

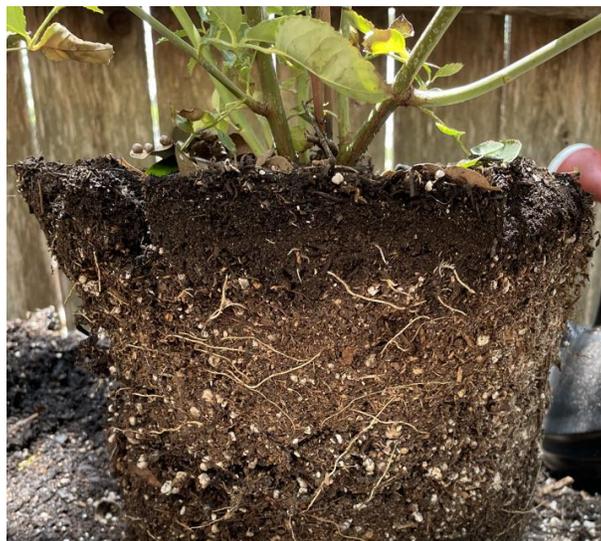
## The Perfect Storm

by Bill Swantner, Bexar County Master Gardener

2022 has been a "perfect storm" for gardeners in and around Bexar county. First, this has been one of the driest years on record. Second, it has been one of the hottest summers recorded. And, finally, the sun's intensity has been relentless.

This "perfect storm" is reflected in the stress that our plants are experiencing, both in the garden and in container plants. They are suffering because the heat and sun have adversely affected the quality of the soil.

The effects of this perfect storm are shown in the photo below.



Here in San Antonio, we have a heavy, clay-based soil that shrinks when it dries out, and the extreme heat has accelerated this process. When this occurs, the clay particles clump together. Even when the soil is re-hydrated (either by a rainstorm or by regular watering), the clumps (technically called "aggregates") still exist: the water simply goes around the aggregates.

As aggregates form and solidify, roots cannot properly grow into the soil to absorb water and nutrients. Moreover, any water applied to the soil only penetrates a fraction of an inch of the soil while the rest is run-off.

What can a gardener do to remedy the heavy, clay-based soil? The chief solution is to break up the aggregates and prevent future aggregates from forming by adding compost. Compost penetrates into the soil and prevents the clay particles from forming large aggregates or dirt clods. Smaller aggregates also allow water to drain more fully into the soil and allow the roots

of the plants to grow more deeply. An added benefit of compost is that it allows microbes to continue to enrich the soil through their excrements.

One of the most effective ways for breaking up the surface of the soil is to use an aerator. An aerator is a heavy machine with spike-like claws that penetrate 4-6" into the soil. These claws pull up the plugs of the soil and help them to disintegrate over time. Note that walking in your garden wearing shoes with spikes will have little effect on aerating the soil.

In sum, aerating the soil and then adding compost will provide the best results. Right now, while it is still hot outside, we can gently incorporate compost into the top 2-4" of the soil of our gardens, especially around plants. Then, water the compost into the soil. By October, it will be cool enough to aerate the lawn and apply a fuller application of compost.



*The photo on the left shows soil before the compost application, while the one on the right demonstrates how the soil is improved after compost has been applied.*

The final step is to add some double-shredded mulch to protect the rejuvenated soil. Mulch helps to maintain a stable atmosphere for the soil by protecting it from sun and wind. It is wise to follow David Rodriguez' rule of thumb: "Add 2" of compost to the soil, keep it 2" away from the base of the plants, and apply the compost twice a year."

All indications are that we will continue to experience excessive heat, which means that our soils will continue to dry out. Before the weather cools off, you can take steps to modify the soil and protect your plants.

All photos by author