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Commentary

Protection Properties and Functional Diversity of Forest Soil

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DESCRIPTION

Forest soils are typically highly acidic, organic, and have a relatively low chemical fertility. Since the organic matter of topsoil is always more labile than mineral phases, the role of ecosystem management will be even more crucial for their sustainability as the soil becomes poorer. In general, strongly entrenched trees, considerable "litter layers" or "O horizons," recycling of organic materials and nutrients, including wood, and a vast variety of soil-dwelling creatures are characteristics of forest soils, where soil formation has been stimulated by forest vegetation. In regions that were not naturally wooded, there are also soils that are now covered with forest plants, frequently plantations. With the help of linked soil microbial and fauna communities, tree litter layers, woody organic wastes from deep roots, and other processes, these soils are likely developing properties that make them resemble "forest soils." These soils, have evolved from geological parent materials in a variety of topographic locations that have interacted with climatic conditions and living things. Forest soils could also be young, made of "Raw" talus, recent glacial till, or alluvium, or "Mature," in locations with a rather stable environment. Forest soils can be shallow, deep, sandy, clayey, wet, arid, freezing, or warm, just like forest vegetation around the world.

Fungal microorganisms involved in forest soil

Forest soil fungi exhibit a wide range of diverse lifestyles, including *saprotrophs*, *endophytes*, pathogens, and *mycorrhizal* species. These communities are incredibly complex and diverse. These subsurface communities are involved in important ecosystem processes such as community dynamics, belowground trophic interactions, and biogeochemical cycles. Ecosystems are dispersed differentially throughout time and place. They show the predominant abiotic and biotic elements, such as natural disturbances, that influence the assemblage of fungal communities in forest soils using examples from various global forest ecosystems. Researchers have intended these analysis that strive to comprehend that soil fungal interactions and activities affect the forests function and can affect the products and services that these ecosystems offer. Finally, they indicate that anthropogenic variables influence fungal communities and also the soil fungi might be more effectively included into forest management approaches in the coming decades to enhance ecosystem services.

At each plot site, the DBH, tree height, and tree density of a poplar forest were measured. In terms of the separation between agriculture and forest, 42% (30 plots) of the plots were less than 3.4 m distant, while 47% (34 plots) were between 3.4 and 6.7 m apart. Local farmers dug ditches between the shelterbelt and the farmland that were about 2 m wide and 2 m deep in order to lessen the impact of roots on the nearby farmlands. There are data on the forest characteristics of 72 plots. Using a quick and easy procedure provided, the relative amounts of sand, silt, and clay in the bulk soil were measured to determine the soil texture.

Applications

Agricultural activities reduced the diversity, richness, and abundance of soil microbes;

- The distinct bacterial communities were influenced by the pH and NO^{3-} level of the soil.
- Agricultural methods boosted the Assignment of Benefits (AOB) amoA gene's relative abundance.
- The diversity of the nirK gene was lowered by agricultural activities.
- Agricultural activities have a deleterious impact on the bacterial communities in the soil.

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