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Foliar Feeding

[Corn and Soybean Digest](#)

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Looking for a way to kick soybean yields up a notch? Then consider foliar feeding.

According to consultants studying foliar fertilizer applications -- and growers adopting this practice -- yields can be bumped by 3-9 bu./acre. Fertilizers can also be applied more efficiently.

However, they advise it's not for every field and caution not to try it unless you have a good crop coming along.

"Your crop has to be in good condition and well-managed," says Paul Rose, Opti-Crop specialist for Miles Farm Center in Patoka, IN. "Then properly timed foliar applications can make a good yield even better."

Rose conducts foliar trials on both corn and soybeans and has been impressed with the results on beans. "We've seen limited results in corn," he reports, "but we've seen some fairly good results in soybeans."

On soybeans, Rose tested foliar applications at various timing intervals during the reproductive growth stages with 3 gal./acre of a 3-18-18 mix, plus trace elements.

"We saw between 3- and 9-bu./acre yield increases with that timing," he says. "The best results occurred during pod fill. Also, replicated trials were made at V3 and V5 stages along with an application of RoundUp UltraMax. Again, we saw a 6-bu./acre increase over the check."

One of the new benefits of foliar feeding beans is being able to mix in a late-season weed clean up using Roundup, Rose says.

Brian Meyer, a fertilizer dealer who also no-till farms corn and beans near Readlyn, IA, agrees.

"We've been foliar feeding for about 20 years," he says. "We started with alfalfa and then soybeans, but in the last couple of years, foliar in soybeans is attracting more attention because you can apply it with a late-season Roundup treatment. It's an excellent opportunity because you're making that pass across the field anyway."

Meyer also recommends a 3-18-18 mix. He says that results in his area vary from year to year, but he sees about 3- to 5-bu./acre yield increases. "There are times when you see more than that, and times when you don't see much improvement at all," he says.

"We've had customers foliar feed their beans after hail damage and get good results. The beans are under so much stress and the foliar application gets the growing points going again."

Foliar feeding greatly increases fertilizer efficiency, says Dan Conroy, who covers Iowa for Na-Churs/Alpine Solutions, a foliar fertilizer manufacturer in Marion, OH.

For example, 1 lb. of nitrogen (N) applied as urea is equivalent to 4 lbs. of soil-applied N. With magnesium, the efficiency factor improves to 1 lb. of foliar-fed equaling 75 lbs. of soil-applied.

According to tests conducted at Michigan State University, soil type also dictates efficiency. Tests with phosphorus in clay loam and organic loam soils netted a foliar efficiency advantage of six times the soil-applied nutrients. In sandy loam soils, foliar efficiency zoomed up to 20 times.

Researchers also found that foliar feeding maintains a better overall nutrient balance within the plant, which may not be achieved through soil uptake alone. They note that root distribution, soil temperature, available soil moisture, soil-nutrient imbalance and other factors can limit nutrient absorption through the roots.

University studies demonstrate that foliar-fed nutrients move upward and downward from the leaf surfaces where they are applied. This helps move concentrations of growth nutrients to the most critical parts of the plants -- buds, young leaves and growing roots.

Many factors go into achieving top yields in soybeans, according to Rose and Conroy. They say it starts with having good soil, balanced fertility and plenty of moisture. They also emphasize the need to manage compaction, keep weeds and insects under control and plant good seed.

"Foliar is not going to give you an extra 20 bushels," says Conroy. "It just doesn't happen like that. You need to have your soil-test level up. Your dollars are often better spent there than in foliar applications if you're not already into the optimum.

"I'm probably overly cautious on foliar because it's not a quick fix," Conroy suggests. "That root system has to be able to pull up enough nutrients late in the season to add those extra bushels.

"Foliar is a dessert to a soybean crop, not the meat and potatoes," Conroy says. "Good soil with the right balance of nutrients is the meat and potatoes. Foliar is not going to make up for the shortcomings in soil. It's the last step a good grower will make to increase yields."

According to Rose, if you've been managing all factors in your field well, foliar can give you a good return for the money.

"It can be one of the most efficient ways to supply essential nutrients to a growing crop," he says. "It provides a method of delivering fundamental nutrients at critical growth stages when the plant can use them most."

To optimize timing and select the right nutrients for foliar application, agronomists recommend a tissue analysis.

Foliar feeding is shown to have the most benefit between V3 and V5, and R3 to R5 -- from when pods start forming to the time pods are filling.

Fertility management has become pretty basic stuff over the years -- soil test, recommendation and application. But now the old rules are being questioned and conventional wisdom, challenged.

Led by new technologies -- especially the ability to measure yields at precise field points -- the best fertilizer timing is when plants need it and can use it to produce higher yields. This boosts profits, cuts down on wasted nutrients and lowers environmental concerns.

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