Welcome to Ground Work

Humic Acid to the Rescue

11/30/11

This past season a grower in north Florida was not fully satisfied with the growth and productivity of his perennial peanut crop. (For those of you who live where it snows, perennial peanut does not make nuts; rather it is a very nutritious legume forage plant that is usually higher in NFC and brix than alfalfa. It is often called Florida's alfalfa.)

Though his crop did have better size and color than neighboring perennial peanut fields, the growth of the new petioles was straight up vertical, and beneath the new growth there was a bluish tint to the crop. This was an irrigated field and a quick examination of the soil showed that moisture was not responsible for the blue cast of the plants.

We had to conclude that we were looking at a **phosphorous deficiency**. The grower didn't easily accept this assessment because his soil tests claimed he had abundant levels of available phosphorous. The soil pH at 6.1 was neither too high for the phosphorous to be locked up by calcium, nor too low to be locked up by zinc, iron, aluminum, etc. Or so we thought!

For lack of a better idea, the grower agreed to **apply phosphorous and liquid humic**. Phosphorous for apparent reasons; and humic because it is known to improve phosphorous availability. He applied four gallons per acre of 10-34-0 along with four gallons per acre of humic acid to a section of his field that had just been baled. He did leave an untreated check on that same section of his field.

Before two weeks had passed, the grower sent photos of the ground fertilized with the phosphorous and humic. The **treated part was re-growing far more rapidly** than the untreated. This superior regrowth ended up yielding about an extra ton per acre across the whole season compared to the untreated.

Great news; yet, a mystery remained. **Why, in a soil with abundant phosphorous and a pH of 6.1, were we getting such a nice response to phosphorous fertilization?** After all, we have been taught that with good phosphorous levels, and where the ground is neither too alkaline nor too acid, we should have all the phosphorous a crop needs.

We wondered if it could be aluminum. We had a forage test which showed fairly high levels of aluminum in the peanut hay. But we have also been taught that if soil pH is above 5.5, some say 5.0, we don't need to worry about aluminum. We had soil tests, but not one that had tested for aluminum. So we tested and indeed **the soil showed very high levels of aluminum**.

The lessons we learned were that: (1) we shouldn't get locked into numbers and (2) we shouldn't assume that a soil test will necessarily show what is going on inside the plant. **Apparently there was enough aluminum in solution to lock up phosphorous.** Also, enough aluminum in solution to be somewhat toxic to the roots and to inhibit rhizobial inoculation. We got lucky by applying our phosphorous fertilizer with humic acid. We had put the humic out to help solubilize phosphorous without thinking, at the time, that the way we were doing that was by neutralizing excess aluminum.

On this particular farm we will continue to add phosphorous and humic with the hope that over time we will lock up enough aluminum such that we can back off on phosphorous fertilization.

This approach will be watched with special interest because this fall we added **Residuce™** to the phosphorous/humic program, and next season we will incorporate **SP-1™** as well. We will also be trialing this combination of products on his heavier soils where iron, rather than aluminum, is in excess.