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POST-EMERGENCE NITROGEN APPLICATION...IS IT FOR YOU?

If your crops are short of N during the early season, in-season N application may be for you. Producers are interested in N management options that reduce risk associated with applying all the N fertilizer at seeding. Understanding the uptake of N by your crop, and the importance of timing N for yield production, are critical.

Early N helps boost yield in cereals, while late N may boost protein. Early N is critical for the development of cereal crop yields, especially during the first 3 weeks after emergence. If the crop was seeded with little N, any N applied during stem extension may miss the yield-building time and only impact protein. Canola is much more elastic in its response, meaning that N application later in the growing season can still boost yield by improving flower and pod formation.

How much N should be applied at seeding to avoid yield loss? Results from research in the northern Great Plains indicates that at least 50% of the targeted N rate should be applied at time of seeding to reduce the risks of post-emergent N applications. For individuals with low tolerance to risk, they may want to apply 66% of their target N at time of seeding. Nitrogen fertilizer can be managed more precisely with post-emergent N applications providing that some starter N is provided.

How do we define target N rates for crops? The target N rate is that rate of fertilizer N required by the crop, in addition to the soil test determined N, to achieve the desired yield goal. For example, say you have a 40 bu/A wheat yield goal. Using 2.5 lb N/bu as your guide, you would want to have soil test N plus fertilizer N add up to 100 lb/A in total (40 bu/A x 2.5 lb N/A). If you opted to use post-emergence N application, and had a soil test N of 25 lb N/A, we would recommend a fertilizer N rate at seeding of 25 to 41 lb N/A to achieve the goal of 50 to 66% of the total 100 lb N/A.

How much post-emergence N should be applied? When the time comes to apply post-emergence N, you have a couple of options, based on growing conditions. One option is to not apply any more N in the event that the lack of rainfall has resulted in low yield potential. The second is to apply the remaining 34 to 50% of the desired N rate based on the previously established yield goal. And finally, some growers opt to apply more N than previously determined based on good to excellent growing conditions which will support yields higher than 40 bu/A. New technology using optical sensors, like the GreenSeeker[®], have the potential to help apply the added N based on crop response to soil N supply across a field. Where soil N supply is low, more N would be applied, and where it is high, less would be used. Ongoing research with the sensors should give us a good idea of where they can best be used.

Making post-emergence N work requires good management skills. Be sure and prepare for post-emergence N application if that is an option you have selected on your farm. Timing will be critical for cereal crops, and having a good proportion of your N applied at seeding is the key to making the post-emergence application effective.

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Abbreviations in this article: N = nitrogen.