

ENVIRONMENTAL MANAGEMENT OF
SOIL

Introduction:- Water, Air and soil are three natural resources that we cannot live without. Soil provides nutrients, water, oxygen & heat to natural land areas. Soil support an ecosystem plays an important role in land management decisions. This includes chemical, physical and biological process affecting flora, fauna, water, air & soil in relation to environmental pollution.

Soil management is the application of operations, practices and treatments to protect soil & enhance its performance (such as soil fertility & soil mechanics). It includes soil conservation, soil amendment.

In Agriculture, some amount of soil management biological, physiological and chemical soil protection measures in order to manage plant pests, farmers apply different protection measure. Crop rotation, crop isolation, tillage, mixed farming, proper planting, organic soil coverage & barriers, mulching, row maintenance in orchards, green manure, chemical

The soil is the primary resource for food production and the most important tool for every farmer. For farming, successful farming begins with the quality soil, which provides water and essential nutrients to the crops. Rich and healthy soil, combined with the appropriate amount of water & sunlight can significantly contribute to global food production.

There are five ways to manage ~~soil~~ healthy soil -

- 1) Soil Analysis - For ~~the~~ sustainable soil management, it is essential that farmers regularly perform soil analysis. By testing their soil, farmers can see the exact amount of soil nutrients, humus content and pH value.
- 2) Organic Fertilization - Organic matter consists of all living soil organisms and the previous living organisms in their degree of decomposition. It has a major role in soil management practices carried out before planting. Organic matter improves soil structure, enhances water & nutrient holding capacity, protects the soil from erosion and compaction and supports a

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healthy community of soil organisms.

③ Proper Tillage — Proper tillage practices and type can significantly improve the quality & performance of the crop. There are various tillage systems, depending on production type, soil condition, crop planted & farm practices.

④ Biological, Physical & Chemical Soil Protection measures — In order to manage plant pests, farmers apply different protection measures i.e. crop rotation, crop isolation, tillage, mixed farming, proper planting time, organic soil coverage, barriers, mulching, row maintenance in orchards, green manure, chemical and natural soil & plant treatment.

⑤ Proper Drainage and Irrigation — It is important to ensure good soil drainage and optimum humidity for young plants. Soil with less drainage may accumulate higher amounts of water than is needed and thus negatively affect seeds & young plants. On fields, where the water is insufficient, irrigation is required.

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Environmental Impact -

According to the EPA, agricultural soil management practices ^{lead to} can produce & emission of nitrous oxide (N_2O), a major greenhouse gas & air pollutant.

Cattle livestock account for one third emissions through methane emissions. Manure management & rice cultivation also produce emissions. The usage of artificial fertilizers in the agricultural field it leads to nutrient imbalance in the soil.

CO_2 is stored as soil organic carbon (SOC) through the process of photosynthesis. CO_2 can be also stored as inorganic carbon. ~~the but~~ this is less common. Methods that enhance carbon sequestration in soil include no-till farming, residue, mulching, cover cropping & crop rotation. Among all, organic farming is ^{widely} used.

Large scale farming base that specializes in monoculture and uses pesticides, herbicides & fertilizers. There are three main practices that minimizing soil disturbance, maintaining permanent soil coverage and diversifying crop species & for improve carbon sequestration in soil.

- i/ Increasing biomass inputs.
- ii/ decreasing SOC losses.
- iii/ increasing the mean residence time (MRT) of SOC.