

Foliar Feeding of Soybeans

Foliar Feeding of soybeans and other types of plants have had an interest for a lot of people, and researchers, every since researchers at Michigan State University showed in the 50's that foliar fed nutrients move into the plant very quickly. This presented a possible means to increase production beyond what was normally possible with soil-applied nutrients.

In the ensuing years this practice has become quite common with high value crops, less common among "commercial" commodity crops. It has been a choice primarily due to economics. Not that the foliar treatments didn't work, just that the pay out wasn't typically there for the commodity crops.

There has been a vast amount of work done over the years to try to change this relationship for the commodity crops, but to date there still remains the issue of consistency of yield increase.

A few years back one of my customers challenged me to help him raise some exceptional yielding soybeans. We made some assumptions going into the project: 1) If we were to raise exceptional yields, we would have to do something a bit different than normal. 2) We could do a better job of praying for rain. 3) If we were to raise exceptional yields, we probably needed more nutrients in the plant than we normally could get through the soil. 4) When we plant sampled, we were looking for above normal levels of nutrients in the analysis. 5) If we didn't have above normal levels, we attempted to raise those levels through the application of additional nutrients.

I will be the first to argue, that the project should actually start with preparing for the project at least a year in advance. Making sure your residue is spread evenly, and you limit compaction as much as possible from the harvesting operation.

Here you are this year with what you have. What can you do to improve your odds of a successful yield bump at this time? We found that almost all soybeans in the early stages of growth are short on Molybdenum, we found they are also typically short on Boron, and Manganese. If I knew nothing else about your situation, I would normally recommend applications of those nutrients to your soybean crop. Manganese EDTA, and Boron are actually labeled to be tank mixed with Round Up, so it would be an easy fix for those to be included while spraying for weeds.

A word of caution, there is a reason that only EDTA Manganese is labeled to be included with the Round Up. That reason is simply that the

other forms will react with and inactivate the active ingredient in the Round Up, thus affecting weed control. Lest we forget, Monsanto, and others that manufacture those compounds are about weed control. Anything that lessens that control does not get favorable press.

At one time Monsanto, and NaChurs Plant Foods, did some research together. As a result Monsanto cleared, and published a label okaying certain types of NPK fertilizer to be included with Round Up in the tank mix. At that time I worked with the NaChurs/Alpine company. We oftentimes used a polyphosphate compound, in place of the labeled orthophosphorous compounds. They seemed to work well.

In recent years, with the changes in the Monsanto products, the weed control when mixed with the NPK products seems to have lessened. I no longer will recommend combining Round Up with an NPK product in a tank mix.

Combining Boron and Manganese with Round Up still works well, and I would recommend it.

So, how do we further our cause of increasing soybean yields? Oftentimes, in my plots, when I foliar feed NPK on the beans, we get nutrients in the next plant sample that we didn't apply in the fertilizer. If we didn't apply them, where did they come from? The untreated areas continue to be short of those nutrients, so they must have come as a result of the fertilizer application, even though those compounds were not included in the fertilizer material.

It is my thought that we have stimulated the plant to restart, or grow more roots, which in turn pull more nutrients into the plant from the root system. That could explain what we are seeing.

That application is normally made 10-14 days after the Round Up application. Researchers have known for several years that Round Up (Glyphosate) restricts the uptake of Manganese, and therefore the fixing of Nitrogen in the soybean plant. It is for this reason that you should apply Manganese at this stage, if you did not include it in the Round Up treatment.

Boron is a reproductive compound. When I apply Boron at the proper level I usually get between 900,00 and 1,600,000 more soybean seeds per acre at harvest. Depending upon the moisture levels in the soil, how well that translates into additional yield.

As the soybean plant progresses, if all other nutrients are in plentiful supply, nitrogen usually becomes limited during pod fill. An application of a high urea product with some potash is usually a positive for yield at this

stage of development. This application should be made approximately 1 week to 14 days after the second Round Up application.

For years NaChurs has used ortho-phosphate fertilizer compounds to foliar feed crops. A few years back, the University of Iowa did a 3 year research project which showed that ortho-phosphate alone yielded less than a combination of Ortho and PolyPhosphate. That was totally against what we had always been led to believe, based on theory. I have oftentimes found that when you go to the field, theory goes out the window. That's why we at LFB Solutions prefer to put our tests through the planter, or through the spray rig.

There is more to this program than what I have discussed, but this is a good overview of what we are doing in plots. We are constantly trying slight variations in the plots, but this is the basis of what we are doing.

Summary: Application of a ortho/poly phosphate product (LFB Solutions 6-24-6 TMP contains a multitude of Micronutrients) at approximately 2 gallons per acre with appropriate water to carry it. Try for no more than 10 gallons of compound per acre. This product should also include 1 pint per acre of Manganese if not included with the Round Up treatment. If there is a true shortage in the soil of Manganese, corrective applications can be made at this time with the form of Manganese of your choice (not with the RU treatment).

Boron should be applied with the NPK treatment if not done in the RU treatment. 1/2 pint per acre of 10% Boron works very well. If the Boron is less than 10%, adjust accordingly.

The second application should ideally be a combination of the 6-24-6, or a 3-18-18 NPK product, combined with a foliar urea product if available. 50/50 mix of the NPK with the Urea. Apply at 4-5 gallons of material per acre. If a 3rd application is to be made, it should be primarily with the foliar Urea product at 3 gallons per acre. These quantities should be made with appropriate amounts of water, not to exceed a total of 10 gallons of mixture per acre.

Ideally, these applications should be made in the evening, early morning is acceptable, evening tends to be better. Don't apply if the plant is not actively growing.

3.

My concern has always been the ability to replicate the results in the field. In the past that hasn't had all that good of record. That's why we are still doing primarily plot work, although we have expanded it to field size plots where we stretch it across a field, and replicate it several times w/in the field. In the plots we always pull plant samples at 14-15 days after the 1st treatment, then the 2nd application usually follows the 1st at approximately 21 days.

The 2nd treatment is actually adjusted according to what we find in the plant sample. So, the above general recommendation is just that. It may not apply to the specific field. The second recommendation is always adjusted according to what the plant sample reveals.

Any questions you have, I will more than welcome. I hope this discussion hasn't been too confusing.

Bill Moyer, Dir

Bill Moyer, CPC, Dir
LFB Solutions, Inc
lfbolutions@msn.com
517-812-2483

P.S.

The Moly discussed earlier must not be included in a Round Up application. However, my best yield bumps tend to happen when Moly has been included early in the season.