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Perspective

Role of earthworm to improve soil fertility

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ABOUT THE STUDY

Earthworms enhance plant growth by improving the soil aeration, penetration, structure, biogeochemical cycles, and water flow. One of the major organic matter decomposing organic matter is the earthworm. Microorganisms that live on organic compounds and in soil supply them with their nutrition. Worms consume soil and plant debris (dead roots, leaves, grasses, and manure). Their molds are richer in easily accessible nutrients than the soil surrounding them because their gastrointestinal tract concentrates the organic and mineral components in the food they consume. Nitrogen is present in the sediments and is easily reached by plants. Worm remains quickly decompose, enhancing the soil's nitrogen concentration. Earthworms channel and dig deeply, which aerates and softens the soil and promotes soil drainage. Approximately ten times more quickly than soils without earthworms, soils with earthworms can drain. Groundwater can be approximately six times greater in zero-till soils than in cultivated lands, where worm populations are high. Under the influence of rain, irrigation, and gravity, earthworm tunnels also perform as pathways for lime and other materials. Due to the numerous advantages they provide that enhance the health of the soil and therefore the health of the plants; earthworms are thought to be farmers' dearest friends. Considering earthworms improve numerous soil properties, including structure, water retention capacity, moisture content, etc., as well as boost availability of nutrients and breakdown pesticide residues, it is thought that the concentration of earthworms in the soil is a useful predictor of a healthy soil. As researchers learn more about these "ecosystem services" provided by earthworms, they find that this interaction between earthworms and farmers is much more complicated than they had initially assumed. In order to create water-resistant aggregates, earthworms cement soil fragments firmly. These have the ability to hold moisture without leaking it. According to studies, earthworms that leave their impressions on the soil's surface help to repair the topsoil. In ideal circumstances, they can produce 50 t/ha per year, which is sufficient to create a layer five millimeters thick. In one experiment, worms produced dirt that was 18 cm thick in thirty years. Sand, fallen leaves and decaying roots are all food for earthworms, along with soil and other dead or decaying plant materials. They are the major contributors to the soil's mixing with dead surface litter, which increases the litter's accessibility to microbial breakdown. Various species of earthworms find food in animal excrement to be quite appetizing. The following agricultural techniques nourish earthworms. Worm infestations are suppressed by highly acidifying fertilizer like ammonium sulphate and some insecticides. Researchers have learned that crops sprayed with bordeaux or other copper treatments had poor soil quality, loamy surface coverings, and few earthworms. Worms need moisture to survive since they can lose 20 percent of their body weight each day in sediments and secretions. The evaporation of moisture is decreased by approach was used to collect like grassland or grain. Humus, an organic substance in decomposition, retains moisture in the soil. Some species remain dormant in dry seasons and remain there until rain "reactivates" each one. Drought and frost are unbearable to earthworms, and especially detest dry, sandy soils. Only when the earth is moist are they active; when the soil is dry, they are inactive. The presence of organic matter maintains the soil wet and lessens the impact of climatic changes. Earthworm species in the soil are known to be negatively affected by farming techniques including tillage and the use of pesticides. These results emphasize the significance of a more thorough understanding of the intricate relationships that exist within an agricultural ecosystem when attempting to develop crop management methods.

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