What a Soil Test for Gardens Does Not Tell You

Though soil tests are useful for identifying nutrient deficiencies as well as soil pH, they do not tell the whole story. We often receive soils from gardeners that are having a difficult time growing crops even though the soil test shows that nothing is deficient. Following are some factors that can affect plant growth that are not due to nutrient deficiencies or pH.

Not enough sun: Plants need a certain minimum amount of sun before they will grow well. As a general rule, flowering (and fruiting) plants need at least six to eight hours of full sun per day. There are, of course, exceptions such as impatiens that bloom well in shade. Move sun-loving plants out from the shade or use plants that are better adapted to shady conditions. Cool-season grasses such as tall fescue and Kentucky bluegrass can take more shade than warm-season grasses (zoysia, bermuda or buffalograss) but even cool-season grasses will die out under heavy shade.

Poor soil physical characteristics: Roots need oxygen as much as they need water. A tight clay soil can restrict soil oxygen levels as well as make root penetration of the soil difficult. Increasing the organic matter content of clay soils can help break them up. Add a 2 inch layer of organic matter and till it in.

Walnut trees: Walnuts give off a natural herbicide that interferes with the growth of some plants such as tomatoes. Vegetable gardens should be at least 50 feet away from walnut trees if possible. For a listing of plants that are susceptible to walnut, go to:

http://www.omafra.gov.on.ca/english/crops/facts/info_walnut_toxicity.htm

Tree roots: Trees not only compete with other plants for sun but also for water and nutrients. Extra water and nutrients may be needed.

Shallow soils: When new homes are built, the topsoil is often stripped off before the soils are brought to grade. Though the topsoil should be replaced, it sometimes is not or is not replaced to the same depth as it was originally. You are left with a subsoil that usually does not allow plants to grow well due to a lack of soil structure. Adding topsoil to a depth of 8 to 12 inches would be best but this often is not practical. In such cases, try to rebuild structure by adding organic matter and working it into the soil.

Also, check for shallow soils if you see spots appear in a lawn that are not easily explained by disease or a female dog urinating. Sometimes new developments have large rocks that are thinly covered with soil or buried debris that will limit the depth of the root system of the turf.

Therefore it dries out and goes off color before the rest of the lawn.

Added Soil: Sometimes soil is added to smooth out an area or topsoil is added but only a shallow layer is used. Roots will not go from one soil type to another. Always blend in added soil to existing soil so there is a gradient from one to the other. For example, let's say you want to add 6 inches of topsoil. Add 3 inches and till in to a depth of 6 inches and then add the remaining three inches of topsoil. You now have a gradient that goes from the topsoil to the existing soil.

Improper watering: Roots develop where conditions are best for growth. Shallow, frequent watering leads to roots developing primarily near the surface of the soil where the soil is moist. Such shallow root systems are easily damaged by heat and any interruption in the watering schedule. It is better to water less frequently and to a greater depth to encourage a deeper root system that is less sensitive to heat and water stress. It is best to water deeply (eight inches for turf, flowers and small shrubs and about 12 inches for large shrubs and trees) so that the majority of the root zone is moistened. The depth of watering can be checked by pushing a wooden dowel or metal rod into the soil.

Watering during the evening can also be detrimental to plants if the irrigation wets the foliage. Many diseases are encouraged by free water on the leaves. Watering late in the day often will keep the foliage wet until dew forms. Dew will keep the foliage wet until it evaporates the next morning. It is better to water early in the morning so leaves do not stay wet as long. If you must water late in the day, use drip irrigation if that is practical (such as in a vegetable garden).

Gas Leaks: Make sure that a natural gas line does not run under the affected area. Leaks from that line can kill existing vegetation. If this is the cause, everything in that area will be killed.

Too much phosphorus: Most Kansas soils are naturally low in phosphorus. However, soils that have been fertilized for a number of years may have phosphorus levels that are quite high. As a matter of fact, the majority of soil tests we receive show phosphorus levels in the "high" category. Too much phosphorus can interfere with the uptake of some micronutrients such as iron, manganese and zinc. This will rarely, if ever, kill plants. High phosphorus soils should only be fertilized with fertilizers that have relatively low amounts of phosphorus.