



Agricultural Systems For Environmental Conservation

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Short Communication

Agriculture encompasses all the land-related activities. In our contemporary world, however, meaning of agriculture has been reduced to mere cultivation of food crops. Agriculture cut off from its environment becomes detrimental. Environment-deteriorating agriculture invites ruins. Agriculture in perfect conciliation with environment is what is said to be a sustainable form of agriculture [1,2]. The first purpose of agriculture should, therefore, be environmental conservation. Agriculture must not only be environment-friendly but also conservation-oriented and biodiversity enhancing.

Foods are not only necessary for life but also indispensable. Agriculture determines the way we live in. Agriculture determines the future we shall usher in. We are the beings of our environment. Quality of our environment and that of our life are interconnected. If agriculture is meant to care for us, it must be caring for the environment. Agricultural practices that are supportive of soil and water conservation, do not pollute our soil, water and air and provide food and nutritional security are an imperative of our life. Only a sustainable form of agriculture will help us usher in a sustainable future. Biodiversity-based agriculture, for example, ecological agriculture, organic agriculture and agriculture based on a farming system with cropland in linkages with forests and livestock, will ensure environmental conservation. We have to look into all the aspects relating to soil health. Our soils should not be contaminated by pesticides and other pollutants, such as heavy metals. Our water resources must also be free from pollution.

The second purpose of agriculture must be provision of health. The foods produced must be healthy. Healthy foods can be grown only in a healthy environment. Our foods must come from a variety of food-yielding plants (trees, shrubs, herbs, cereals, coarse cereals, pseudo-cereals, vegetables, fruits, underground stems and roots, leaves, pods, beans, seeds, mushrooms, edible flowers, buds, leaves, etc. In other words, a biodiversity-based agriculture and an environment-friendly agriculture will ensure supplies of healthy foods. In agriculture, we must also incorporate medicinal and aromatic plants besides food crops providing nutritive and medicinal value laden foods.

There are three principles of operationalizing a sustainable agricultural system: i) biodiversity-complexity; ii) living soil, and iii) cyclic flow of nutrients [3-5]. Ensuring that our agricultural system obeys these principles, we can transcend our life into a conservation-oriented and life-enhancing life. It is agriculture-the food production system-that can help us a healthy happy life and guarantee us to usher in a sustainable future. Our agriculture system must cultivate as much biodiversity as will be possible in the area/region it operates in. Higher

degree of biodiversity imparts higher degree of resilience, and, therefore, of sustainability [6-8]. In order to increase complexity in the system, try to make elements or functions of output as elements and functions of other outputs. In traditional agricultural systems in Indian Central Himalayas have no waste at all as the waste eventually ends up as a culture for microorganisms in the soil to the improvement and maintenance of soil fertility.

Soil should be treated not as a physical substratum, but as an ecosystem. Soil, in fact, one of the most wonderful ecosystems on Earth harbouring maximum life per unit area as well as per unit mass. Soil must always be vibrant with all kinds of microorganisms and meso forms of life, such as earthworms. Soil fertility and soil productivity, after all, are the attributes of the microbial processes going on in the soil ecosystem. Therefore, we must constantly feed the soil so that soil then feeds the plants we cultivate. In an agricultural system foods are produced at the cost of soil nutrients. A bulk of the nutrients drained from the soils through foods must return back to their pools. It is indispensable for the maintenance of soil fertility and productivity. This can be ensured by following nutrient flow pattern in agriculture [9,10]. Nutrients in the wastes from our households, livestock sheds and in human excreta must return to the soils of the agricultural systems. The nutrients the wastes are rich in should not capture other routes, e.g. rivers and streams, as it is often observed in urban areas of many countries. These nutrients must be recycled into soils from where they have been 'mined' through crops. Operationalizing these three principles, we can design sustainable agricultural systems, which is an imperative of our times.

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