

Why Tissue Test and Foliar Feed?

There is getting to be a common theme amongst the growers striving to increase yields and profit. The tag-line has become this; *“Just make sure the plants never have a bad day”*. Ken Ferrie (Farm Journal Agronomist) uses this exact analogy in his November 2017 article on Nitrogen management. Jimmy Frederick, 2017 Soybean yield winner with 163.9 bu/acre told Farm Journal that they walked his fields all the time and tissue sampled weekly. He stated, “Bugs were smoked right away and when tissue samples called for something, we didn’t hesitate.” You hear the 500+ Bu/acre yield winners, Dave Hula and Randy Dowdy, give presentations using this same phrase about never allowing the plant to have a bad day also. Randy shared in an article with Farm Journal in December 2016, *“One weak nutrient will rule them all. Yield is limited by the least available nutrient”*.

The yield contest winners all strive to truly make sure their crop never has a bad day. To begin with, they all use an in-furrow starter with a PGR to maximize root development and make sure each plant has adequate nutrient access to get to the critical V5 stage where ear girth and length determination begins. Additionally, they tissue test at every stage which is approximately once per week. Their intent is to try and make sure there is never a nutritional gap. This is always done on top of a full menu of soil nutrients, balanced prior to planting to allow for their yield goals to be possible.

Obviously, in commercial corn and soybean production, we are not going to tissue test and treat weekly. Our intent is not to get you to do this. However, there **are some critical stages** where there are “turning points” for higher management that do make sense for us to focus our attention towards. In corn, the first turning point is the V5-V7 stage, where the plant determines the ear’s girth and length (total kernel potential). Since you sell kernels per acre, wouldn’t it be wise to make use of the genetic potential we invested in with our seed purchase and try and retain as much as possible through adequate nutrition? This is the reason we urge you to take a V4 to V5 tissue test, and assess what the needs might be as this ear is being determined, and additionally to help nourish the plant ahead of the grand-growth phase. The reason high yield achievers tissue test in the V8 to V12 stage zone is because when corn is in its explosive growth time referred to as *grand-growth phase*, there is often no way the root system can keep up with plant demands for higher yield production. Hence, the need for sidedress N, S, sometimes K as well as foliar feeding “the factory” with necessary micronutrients to maintain adequate nutritional capacity to prevent any nutrient inhibitions to maximum yield. At 70 days after planting, the plant is taking up around 11# of N, 2.75# of P2O5 and 15.3# of K2O each day. Especially this year, with challenges such as wet planting conditions and side-walling, not to mention our normal insect feeding issue, etc., the plant will need monitoring to assess its needs. These are just measured agronomic facts. And it is just something that we don’t usually manage very well. The final stage in corn to monitor is the reproductive stage. Newer hybrids use more N later in the season than the prior genetics we used. So, we need to still have adequate N and Boron available to the plant for the final reproductive time when the ear is being filled. Applying late-season N is tough to do and expensive. This late-season N requirement is why your agronomist is talking more now than ever about using stabilizers and retaining your nitrogen investment in the root zone through the entire season.

Soybeans---critical stage is primarily in the reproductive stages when we are trying to retain flowers and pods. Feeding the plant as it gets into the later V-stages to prep it for R1 and the onset of flowers would be a target also. Then certainly, R2-R3 is the most critical and best response, as the plant works to offset environmental stresses such as drought, heat, insects, disease, nutrient deficiency and other factors

causing it to “strive to survive” at the expense retaining flowers and maximizing seed production. Nutrition at this stage is critical to flower and pod retention. Again, note Jimmy Frederick and his record 163.9 bu/acre soybean yield. He didn’t let the plants lack for anything as they set pods and determined yield.

Tissue testing is not a shot-gun approach. It is not trying to outguess the weather and other conditions. It is *not* at all a replacement for an agronomic soil nutrient program ahead of your crop. And, it is not a random forecast of nutrient needs. It is a *real-time perspective* on your crop’s nutrient demands pertaining to its opportunity to maximize its genetic potential. Tissue testing is probably the most sensible management tool we employ through the season. It is our best attempt at insuring the other 98-99% of your crop investment is protected and maximized.

Source: Karl Leikvold, Plant Nutrition and Performance, Winfield United Ag

