

Overview on Benefits of Forest Soils

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DESCRIPTION

Forest soils are often acidic and organic, with low chemical fertility. Because organic matter in the top soil is always more labile than mineral phases, ecosystem management will be even more crucial for their long-term stability as the soil becomes degraded. Soil is an important component of forest and woodland ecosystems because it aids in the regulation of important ecological processes like nutrient intake, decomposition, and water availability. Climate change can impose considerable limits on nutrient absorption, both directly (in the case of a significant change in total rainfall and distribution, or even temperature), and insidiously in a complex network of interactions. Mountain soil is found in mountainous regions of India. It is also called Forest soil having 1-5 % organic matter by the weight. Acidification, physical deterioration, soil carbon, biological activity maintenance, pollution, and forest soil loss are all issues that need to be addressed in the environmental impacts on forest soils. Soil is also one of the world's greatest carbon pools, and its change can have an impact on carbon storage and emissions. Soil carbon aids in the retention of water, increases the capacity of soils to keep key nutrients like nitrogen and phosphorus, and provides energy to belowground creatures like insects and fungi. They are highly important food sources for many insects and animals. Forests cover 31% of the total land area and providing livelihood for more than 1.6 billion people worldwide. Forests are also essential because they house 80 percent of terrestrial biodiversity, which includes plants, animals, and microbes. The food web process incorporates the interactions of terrestrial biodiversity. Energy transfer, community interactions, and nutrient cycling are examples of these processes. These processes are also influenced by abiotic elements such as soil, water, and climate, and they shape the niche's productive characteristics.

"Soils as a media for plant growth". It is the most popular soil definition. Soils, on the other hand, serve a variety of purposes in the ecosystem, including:

- Nutrient and organic waste recycling system.
- Modifier of the environment.
- Soil organisms' habitat.
- Medium for engineering.

- Water filtration and supply system.
- Transitional soils between forest and grassland.
- Timberland soils with light-colored podzolized soils.
- Lateritic soils in tropical and warm-temperature wooded areas.

Soils from tropical forests

Soils generated from volcanic parent material under high temperatures and precipitation rates typically have a fragile nutrition cycle. Tropical forest soils, in reality, have a high clay percentage and little organic matter buildup. The Tropical Rainforest, for example, has a low pH and poor plant nutritional content due to clay particle translocation that transferred non-acidic cations into the soil. Ultisols and Oxisols are two examples of these soils.

Soils from temperate forests

Because of the lower temperature, which slows the decomposition rate, forest soils created in temperate climates frequently include more organic matter. Due to the seasonal temperature and precipitation rate throughout the year, these soils are extremely worn. The most prevalent soils found under these conditions are alfisols and spodosols. These soils have a CEC of up to 35 percent and are characterised by the accumulation of calcium carbonate and clay particles in deeper layers as a result of nutrient leaching from parent material rocks and decomposition of litter, which produced strong organic acids that reduced the soil pH.

Soil organic matter

The buildup of organic matter is the most essential role of vegetation on soil. The most important source of carbon in the soil is tree leaves. The type of vegetation is also essential since it affects the acidity of the soil. Conifer tree litter, for example, takes longer to degrade, resulting in a delayed recycling of nutrients. Litter from deciduous trees, on the other hand, is easily destroyed because it has fewer and weaker carbon bonds, allowing microbes to break them down more quickly. As a result, microbes produce organic acids, which aid soil formation by separating rocks. This process takes time, and it will decide the thickness of the soil horizons in the long run.

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