

Soil Biodiversity: An asset for agricultural sustainability

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Introduction:

Agriculture is a profession which has its direct interaction with the nature. Agricultural production depends on the availability and management of resources such as labor (human and animal, capital, machinery, fuel, seeds, water, nutrients, crop residues, manures, pesticides and most importantly Soil. The soil below our feet is home to an astonishing number of organisms that are vital for earth's eco-systems and for life, including humans. Soil is thus, considered as a fundamental unit for plant growth and hence has gained its importance in farming.

Biodiversity:

It comprises of the enormous variety of life on the planet Earth. It refers to the species in a region. Therefore, Soil biodiversity is the collection of various soil living organisms that interact and form energy to make crop growth possible to the farmers.

Importance of soil biodiversity:

“Uniformity is not the nature’s way; diversity Is.” Most of the agricultural systems resides in the soil. Seeds are planted into the soil and then are raised by various soil ingredients like micro-organisms, water, nutrients, etc. This seed then turns out to be a mature crop with its roots emerged into the soils. Various living organisms present in the soil like archaea, bacteria, actinomycetes, earthworms are responsible for maintaining the fertility of the soil, Adjusting the pH of the soil, balancing the soil nutrients and thus resulting in the advancement of the crop quality. Not only does healthy soil grow 95% of the world food, but it filters pollutants from our drinking water, sequences carbon, and supports a quarter of world’s biological diversity.

Also, on the other hand many soil organisms are inimical to crop production and human societies. For example, Some animals (such as moles, rodents, snails, slugs, termites, ants, beetles and nematodes may seriously damage crops. Many species of bacteria and actinomycetes can cause plant diseases, but most damage is caused by fungi which account for most soil-borne crop diseases such as wilts, root rot, blight, club rot. Thus, resistance against this outbreak's and maintaining the agro-ecosystems is of particular importance in agriculture.

Managing Soil Biodiversity:

Biotic and abiotic factors and their interaction leads to the sustainable agro-ecosystems. The main management options for soil biodiversity comprises of tillage, crop rotation, organic matter management, etc.

Various other factors are:

- Maintaining sustainability by minimal use of pesticides, fertilizers.
- Use of biological controls for controlling various pests and diseases.
- Inoculation of beneficial soil organisms (Rhizobacteria, earthworms, etc.)
- Burning up of crop residues and thus adding up organic content to the soil.
- Drainage, irrigation can work workout positively depending on agro-ecological conditions.

Human activity around the globe can affect life on the earth, even the soil and its biodiversity. Moving soil, altering ground water level, mining, pollution can thus affect the soil life and can directly have an effect on agro-ecosystems. Hence maintaining soil biodiversity is the key element for agricultural sustainability.

Conclusion:

The assessment, management and conservation of soil biodiversity is more important than technology advancement and intervention. Agricultural ecosystem and biodiversity are integrated processes which depend on available resources, climate, socio-economic factors, involvement of farmers and thus shaping up their management practices. Active involvement and spreading out the awareness by government agencies, NGO's will lead to sustainability of agro-ecosystems.