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## How Do I Garden In This Clay Soil?

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 in [this publication from NC State](#). Continued page 2.

### Is It A Clay Rich Soil or Subsoil?

In truth the soil you may have at the top of your garden might not in fact be our native topsoil. The issue is what happens to soil when housing developments happen. First, is the case where developers will sell off topsoil that they remove when building the homes. The topsoil is the most fertile and productive portion of the soil and its removal is a step in the wrong direction if we want the most hospitable conditions for plants.

A second scenario sees topsoil stockpiled on site and replaced at the end of construction. While better than removal it's still not a best practice, let me explain why. Let's say someone baked you a three-layer cake for your birthday. They then throw it in a food processor and serve the blended material on your plate. Is it still a three-layer cake? I say no.

This issue with topsoil is that a very significant portion of its good qualities is due to characteristics such as aggregation (soil particles bound together) and preferential flow paths for air and water. By removing and respreading the topsoil those qualities are lost. This same disruption stands true for purchased "topsoil". My opinion is that topsoil only exists in position where it develops. It's removal, or disturbance, creates a material that is without the many positive elements that makes topsoil plant friendly.

So, how do you address this issue? The same answer of adding organic matter applies here and perhaps patience.

## The Trusty Trowel-June 2023

We can use these 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. Visually think of a five-gallon bucket filled with baseballs; now add to the bucket as many airgun BBs as will fit. The bucket will now be heavier with less air space that's the same concept as adding sand to clay soils. To reiterate, soil and clay should NEVER mix where we want to grow plants.

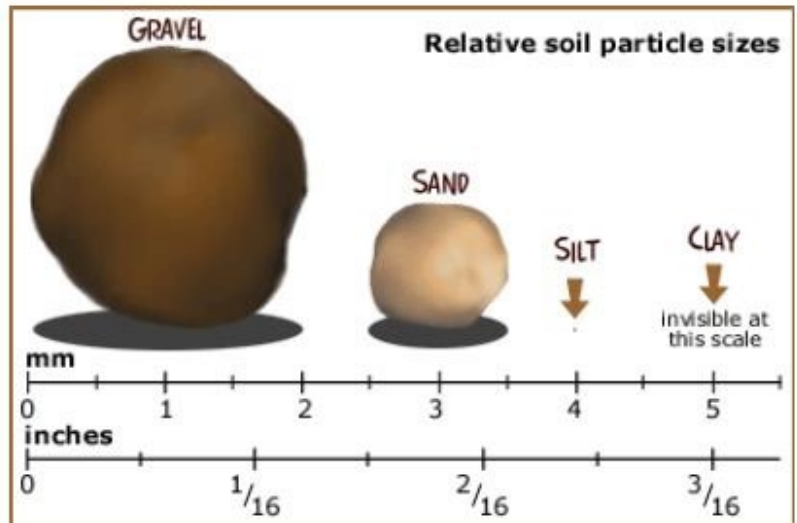


Image from [University of Nevada](http://University of Nevada)

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.

### **Thinking of a Fall Vegetable Garden?** Consider growing your own transplants!

Most will need to be started 5-7 weeks before you wish to plant them out. For more info [Garden Planning, Plant Preparation and Planting](#) or check out our webinar from earlier this year [Growing Your Own Vegetable Transplants](#)



**Looking for a no spray fruit pest control strategy? [Check out this blog posting from University of Kentucky on bagging fruit.](#)**

Photo: Kim Leonberger, UK; Oriental Fruit Bag with outer layer intact.

# Upcoming Canning Classes Announced!

Class size  
Limited  
to 7 per  
Canning  
College

SUMMER 2023

Washington County will be hosting Home Canning classes this summer.

## Canning College #1

July 11th, 12th, & 13th 6PM to 9:30PM

Cost: \$125\*

Canning College you will learn about water-bath canning, steam canning, pressure canning, jams, jellies, & pickles

## Canning College #2

July 26th, 27th, & 28th 6PM to 9:30PM

Cost: \$125\*

Canning College you will learn about water-bath canning, steam canning, pressure canning, jams, jellies, & pickles

**Registration will open soon for these classes.**

If you would like to be made aware when registration opens before it's posted on social media please sign-up at: [tiny.utk.edu/CanningInterest2023](http://tiny.utk.edu/CanningInterest2023)

*\*Cost covers supplies for hands-on class and you will be able to take at least one home canned good from the class.*

For more information contact:

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For questions about your home and garden please feel free to contact me, Adam Watson, Agriculture Extension Agent [watson@utk.edu](mailto:watson@utk.edu) or by cell 423-430-6711. Emailing or texting pictures is a great way to get questions to me.

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