

Does corn need post-emergence N?

LANCASTER — Post-emergence applications of nitrogen are expected to become more popular as corn growers seek to improve fertilizer efficiency and maximize per-acre profits.

Extensive research by university and private soil specialists has fueled this trend. Split applications improve nutrient recovery by making more N available to the crop during its peak demand period. They also provide good insurance against fertilizer losses.

"The question today is not whether you should apply some N after planting, but how much you should apply and when," insists Don Johnson, an agronomist with Allied Chemical. "The answer hinges on your soil type, yield goals, cultural practices, and the type of application and tillage equipment you have available."

Weather is another factor. In wet seasons, corn growers who applied as much as 200 pounds N per acre before planting still find it pays to make a post-emergence application. It depends on how much N was lost to leaching and denitrification.

Practical Program

Because a corn crop's peak demand period for N is six to 12 weeks after planting, "spoon feeding" the mobil nutrient in small increments throughout the growing season maximizes its utilization. Such a program is not always practical, however.

"Unless you have sprinkler irrigation and can fertigate N whenever you water, there is no way you can apply N four to eight times after crop emergence," Johnson says. "You'll have to find a compromise."

But a compromise is still attractive. According to Johnson, making one post-emergence application of N is usually enough to boost crop yields 10-15 percent — even on high-fertility soils. A post-emergence application also lets farmers adjust their N rate to the quality of their stand. In a good year, it may pay to apply more N than was originally planned. Other nutrients, such as sulfur or zinc, also may be needed.

What's the best time for post-emergence applications of N?

Rescue treatment

Farmers making rescue treatments will have to get into the fields as soon as possible to correct the N deficiency and prevent further yield loss. However, far-

mers who plan on making a post-emergence application can usually be more flexible. They can also do the job for less money.

To save a trip across the field, most corn growers will band N when they cultivate or apply a post-emergence herbicide. Other farmers will make a special trip because the economic returns of a split application make it worthwhile.

"If you have a choice, and if you're only going to be making one post-emergence application, the ideal time to do it would be at the eight- to 10-leaf stage of crop development," Johnson says. "That's when the crop is on the threshold of its peak demand period for N."

How Much and When?

How much N should corn growers save for post-emergence application?

Making a 70/30 or 60/40 split of preplant and post-emergence N is the most practical program for farmers with medium-textured soils, Johnson says. "This way, if rain or something else prevents you from getting into your fields on schedule, you'll still have enough N in the soil to support the crop for awhile," he explains.

But the groundrules change on soils that are prone to N deficiency. These include coarse-textured sandy soils, where N can be leached, and fine-textured heavy soils with poor drainage,

where N can be lost to denitrification.

"On these high-risk soils, you're better off reversing the formula and applying 60-70 percent of your N after crop emergence," Johnson says.

Develop contingency

Knowing that rain could prevent them from making that second application on time, most corn growers are reluctant to save that much N for post-emergence application. But Johnson discounts this concern.

"If it's too wet to get into the field to apply N, then it's also probably too wet for your preplant N to be very effective," he says. "Most of it probably left the soil. So either way, your crop could run short of nitrogen."

To make sure the crop gets enough N, Johnson suggests developing two or three contingency plans. "If the crop is hurting, then you may have to fly on a little N to nurse the crop through the stress period," he says.

He recommends using a high quality N solution with low free ammonia to minimize fertilizer burn. Farmers should consult their fertilizer dealer or extension specialist about application rates and precautions. Using a nitrogen-based foliar fertilizer, such as NZN (15-0-0-5Zn), NMG (14-0-0-4Mg) or NFE (16-0-0-4Fe), is still another alternative. These materials were

designed for foliar application.

Farmers saving the bulk of their N for post-emergence application should also have access to a high-clearance sprayer, Johnson says. "If rain sets you back, the crop may be too tall to put on the N with a cultivator," he says. "Using a high-clearance sprayer doesn't present any problems, but you should know ahead of time where you can rent or borrow one. Don't wait until the last minute."

Post-emergence applications of nitrogen can be made as late as tasseling time and still produce a good return on investment, Johnson says.

Replenish losses

As mentioned earlier, not all post-emergence applications of N are planned in advance. In wet seasons, many corn growers are forced to make rescue treatments to replenish N lost to leaching or denitrification.

How much N should these farmers apply?

In states where N losses have been a recurring problem, a few extension services have developed soil maps that indicate potential N losses with respect to amount and frequency of rainfall. The University of Illinois is one example.

Farmers in most other states, however, have to rely on guesswork. In these situations, a good benchmark would be 50 pounds N per acre, Johnson says.

"A 50-pound shot of N will have a nice effect on the crop and get it back on track," Johnson explains. "Your crop may only need 40 pounds, or it may need 60. But a 50-pound rate is a good ballpark figure to use. If you find you need more, you can always make another application or rely on a foliar fertilizer to fill the gap."

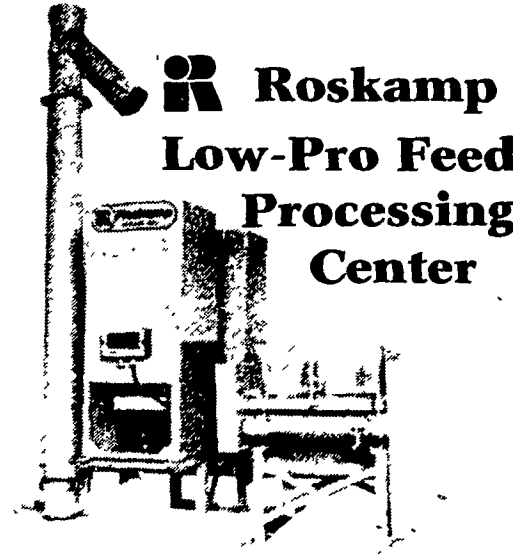
Spot Treatments

Spot treating problem areas is another option, though it will usually pay to apply additional N to the entire field, Johnson says. "Generally, if one section of a field is short on nitrogen, the entire field could probably benefit from additional N fertilizer," he says. "You might get a 30-bushel increase here and only a 10-bushel response there, but overall it should be a good investment. A compromise would be to adjust your N rate as you go along."

Any type of N fertilizer can be applied after crop emergence. "Nitrate N is what you lost, so you ought to put a little back," Johnson reasons. "It's readily available to the crop and will go to work right away."

But other forms of N, such as ammonia and urea, are also desirable. "That time of year, ammonia and urea will break down into the nitrate form five to eight days after application. By using a combination of all three

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