

Why Soil Matters

“Essentially, all life depends upon the soil... There can be no life without soil and no soil without life; they have evolved together.” ~ Charles E. Kellogg



There can be no life without soil. Did you know that almost all of the antibiotics we take to help us fight infections were obtained from soil micro-organisms? Or, that the average quarter acre lawn contains 50 to 250 earthworms?

Soil is a living factory of macroscopic and microscopic workers who need food to eat and places to live to do their work.

As a matter of fact, there are more individual organisms in a teaspoon of soil than there are people on earth; thus, soil is controlled by these organisms.

Soil health is the capacity of a soil to function. Soil is on the immediate surface of the Earth and serves as a medium for the growth of land plants. How well is your soil functioning to infiltrate water and feed growing plants?

Tillage, fertilizer, livestock, pesticides, and other management tools can be used to improve soil health, or they can significantly damage soil health if not applied correctly.

Managing for soil health can be accomplished by disturbing the soil as little as possible, growing as many different species of plants as practical, keeping living plants in the soil as often as possible, and keeping the soil covered at all times.

The very top layer of soil is called the humus layer. The organic material in this layer gives the soil nutrients and minerals that plants need to survive. It also helps bind together the soil helping in moisture retention.

Soil needs to be able to support a living plant with roots in a natural environment.

Sugars made by plants are released from their roots into the soil and traded to soil microbes for nutrients to support plant growth.

Benefits of Soil Conservation

Soil conservation refers to various management strategies that are put in place for protecting soil from various factors. For instance, soil conservation helps to avoid soil erosion or damage to soil by salinization, acidification, or overuse. By conserving soil, the following rewards are gained.

1) Promotes soil organisms

Ensuring that useful soil organisms, especially the macroscopic species, are unharmed is a major advantage of soil conservation. Soil organisms like the earthworm offer several benefits in terms of promoting macronutrient availability and increasing aeration. Actually, through simply burrowing through the soil, the earthworm creates channels for enhancing drainage and aeration processes. The protection of soil organisms in soil conservation thereby boosts fertility.

2) Maintains soil PH

Soil PH normally controls nutrient accessibility to the vegetation. Macronutrients such as nitrogen, phosphorous, calcium, sulfur and magnesium prefer slightly alkaline or neutral soils. Chemical acidification of the soil may cause these nutrients to become inaccessible to the plants, leading to abnormal plant growth. However, soil conservation practices help maintain proper levels of soil PH and this ensures that all nutrients can be easily accessed by the plants.

3) Prevents soil erosion

Soil erosion refers to the gradual loss of soil due to the flow of wind or water on a piece of land that lifts and moves the small soil particles. While it may not be possible to actually see soil erosion happening, you will only realize that the topmost fertile soil has disappeared once you look out and all you see are gravel and stones. Soil conservation offers the best method of guarding against erosion. Building terraces and introducing new farming practices such as deep tillage acts like a preventive measure against soil erosion.

Soil conservation might be beneficial for the environment but most farmers find that undertaking the commended conservation practices is a very expensive affair.

The benefits of soil relate to the following resource issues:

- **Water quality** of streams, lakes, oceans, and groundwater
- **Air quality**, especially particulates
- **Greenhouse gases**, including carbon dioxide, methane, and nitrous oxide
- **Biodiversity**
- **Water flow and flood control**
- **Sustainability** of land productivity
- **Aesthetics**

The NRCS offers technical assistance for planning and implementing natural resource solutions through its Conservation Technical Assistance (CTA) program. CTA provides voluntary conservation technical assistance to land-users, communities, units of state and local government, and other Federal agencies in planning and implementing conservation systems. This assistance is for planning and implementing conservation practices that address natural resource issues relating to soil conservation. It helps people voluntarily conserve, improve and sustain natural resources.

If you would like more information on soil conservation, please contact your local NRCS office or visit the NRCS website at www.co.nrcs.usda.gov.

Did You Know?

- ❖ It can take 100 to 500 years to create one-inch of soil.
- ❖ The average quarter acre lawn contains 50 to 250 earthworms.
- ❖ The best china dishes are made from soil.
- ❖ Throughout history, civilizations rose or fell depending on the fertility of their topsoil.
- ❖ Almost all of the antibiotics we take to help us fight infections were obtained from soil micro-organisms.