

Reminder: Tennessee Tree Day is March 16, 2024. To reserve your trees now through March 4th, go to: <https://www.tectn.org/tennesseetreeday.html>. The trees go fast, so reserve now.

And now, our feature article.

How Do I Garden in This Clay Soil?

By Adam Watson, Agriculture Extension Agent

If you're new to the area you might be gardening in clay soils for the first time. I always like to remind people that all of our large trees have managed to grow in the native clay soils quite successfully. Clay rich soils can be very productive and is not a death sentence for your garden although it will need proper management.

One challenge with clay rich soils is how they behave in relationship to water. Clay soils will retain a lot of water, but at the same time aren't the fastest at absorption or infiltration of water. When irrigating clay rich soils, lower volumes of water over longer periods is better than larger volumes of water quickly applied. Clay rich soils can also crust and appear dry on the surface while there is sufficient water below leading to unnecessary irrigation and water logging or saturation. Water logging is bad because roots need oxygen, and excess water occupies the space that would otherwise hold air. Clay rich soils don't allow this excess water to drain quickly making them more prone to overwatering than other soils.

Another difficulty is the ease at which clay can be compacted. Compaction of soils is when the pore space of the soil is decreased; pore space is where air and water is found in the soil. The compaction not only limits air and water availability for the plant, but also physically makes it more difficult for roots to grow through the soil. Compaction happens when we have traffic present (vehicles, equipment, people, and even animals), tilling the soil particularly when it's too wet, and even planting methods such as augers.

So, how do we improve the positive qualities of these clay rich soil and ameliorate the negatives? One good answer exists, add organic matter. Organic matter is something that was formerly living and what we see most often in the garden are sources such as compost, leaves (don't trash the fall leaves), lawn clippings, animal bedding and manures, cover cropping/living mulch, and various sorts of mulches.

There are some concerns in regards to persistent herbicides, particularly with manures, hay and to a much lesser degree lawn waste. You can read more about the concerns with those persistent herbicides here <https://content.ces.ncsu.edu/herbicide-carryover>.

We can use organic materials as soil amendments in the case of compost or as a mulch for really nearly any of them except manure containing materials due to food safety concerns. As a mulch they preserve soil moisture, reduce weed competition, prevents erosion, and can help keep produce cleaner. Over time these organic mulches will break down, or compost in place, which directly adds organic matter to the soil.

NEVER add sand to clay soils.

Mistakenly, some people think that since clay doesn't drain well and sand is super well-draining that mixing the two can make clays more free draining. Unfortunately, sand will only make matters worse. If you add sand to clay rich soils, the clay particles will fit in between the much larger sand particles meaning you actually decrease the pore space or increase the bulk density of the soil. In other words, you make bricks. To reiterate, soil and clay should NEVER mix where we want to grow plants.

Other suggestions you can find online, like using gypsum won't help our soils. While I've been referring to clay soils as if only one type exists there are many types of clays across this country and even the world. Dispersed clays that contain a lot of sodium can be improved by the addition of gypsum due to calcium increasing flocculation of clay particles, our clays are not that sort of clay. Keep in mind gypsum is just calcium sulfate, which in the soils becomes calcium ions and sulfur ions. Neither is likely to be deficient in our garden soils.

How do I ask a question?

If you have a question for the Master Gardeners, submit them to us on our website at www.netmga.net. Click the link at the top of the page, "ASK A MASTER GARDENER" to send in your question. Questions that are not answered in this column will receive a response from a Master Gardener to the contact information you provide.

The Master Gardener Program is offered by the University of Tennessee Extension. The purpose of the Master Gardener program is to train people as horticultural-educated volunteers. These volunteers work in partnership with the local Extension office in their counties to expand educational outreach, providing home gardeners with researched-based information.