

GARDEN SOIL PREPARATION — IT'S NOT TOO LATE

Autumn is an excellent time to add organic materials and till garden soils. Winter can still be a good time to take care of this chore as long as the soil isn't frozen. It is far wiser to till now than to wait until spring when cold, wet conditions can limit your ability to work soils easily. Working soil when it is wet destroys soil structure and results in hard clods that are very slow to break down. On the other hand, dry soil may need to be watered so it can be more easily tilled. Be sure to wait several days after watering to let soil moisture levels moderate. You want the soil moist, not wet or dry, when tilling. There is a limit to how much organic material such as leaves can be added in one application. Normally, a layer 2 inches deep is adequate with 5 to 6 inches being the maximum that can be added at one time. Shredding the material before application encourages faster and more complete decomposition due to increased surface area. Remember, soil preparation is an important key to a successful garden.

Reproducing Apple Trees

Every so often we receive a question about how to make apple seeds germinate. Often, the person is looking for a way to reproduce an apple tree that is dying. Unfortunately, apple trees do not come true from seed. In other words, the apple seed produces trees that differ from the parent. It is extremely unlikely that any apple produced from seed will bear quality fruit. About 1 in every 80,000 apple seedlings will produce commercial quality fruit.

So, how do you reproduce an apple that is like the parent? The most common way is by grafting. Grafting is a procedure that joins two plants together. The upper part (or scion) becomes the top part of the tree, while the lower part (or stock) provides the root system or part of the trunk. In apples, the rootstock is often used to dwarf the tree so it is easier to prune, spray and harvest.

High pH Soils and What to Do With Them

Though there are high pH soils in most parts of the state, alkaline soils tend to be more common in the central and western regions of Kansas. These high pH soils can cause problems for plants by reducing the availability of certain micronutrients. For example, most Kansas soils have more than adequate amounts of iron. However, a high pH can make iron unavailable resulting in a condition known as iron chlorosis. Iron chlorosis reduces the health of plants by reducing photosynthesis. Lowering the pH of such soils will eliminate iron chlorosis.

Now would be a good time to have a soil test done to see if your pH is too high. If so, sulfur can be added either now or in the spring to lower the pH. Different textures of soil require different amounts. A sandy soil needs 7 pounds of sulfur per 1,000 square feet to reduce pH one point. A loam soil needs 11 pounds and clay needs 17 pounds to do the same. For example, if you wished to lower pH from 8.5 to 6.5 on a loam soil, you would need 22 pounds of sulfur per 1,000 square feet. So, what pH do we shoot for? For most plants, a pH between 6.0 and 7.0 is preferred. Unfortunately, adding sulfur to lower pH is not as clear-cut a solution as we would like. Here are some other factors to keep in mind.

Free calcium carbonate: Some soils have free calcium carbonate, actual particles of limestone mixed in the soil. These "calcareous" soils normally have a pH of 7.3 to 8.5, with 8.2 to 8.3 being most common. In order for us to lower the pH with sulfur, all free calcium carbonate must be neutralized first. A recent soil test showed 6.7 percent free calcium carbonate. One pound of sulfur is needed to neutralize three pounds of calcium carbonate. Assuming 80 pounds for a cubic foot of soil, you would need about 1.75 pounds of sulfur per square foot just to neutralize the free lime. Additional sulfur would be needed to lower pH. Adding this much sulfur to a soil at one time is not recommended.

Not all high pH soils are calcareous. Perform this simple test to see if your soil contains appreciable amounts of free lime. Apply one drop of vinegar to dry soil. A vigorous fizz usually means the soil contains at least 3 percent calcium carbonate. A mild fizz suggests a calcium carbonate of between 1 and 2 percent and a fizz that can only be heard suggests the soil has a calcium carbonate content less than 1 percent.

How sulfur works: Elemental sulfur does not lower pH directly. It must first be oxidized to the sulfate form with the result being sulfuric acid. The sulfuric acid produces hydrogen, which acidifies the soil and lowers pH. The oxidation takes place primarily through microbial activity.

Oxidation takes time: Microbial oxidation of elemental sulfur takes time and depends on:

- number of sulfur oxidizing(thiobacillus) bacteria present
- temperature (75-104 degrees optimum)

- moisture content of soil (too wet or too dry will slow down process)
- size of sulfur particles (the smaller the better)

A single sulfur application normally takes at least 2 years for most the sulfur to react and form sulfuric acid. This, of course, depends on the factors listed above.

Why Do Houseplants Lose Leaves After Being Brought Inside?

Newly bought houseplants or those brought in from outside often lose their leaves. In order to understand why this occurs, we need to look at how these plants are grown and what the plant needs to do to adapt to its new environment. Houseplants are normally produced either under shade outdoors in southern states or in greenhouses. Also, many homeowners move their houseplants outside during the summer. Regardless, the plants receive much more sunlight than they do in an indoor environment. Research done in Florida in the late 1970s revealed that tropical plants grown under high light conditions produce "sun leaves" while those grown under low light conditions have "shade leaves." These leaf types differ structurally in that sun leaves have less chlorophyll (the substance that plants use to convert sunlight to energy) and the chlorophyll that is present is located deeper inside the leaf. Sun leaves also tend to be thick, small and numerous while shade leaves are more thin, larger, and fewer in number. When plants are moved from one light condition to another they need time to adjust. This process is known as acclimatization. If they are forced to acclimatize too quickly, they will drop their sun leaves and produce a new set of shade leaves. If the acclimatization process is slower and less drastic, the plant can convert their sun leaves to the shade leaves that do better under low light. If going from shade to sun, this process is reversed.

Some houseplants are acclimatized before they are sold but many are not. So how do we help our new houseplants or those moved inside acclimatize to their new home environment? Houseplants should start out in an area of the home that receives plenty of light and then gradually moved to their permanent, darker location. This process should take 4 to 8 weeks depending on the degree of difference in light levels between the initial and final location of the plant. Remember, plants need to be acclimatized whether they are moved from a sunny location to one that receives less light or from shade to sun. Understanding plant processes allows us to anticipate potential problems. Acclimatization gives our houseplants a greater chance of retaining leaves and avoiding the stress of completely replacing them.