pivotal point that governs the life and the environment.

In the fallow system practiced in the form of shifting cultivation in many developing countries, it had been increasingly obvious towards the end of the 20th century that the fallow period was shortened due to an increase in population pressure and legal controls imposed on the land use. In some cases shifting cultivation ceased to be the means of subsistence but became an operation for commercial crop production without an adequate means for nutrient replenishment, resulting in a rapid deterioration of sustainability of the system. In view of the acute land shortage there would be no prospect for the fallow system to survive in most of the developing countries.

Only the paddy rice farming in Monsoon Asia has been retaining its intrinsic sustainability all the times. This may be due to the strict controls imposed by climate it difficult for the farmers to pursue economic efficiency and scale merits beyond a certain limit. Paddy rice cultivation would remain to be the most productive and yet the most sustainable among all the food production systems.