

WHAT DO EARTHWORMS DO FOR THE SOIL

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As children, most of us were fascinated with the worms that were found in the garden or on the concrete after a rain. Scientists say that there are 7,000 species of earth worms. They are the largest and most visible of the life that lives in the soil. Large numbers of bacteria, fungi, and insects make up the living component of soil.

A quote from Pen. State Extension shows the importance of earthworms: "Only a few decades ago, the predominating thought was that earthworms were not very important for agriculture. Emphasis was placed on physical and chemical aspects of plant growth while biological aspects were neglected. We are now realizing how interactions between crops, climate, soil, and living organisms play important roles in sustaining our agriculture. Earthworms are among the most visible of soil organisms and have received considerable attention. They play a pivotal role in maintaining the productivity of our soils. This makes understanding these lowly animals and finding ways to make them thrive very important."

Scientists place earth worms into three groups. The first is surface (litter) species. They are small worms that live under leaves and compost piles. They stay mostly on the surface and decompose dead plant material. They consume half their weight in organic matter each day. They do not make permanent burrows or ingest soil. Red wigglers are included in this category. They are found in bait shops as they are just the right size for fishing. They are also used for making worm compost (vermicomposting).

The second category includes worms that live in the upper 2 to 3 inches of soil. They burrow horizontally but do not make permanent burrows. They are also small and decompose dead plant material.

The third category includes the deep burrowing worms. They are large worms, up to 14 inches long, and make permanent burrows that can go 5 to 10 feet down into the soil. This category includes the "night crawlers" that are found on the surface after a rain. These worms travel up to the surface at night and pull dead plant material into their burrow. They digest the plant material and then deposit it on the surface near the entrance to their burrow. This digested material is called castings.

Earthworms breath through their skin. They need moist conditions to keep their skin from drying out, and also need oxygen. They can drown with extended rains. They do not have eyes, but have photo receptors on their surface cells. That is how night crawlers can tell when to come out of their burrow. The toxicity of herbicides, fungicides and insecticides on earthworms has not been extensively studied. Diazinon is known to kill earthworms as well as Sevin.

The more plant residue that is on the surface, the more activity of earthworms. No-till soils and mulching mowers increase the amount of surface plant material. Increasing manure and compost content of the soil also increases earthworm activity. Research has found that 5,000 night crawlers per acre would yield 50 tons of castings per year. Pen State has found that the castings

contain increased nitrogen, potassium, calcium and phosphorus than surrounding soil. Micronutrients are also made more available for plants.

The activity of earthworms not only increases the nutrients in the soil, their tunneling also increases the oxygen and water absorption of the soil, making the soil more stable and increasing drainage.

For more information regarding earthworms, contact your local Kansas State Extension Office in Paola: 913-294-4306 or in Mound City: 913-795-2829.