Sustainable Soil Management in Environment Protection and Erosion Control

“A nation that destroys its soil destroys itself.” - Franklin D. Roosevelt

The rate of erosion is highest when soil is not covered by a protective layer of plants or decaying organic matter. Industrial farmland is particularly susceptible to erosion due to intensive tillage (plowing), which eliminates protective ground cover from the soil surface and destroys root systems that help hold soil together.

Since soil formation is an extraordinarily slow process, erosion poses a serious problem; soil erosion can quickly cause fertile farmland to become unsuitable for agriculture. In extreme cases, erosion can lead to desertification, a process which causes arid soil to become barren and incapable of sustaining plant growth for many years.

However, even low rates of soil erosion can severely damage agricultural land; not only does erosion reduce the water-holding capacity of a given soil, it also strips away nutrients and organic matter.

Erosion Control

Sustainable Soil management is important, both directly and indirectly, to crop productivity, environmental sustainability, and human health. In many areas of the world, the loss of topsoil, either through mineral imbalance or erosion, is the single largest threat to agricultural productivity. Soil erosions by wind and water are the main processes by which topsoil is lost.

Organic matter provides energy for biological and chemical processes in the soil and enhances soil biological activity. Also provides a source of nitrogen, improves soil tilth and structure, increases porosity and infiltration, reduces soil crusting and erosion, increases water-holding capacity, and improves nutrient holding and release.

Erosion can be significantly reduced through sustainable agricultural practices. The most effective way to prevent erosion is to protect soil from rain and wind by covering it with plants and/or decaying organic matter.

Sustainable farmers also reduce erosion by creating buffer strips within fields. Wind erosion can be limited by planting strips of trees or vegetation at the edges of fields. Farmers can also create buffer strips consisting of grasses or shrubs alongside drainage ditches and streams in order to help prevent water erosion.

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