Healthy Plants from the Ground Up

Contributed by Janet Ganson for the Lincoln Garden Club

I became passionate and learned about healthy soil because my property, which backs up to the Walden Woods, has terrible soil. Many plants I purchased did poorly even when I added a little bagged soil, compost and fertilizer.

The soil food web: a little chemistry

Only 10 percent of the earth's crust has the physical, chemical and biological properties to support plant life. Roots absorb nutrients from the soil by exchanging a hydrogen ion for one attached to clay or organic particles. Good soil for plants has a mix of small-sized clay and silt particles, which support the ion exchanges needed for the plants to convert water and nutrients into plant material, plus sand, which creates space for air, water and organic material.

Like a healthy human digestive system, good soil supports a variety of life forms: from the visible shredders like earthworms and ants to microorganisms like bacteria, protozoa and fungi which convert the leaves, weeds, and other plant waste into nutrients plants can absorb. This is called the soil food web. A good soil food web maintains appropriate nutrient and PH levels for most plants.

Create your own compost

The best way to create a good soil food web in your garden beds is to generate your own compost to mix into the soil around new plantings, and to mulch beds with shredded leaves.

My compost piles are on the side of my garden shed in part sun. I built four 4' cubed bins made with 2" X 4" wire fencing on three sides and open on the fronts. One is for leaves (no sticks) which take longer to break down and are used for mulch, one is for new kitchen and garden scraps, the next is last year's kitchen and garden scraps, and the fourth is finished compost. I only turn the compost into the next bin whenever I have emptied my finished compost in the spring. Adding manure or chicken bedding makes better compost so if you have a friend with animals, you are in luck.

Compost tea concentrates microorganisms into an easy to apply form

Ecological landscape professionals recommend the use of compost tea because it provides powerful nutrients and is easy to use once it is created. The tea can be sprayed onto lawns and plantings to supplement the existing food web. The professionals keep a small amount of compost in warm, aerated water with molasses or other microorganism food for about 18 hours, so the microorganisms move into the liquid and multiply tremendously. Harvard University and Mt. Auburn Cemetery use only compost tea on their lawns. Some dedicated Lincoln gardeners have successfully made it on their own using panty hose and aquarium heaters and aerators or buying home compost tea brewers from online garden supply web sites.

Bagged compost less effective than home grown

Adding commercially bagged compost to your soil adds good organic material but I have learned that often microorganisms do not survive the travel and plastic bags. So without a drink of compost tea, it will take longer to build up organisms than with your own compost.

Chemical fertilizers are bad for the food soil web

These fertilizers can kill many of the microorganisms, and they are like candy to the plants. The plants directly absorb the three basic chemical nutrients and grow too quickly. But they do not absorb the well-rounded mix of nutrients from the food soil web; without the plant use of the soil web, the microorganisms will die back.

My Garden Today

I have been at this for 7 years, and composting has become a comfortable habit. There is never enough for my spring reorganizing, and I do sometimes mix in bag compost with my own. But over the years, the good soil in my planting beds has gone from about 4 inches to 8 inches. The big improvement is that the soil holds water longer in the summer. I also use compost as potting soil for indoor plants and containers. (To learn more: Jeff Lowenfels & Wayne Lewis, *Teaming with Microbes,* Timber Press 2010.)

The Lincoln Garden Club promotes sustainable gardening and members have written a series of articles designed to demystify the process of developing sustainable gardening practices. Look for these articles in The Lincoln Journal, in the Conservation News section of the Garden Club website (www.LincolnGardenClub.org), and in the Sustainable Landscaping section of the Greening Lincoln website (www.GreeningLincoln.org.)