**Why the soil food web is so important**

The top layer of the soil is alive with micro-organisms called the soil food web. We need to follow techniques on how to feed the soil and not the plants, and to avoid chemical fertilizers, pesticides, fungicides and rototilling. Here’s a brief summary of how the soil food web works.

In the root zone of a plant called the rhizosphere, 60 to 70 percent of the plant’s energy goes in producing exudates that are sugars, carbohydrates, and proteins. They attract bacteria, and fungi, which in turn attract nematodes and protozoa to the root zone. To get carbon, the protozoa eat bacteria, and the nematodes eat bacteria, fungi, and other nematodes. Their poop that is released is the nitrogen that feeds the roots. The plant can change the exudates it produces if it wants different food. That’s because different exudates will attract different bacteria, fungi, nematodes, and protozoa. The huge diversity of the soil biology helps the good guys keep the bad guys in check. The result is healthier soil and significant reduction in the need for chemicals.

A common way to destroy the microbiology in the soil is to add nonorganic fertilizers. Sulfur is in chemical fertilizers and is a common fungicide that kills the fungi in soil. Other chemicals in nonorganic fertilizers kill the bacteria and fungi by dehydrating them, with the result that the plant can no longer feed itself and become dependent on chemical fertilizer. Without bacteria and fungi, the other parts of the food chain start dying off.

The soil food web, a term that was coined by agriculture researcher Dr. Elaine Ingham in the 1980’s to describe the hierarchical, interrelated microbes that function in the soil. Bacteria create slime that glues soil particles together, and fungi weave threads to create large soil aggregates. Larger creatures in the soil, such as mites and earthworms, create pathways for air, and water. Worms are like taxicabs for bacteria, and fungal spores, distributing them through the soil.

The most common method of destroying the soil structure is, rototilling and using pesticides. Also walking on the root zone kills the fungi in the soil.

The soil can be brought back to life by:

1. Adding a quarter inch of well made garden compost. (There are 3 billion living organism’s in a teaspoon of well made garden compost.)
2. Using appropriate mulches such as dry leaves, straw, or wood chips. (Not gorilla hair.)
3. Applying beneficial bacteria and fungi from aerated compost teas.
4. Use natural fertilizers
5. Apply Micorrhizal fungi to the root system.

By: David Martinez

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