Crops and Soils during Drought: Frequently Asked Questions

July 25, 2012 Webinar

Question: In drought would there be a rationale to apply a small amount of supplemental N to soybeans? If so, how and how much?
There is no need to supply additional N. What the plant does not access from soil will be compensated for by fixation. If the plant is so stressed (from hot/dry conditions) that fixation is slowed, then adding N will not be beneficial, as the plant won’t respond anyway.

Question: What will the limited root growth in beans in the upper soil profile mean for N release in corn next year?
The soybean plant does not leave “extra” N behind after the season, so the N application rate need difference for corn following soybean compared to corn after corn is more of an effect of simply having soybean as the previous crop (other factors like amount of residue difference between corn and soybean). So, the effect for next year corn should not be different.

Question: How does foliar feeding help with the N situation on soybean (under irrigation or otherwise)?
It does not help. Nitrogen application in late season has not shown to be a yield enhancing practice in dryland production. There have been some (inconsistent) yield increases to N application (not foliar) with high yield irrigated soybean in Kansas and Nebraska.

Question: Will adding hog manure right before planting soybean help with nitrogen fixation (hog liquids put on was 3,300 gallons/acre; 1,000 gallons contained 40-18-21)?
Adding a crop available N source, like swine manure, will not increase nodulation/fixation. In fact, soybean will use the inorganic N before it fixes N. Research has shown that sometimes there is a yield increase with swine manure application to soybean (besides other nutrients), but it is inconsistent, small, and unknown response.

Question: How do the producers tell if N fixation has stopped?
The only way I know is too look at the nodules and see if they are of good physical condition and have the pink coloration.

Question: Is there a growth stage of the corn plant when the nitrates stop migrating to the seed head? This gets to the notion of how much stalk to leave when chopping for silage.
Nitrogen will go to grain as long as the grain fill is occurring. The issue with nitrate buildup is if the plant is or has taken up more nitrate than it needs for N processing.

Question: What level of moisture will we need in the soil so we can apply NH3 this fall?
No specific moisture level is needed. Dry soil can retain ammonia; it’s more of a question about how far the ammonia moves from the injection point (moves more in dry soil than moist soil as ammonia is quite soluble in water) and if the soil is in good condition to have soil cover the injection track and without voids to the soil surface.
**Question: Does high fertility help corn and soybeans survive drought better?**

Having adequate soil fertility should help, up to a point. Having “excess or high” fertility will not provide additional benefit. Having a healthy plant can mean a good root system, so exploration of the rooting depth and access to more moisture (if the soil physical conditions allow). Of course when the extreme dryness occurs, no fertility level can help.

**Question: If it stays dry through fall how much will it affect fall NH3 application ... as far as lost product due to low moisture ... would we be better to wait until spring if we can?**

No specific soil moisture level is needed. Dry soil can retain ammonia, it’s more of a question about how far the ammonia moves from the injection point (moves more in dry soil than moist soil as ammonia is quite soluble in water) and if the soil is in good condition to have soil cover the injection track and without voids to the soil surface. If application is not going well, then yes, wait until soil moisture improves. Fall ammonia application is typically not as efficient as spring or sidedress, so waiting until spring to apply is good anyway. If soils are dry, then the timing effect may not be as much as in years with full soil recharge (less likely to get excessively wet). Of course if soils are dry, then waiting until spring will give you an idea of soil moisture potential for the next crop.

**Question: What adjustments need to be made to P and K applications for next year's crop?**

Any potential adjustment depends on the yield level and where one is at in the application sequence. If yields are good, and normal harvest, then no adjustment is needed. If there is no grain or silage harvest (or very little), then one could account reduced removal (“non-harvested/removed”) of P and K for the next year (if that was added specific for the 2012 crop). It also depends on if silage was harvested, but not planned for. Then additional P and K might be needed, and of course it depends on harvest level.

**Question: As for 2,4-D, does application timing influence affect on nitrates in the stalk?**

I am not aware of an influence of herbicide application on potential for nitrate uptake or accumulation in corn, unless that application injured the crop — then it might.