

## A Greener View: Soil test aids gardeners by displaying nutrient levels

*by Jeff\_Rugg*

Q: I was told that I should do a soil test before I start gardening this year. I have had a vegetable garden for more than 10 years and I plant annuals around some of my shrubs and perennials. I have never tested before, but I usually have a good crop.

Would the soil test help my garden? I was also told that I should add compost to my vegetable garden. Is that a good idea?

A: A soil test can be a positive idea because it gives you the garden soil's pH. It might tell you that there is already too much phosphorus in your soil; therefore, adding more when you fertilize would be a waste of money. It might also inform you if your soil is deficient in one of the micronutrients.

There are about 20 chemicals that are necessary for most plants to grow. A few more chemicals are required by some specialized plants. Of the 20, carbon, oxygen and hydrogen are supplied by air and water. Everything else is pulled into the plant from the soil. The six soil chemicals - nitrogen, phosphorus, potassium, calcium, magnesium and sulfur - are required in large amounts are called macronutrients. The remaining 11 chemicals are known as micronutrients. Even if needed in small amounts, a soil that is deficient in any one of the micronutrients can lead to poor plant growth or lack of fruit.

Home test kits and soil testing laboratories are available with instructions on how to complete the soil test. Some labs will only test for pH and macronutrients, which most soils don't lack if they have been producing well in the past. The pH test is also important because it measures the acidity of the soil. The acidity greatly affects the availability of both macro- and micronutrients to the plant roots.

If you send the soil sample to a lab, be sure to tell them that it is for a vegetable garden, a lawn or a flower bed; labs usually testing farm soil samples. Without knowing the sample came from a small plot of land, they would send the results back to you in the form of tons per acre instead of pounds per thousand square feet. The results would still be valid, but you would have to convert them from tons to pounds and acres to square feet.

After you receive the results from the soil test, look at the pH result. If it is around 6.5 to 7.5 and everything has been growing fine, then let it go. If it is much higher or lower and you want to bring it close to a neutral 7.0, remember that this will be a continuing battle - the soil will return to its present pH in just a few years after you stop trying to change it.

It can take a lot of sulfur to lower or a large amount lime to raise the pH a small amount. For best results, it needs to be tilled into the soil about three to four months in advance of the planting date and at least 6 inches deep into the soil. Changing soil pH is easier to do on a vegetable garden that gets tilled every fall or spring, rather than a flower bed full of rhododendrons or a lawn. Another soil test after the amendments have been added may show that the new pH has freed up some of the existing soil chemicals, so that additional amounts of micronutrients aren't necessary.

If they are needed, follow the label directions on a fertilizer that includes them. Nitrogen is mobile in soil; it is easily dissolved in many of its forms and washes away quickly. Nitrogen is one of the primary pollutants of local streams, national rivers and even the Gulf of Mexico.

Phosphorus, on the other hand, is not very mobile in soil and is often plentiful. Adding more of it may not help your plants grow any better. Potassium is between the other two in mobility, and some garden plants do better when it is added. Small applications of fertilizer are often helpful during the growing season when plants are actively growing and removing nutrients from the soil.

Chemical fertilizers are easily dissolved in water and rapidly available to plants. They should be applied shortly before the plants are planted in the garden or during the growing season.

Organic fertilizers are generally better for the garden soil and the necessary microorganisms that are part of the garden community. These fertilizers are usually lower in nutrients and added in larger quantities. They should be used in the fall and spring, so they can decay and release nutrients into the soil in anticipation of the plants needs.

Vegetable gardens that have been in place for several years without the addition of organic matter will be greatly helped when fertilizer is added - practically every soil type will benefit from the addition of organic matter. It loosens up clay soils and creates pore space allowing water to drain out of the dense clay soil. It fills sandy soils with a spongy material, which holds water that would otherwise drain out of the loose sand. Organic matter not only decays and releases nutrients to the plants, it holds onto chemical fertilizer nutrients that would have washed away.

A healthy vegetable garden should have yearly additions of organic matter, especially in the fall when it can start decaying before spring. Then some fertilizer can be tilled into the soil in the spring. Additional water soluble fertilizer may be necessary during the growing season for some rapidly growing plants.

Any source of organic matter is appropriate, but composted material is better than fresh. Place tree leaves in the compost pile before adding them to the garden, or at least till them into the garden soil in the fall to begin the breakdown process. Animal manures are great for gardens, especially if they are decomposed more than six months. The longer they have composted, the fewer weed seeds will grow.

Add organic mulch to flower beds when new flowers are planted in the spring. It will eventually decay and more will need to be added. Don't mix fresh mulch into the soil. As it decomposes, the decaying organisms will remove nutrients from the soil making the nutrients less available to the plants.

Testing your garden soil will help you know which chemical nutrients to put in your soil for best results. By adding organic matter you can have a healthier soil.

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