

Field Notes:

December 3, 2017

Drought can affect soil test results.

By: Ernie Flint, Ph.D., CCA, Regional Specialist – Agronomy
Mississippi State University Extension Service

We have discussed this topic several times through the years, but it seems to be one of those things that can't find a good place to stay in our minds. Considering all the rain we received during the early spring period and then fairly good amounts during the mid-summer period it's a little difficult to think about the fact that our region is now experiencing an extended dry period.

This dry period has been a blessing for most row crop farmers since it has allowed you to harvest the crop with very few interruptions. I can think of a few people who would be in trouble right now had we not received this great time to finish the harvest of crops which thankfully for most in the Central Mississippi region have been good to excellent. My apologies as usual to those for whom this statement may not be true.

I think we can now be fairly certain that the main determining factor in the differences in yield have been related to soil moisture, whether it be in the form of excessive amounts that deprived roots of oxygen or insufficient amounts in the localities that missed some of the critical summer showers that made such a huge difference in the crop this year. I encourage you to look closely at tillage systems, rotation plans, cover crops, and of course basic soil fertility as a way of improving yields in the future.

Reduced tillage, or at least limited tillage in fall, combined with a cover crop like wheat to keep soil organisms active and reduce nutrient loss can both save money in fertilizer cost and allow the soil to re-aggregate in preparation for dealing with either moisture situation next year. The cover crop is also a non-host for the worst nematode pests including reniform and root knot. Like it or not the freshly tilled condition that we have all grown up with is not the best for crops. I know you're probably tired of hearing me say that, but it's a fact, like it or not.

Now back to the topic of this article. The dry period can affect the results of soil tests to a significant degree. I know this complicates the job of pulling soil samples and we all like to get that done when fields are easily traversed, but for several reasons the result of the analysis as well as the actual amounts of nutrients available to crops can be altered by dry soil conditions.

Probably the main aspect of this is that soil pH values coming from the usual tests done in most laboratories can be lowered as much as 0.3 to 0.5 point below what they should be. The reason this is true may come in two primary forms, one is that in fields where lime has been applied within a year or so there may be insufficient moisture to allow the lime to react with acids in the soil, and the other is that when the soil is dry there can be an abnormally high salts (several kinds) that can cause the reading to be skewed enough to hide the true reading of soil pH.

The other main effect that is commonly mentioned in this discussion is that soil potassium levels may appear lower than they should. Again this can come in two main forms, the first one being that residues from the recent crop have not decomposed in order to allow the K contained in them to be recycled. And the other is that more K than usual may be tightly bound into the clay particles of the soil and not be detected by the soil test. There is normally little effect on the determination of soil phosphorus levels following drought periods.

I will certainly not tell anyone not to take soil samples, but we should be prepared for the possibility that the readings may not be as expected. In this case it may be a good idea to combine soil test results with the known removal of yield and associated nutrients when determining the fertilization needs for next year.

Thanks for your time.