

Organic matters: Good soil is packed with invisible helpers

**By Yvonne Savio and Steve Zien -- Special To The Bee -
(Published March 20, 2004)**

A basic approach to healthy gardening is to feed the soil, not the plant.

Healthy soil is alive with biological diversity. A teaspoon may contain millions of beneficial soil micro-organisms, including 25,000 species of bacteria and 10,000 species of fungi. These and other soil microbes decompose organic matter, promote deep root development, improve soil permeability and provide plants with nutrition, moisture and resistance to pests.

Some organic fertilizer manufacturers produce products that contain beneficial soil micro-organisms. Product lines to look for are Whitney Farms Life Link (www.whitneyfarms.com), Dr. Earth (www.drearth.net), Fox Farm (www.foxfarmfertilizer.com) and EB Stone Organics (www.ebstone.org).

There are two basic types of microbes that these fertilizers may contain. One is mycorrhizal fungi, which help the plants dramatically extend the area from which they can obtain moisture and nutrition. The other is nutrient-cycling bacteria, which break down organic matter in the soil into forms that plant roots can absorb. They also secrete microbial "gums" that "glue" sand, silt, and clay soil particles together, creating soil structure.

Reading labels of organic fertilizer blends takes some attention to definitions. "Materials derived from" will give you specific information. "Organic base" means there is some organic material in it, but it will also contain some synthetic materials.

Recognizing that your soil is alive is the first step to creating the most favorable environment for your plants. Chemical fertilizers damage this living system by killing many of the beneficial organisms. With few of these "good guys" surviving, soil tends to compact. This makes it harder for roots, water and air to penetrate the soil. Plants have a hard time growing, so they become more susceptible to pests. By fertilizing with chemicals to revive the plants, you "shock" them with an overdose, and the nutrients in the fertilizers that aren't absorbed end up in local streams and waterways as pollution.

Instead, provide the soil with organic nutritive sources that nourish the soil microbes slowly for steady growth. Examples are blood meal, bone meal, feather meal, alfalfa meal, quality compost, worm castings, cottonseed meal, fish meal, kelp meal and humate products.

The microbes feed on these materials and transform their nutrients into forms that plant roots can absorb. They go far beyond the basic "NPK" (nitrogen, phosphorus and potassium) on chemical labels - adding calcium, magnesium, sulfur, zinc, manganese, iron, copper and boron.

In order to know what fertilizers your garden needs - and so you don't overload it with so much that it'll leach into the waterways as pollution - you'll need to have a soil test.

A simple kit is available from your local nursery, but it usually tests only the NPK and the pH level (the soil's acidity).

Most plants prefer a pH reading of between 6.4 and 6.8, which is slightly acidic. To lower the pH, add soil sulfur. To raise it, add oystershell lime. Use only small amounts to adjust the level gradually.

Further testing for trace minerals such as calcium and magnesium is important because their imbalances can limit the full absorption of NPK. For these, you'll need to employ a soil-testing service. Most helpful will be services that provide organic recommendations and are local. Ask the company for a sample report so you can determine how reader-friendly its information will be.

One firm that tests the microbial components of soil is Soil Foodweb Inc., 1128 NE Second St., Suite 120, Corvallis, OR 97330; (541)752-5066; www.soilfoodweb.com.

The Northwest Coalition for Alternatives to Pesticides (P.O. Box 1393, Eugene, OR 97440, 541-344-5044) is asking people to join its Healthier Homes and Gardens campaign by signing a pledge: "I'll try pesticide-free solutions for my pest and weed problems." Signers will receive from NCAP:

- A monthly e-mail of tips for pesticide-free solutions.
- A toll-free helpline for questions on solving pest and weed problems without pesticides.
- Information about NCAP, opportunities to take action on government policies, and announcements about events in your area.

For more information about the pledge, go to www.pesticide.org/HHG.html.

About the Writer

Yvonne Savio is a UC master gardener. Steve Zien is president of Living Resources Co. and executive director of BUGS, an organization devoted to organic pest control. Contact him at www.organiclandscape.com.

http://www.sacbee.com/content/lifestyle/california_life/organic_matters/v-print/story/8571316p-9499661c.html