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Extension Solutions for Homes and Gardens

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“Choosing and Using Soil Amendments Wisely”

A soil amendment, sometimes called a soil conditioner, is any material added to a soil to improve its physical properties, such as water retention, permeability, water infiltration, drainage, aeration and structure. The goal is to provide a better environment for roots to grow.

To do its work, an amendment must be thoroughly mixed into the existing soil. If it is merely buried (or backfilled into a planting hole), then its effectiveness is reduced and it will interfere with water and air movement and root growth. Thorough mixing is especially important in North Georgia's heavy clay soils. Most soil amendments can be incorporated throughout the year before planting trees, shrubs, annuals, or vegetable gardens. Never try to add soil amendments after plants are established. This could bury established roots too deeply and smother your plants.

Amending a soil is not the same thing as mulching, although many mulch materials also are used as amendments. Mulches are left on the soil surface. Its purpose is to reduce evaporation and runoff, inhibit weed growth, and create an attractive appearance. Mulches also moderate soil temperature, helping to warm soils in the spring and cool them in the summer. Mulches may be incorporated into the soil as amendments after they have decomposed or composted to the point that they no longer serve their purpose. This is usually done in vegetable gardens after the season is over.

There are two broad categories of soil amendments: organic and inorganic. Organic amendments come from something that is or was alive. Inorganic amendments, on the other hand, are either mined or man-made. Organic amendments include sphagnum peat moss, wood chips, grass clippings, straw, compost, manure, biosolids, sawdust and wood ash. Inorganic amendments include vermiculite, perlite, tire chunks, pea gravel and sand.

Not all of the above are recommended by UGA Extension Horticulturists. These are merely examples. Wood ash, an organic amendment, is high in both pH and salt. Be sure to check your soil pH by doing a soil test before and after using wood ash as a soil amendment. Also, don't add sand to clay soil -- this creates a soil structure similar to concrete if used incorrectly.

Organic amendments increase soil organic matter content and offer many benefits. Organic matter improves soil aeration, water infiltration, and both water- and nutrient-holding capacity. Many organic amendments even contain plant nutrients and act as organic fertilizers. Organic matter also is an important energy source for beneficial bacteria, fungi and earthworms that live in the soil.

For heavy clay soils, it is generally recommended that you add soil amendments at a rate of 25% by volume to realize its full potential benefits. This is the equivalent of adding a 3" layer of soil amendment and then tilling to incorporate it with native soils 12" deep. One cubic yard (nine 3-cubic feet bags) of soil amendment will cover an area of about 100 square feet. At this application rate it may not be economically practical to apply organic matter to all planted areas. Preference should be given to annual flower beds, then herbaceous perennials, then high value trees and shrubs. This is generally more practical for small raised bed gardens.

Fresh manure can harm plants due to elevated ammonia levels. To avoid this problem, use only aged manure (at least six months old). Pathogens are another potential problem with fresh manure, especially on vegetable Gardens. Most home composting systems do not sustain high enough temperatures to kill potential pathogens. Home-composted products containing manure are best used in flower gardens, shrub

borders and other nonfood gardens. Safer commercial composts are available that are made primarily from leaf or wood products alone or in combination with manures or biosolids.

Another major concern of using manures is where they were collected. Manures that were taken from pastures treated with certain weed-killer herbicides might contain residues of these chemicals that could carry over into your garden. These chemical residues are often strong enough to still kill weeds as well as your garden plants in some situations! Be sure to find out about your source of manure before you use it. If you are unsure, test a small area with the manure using a sensitive plant such as tomatoes. Within a couple of weeks, if the manure has any chemical residues present, your plants will likely show symptoms as their leaves become distorted, twisted, and stunted. It's always better to lose one plant than an entire garden... and I've seen it happen!

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