

Drought Conditions Pose Threat to Home Foundations

Texas A&M AgriLife Extension Service — Galveston County Office



PHOTO BY William M. Johnson

Extended periods of drought during a summer often lead to formation of large cracks in soils that are high in clay. Gaps between the foundation of a house and the surrounding soil also become most noticeable during of dry weather conditions.

Do you remember the date that Hurricane Ike made landfall? Whether you sheltered in place or you choose to evacuate, you likely do remember. Do you remember what the weather was like in 2011? While you might not remember the year, if you lived through the record summer temperatures and summer drought, you will not likely forget that occasion either.

Extended periods of drought during a summer often lead

to formation of large cracks in soils that are high in clay. I've been getting many requests about what to do about cracks in soil in the landscape in additions to those distinctive gaps between the foundation and soil.

The most prevalent type of soil in the Galveston County area is heavy clay soil. Local gardeners also refer to our heavy clay soil as gumbo clay. Gumbo clay is a generic term for a highly

elastic (i.e., expands and contracts due to extremes in moisture levels) clay-based soil.

Gumbo clay soils are notorious for expanding during wet spells because of their ability to absorb enormous amounts of water. The other extreme to this circumstance is that during extended periods of drought (as has been the case for the past few weeks), gumbo clays shrink and decrease in size. As the soil dries and shrinks, gaps develop along the side of the foundation and giant cracks develop in the lawn.

This is easier to image if you think of gumbo clay as a sponge or an accordion in that it expands significantly as it absorbs water and correspondingly shrinks when that water evaporates or is absorbed by the roots of landscape plants. This process is a very powerful force. As gumbo clay shrinks, it damages foundations and forms cracks in a lawn many feet deep.

Concrete foundations crack as they are stressed by the powerful pressures that move the soil. Although this is a continual



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Dr. William Johnson is a horticulturist with the Galveston County Office of Texas A&M AgriLife Extension Service. Visit his website at <http://aggie-horticulture.tamu.edu/galveston>.

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process that occurs throughout the year without major impact on the foundation, when we get into an extended drought, the gumbo clay contracts tremendously. That's when your foundation is the most vulnerable. It's the continual expanding and shrinking over time that can wreak havoc on a foundation.

Experienced gardeners know that when properly managed, gumbo clay is a productive soil for growing vegetables, but when it comes to concrete slab foundations, it can be a home wrecker.

To put it in very simple terms, with gumbo clays, when it rains, the clay in the soil absorbs the moisture and swells. When the soil dries out, the clay loses its moisture and shrinks.

Avoid the practice of just watering the front yard to keep it lush (for the neighbors and homeowner association enforcement folks) while letting the backyard go dry. This will result in portions of the foundation being wet and expanded while other parts are dry and contracted. This can lead to cracking of the exterior brick veneer and to doors of rooms, closets or cabinets coming out of alignment and becoming difficult to open or close. Cracks may also develop in drywall and in tile floors.

Homeowners can help protect the foundation by keeping the soil adjacent to the foundation at a fairly consistent moisture level throughout the year. Water the soil evenly and frequently around the entire foundation during extended dry periods. This should prevent a gap

from opening between the soil and foundation edge.

If you have a sprinkler system in the landscape beds around the perimeter of your home, you will be in good shape as long as you use it.

If you don't have a sprinkler system around the perimeter of your home, place a soaker hose or series of connected soaker hoses around the entire foundation. Do not lay the soaker hose right next to the foundation near the gap.

Lay the soaker hose 6-8 inches away from the foundation. Do not turn the faucet handle to the fully open position when watering by soaker hose—the goal is apply only enough water so that the soil can absorb the water without runoff or puddling.

It is important to avoid direct, heavy watering into gaps and cracks along the foundation using a regular water hose as a heavy flow of water can travel along the cracks for several feet in all directions and move dry soil particles in the process. This approach can cause an opposite problem—sudden expansion of gumbo clay soil can also cause a crack in the foundation.

Now to the question of how often to apply water along the foundation? The key is to maintain a slow flow of water. This may require watering every day to start and perhaps every 2-to-3 days when soil moisture levels have been stabilized and the drought period has ended.

Finally, if you have landscape beds

around your foundation, apply a 3-4 inch layer of mulch over the soil. Mulch not only keeps the weeds down, it also helps prevent the dramatic loss of moisture through evaporation. Do not apply mulch above the slab layer into the brick line or exterior siding as you will be inviting trouble from insects such as termites and ants.

Even though gaps along the foundation become most noticeable during extended periods of dry weathers, homeowners should monitor their foundations throughout the year to keep constant moisture levels around the foundation.

