

## **I've Got That Sinking Feeling**

### AGRI-VIEWS

by Chuck Otte, Geary County Extension Agent

I think we've all had that sinking feeling sometimes. In some cases it's just an emotional event. Other times you may be on a boat that is overloaded or taking on water. Yet other times it may be in your yard or garden or around your house. The drought that we have experienced over the past year has created situations that have generated several questions about a general issue that we should correctly call, soil subsidence.

Soil subsidence is different and should not be confused with sinkholes. Sinkholes are caused by changes well beneath the soil surface that results in the sinking or collapsing of the soil above it. In our region of Kansas we generally are not going to have sinkholes. Other parts of Kansas, where there has been extensive, crude oil pumping over the years, has seen soil settling that would be considered sinkholes even though they may not have totally collapsed yet.

Subsidence happens closer to the surface, usually within a few feet of the soil surface. Many of our soils have very high clay content. Clay has a high shrink-swell potential. When it dries out it gets very hard, and it also shrinks. In fact the kinds of clay we have in Kansas shrinks a lot! We saw cracks in the ground this summer because of the drought. Many people likely saw soil pulling away from foundations. This is all caused by the shrink-swell potential of the soil. Once we started to get rain and the clay started absorbing that water, it swelled back up and the cracks went away. Soil that had pulled away from the foundation, came back in contact with the foundation. You never want to fill those cracks with soil because once the soil moistens back up it will swell to fill the old void. If you had poured sand or soil down those voids it would then be pressed against the foundation and could start to crack the foundation.

Soil subsidence is usually caused by human disturbance of the soil. Let's say that you built a new house and utilities were buried in trenches to your house. These trenches are dug, the utilities are placed in the trench, and then the trench was refilled. If the soil was at a certain moisture level and came out very granular (meaning small soil particles) then when the trench is filled back in the soil will settle in very nicely. But we've all seen wet soil come out in clods that then dry out. They are big and blocky. The contractor tries to get the soil firmed back up in the trench, but those clods just don't pack very well.

So you have this trench that's been refilled with some decent soil, hopefully, over the top. House construction finishes, a lawn is seeded and life goes on. Over the course of the next several years the soils wet and dry, freeze and thaw. Little pieces of soil break off of those clods and slowly fall down into voids. Extreme drought it going to accelerate this process as the voids become bigger. Then, all of a sudden you realize that there is a depressed soil area perfectly matching up to the trench where the utilities were buried. Or it may be a circular area where a tree stump was removed, and on and on.

At that time the only remedy is to bring in additional soil, level it up and replant the grass over it. It may settle more over time and more soil will be added but this is about the only solution. There's a chance that this trench may be visible for a long time as the soil you bring in may be better than what was there so the grass will grow better. Some of this can be compensated for by additional fertilization. If you have questions about possible soil subsidence issues in your yard, don't hesitate to give me a call at the Extension Office and I'll be happy to take a look at it and discuss your options with you.