

# A growing trend for foliar-applied N in corn

By Bruce Prock, Research Agronomist, Georgia-Pacific Plant Nutrition

Now that corn growers have completed one of the earliest and fastest plantings in memory, all eyes are on in-season health and vitality of the crop.

One trend in recent years has been the adoption of foliar fungicides to control plant diseases and increase corn yields. Concurrently, many agronomists and crop advisors are looking more closely at foliar nitrogen (N) fertilizers applied at tasseling, either alone or tank-mixed with a fungicide. A reason for this trend is that researchers have established a link between good plant nutrition and reduced disease incidence. Combining a foliar fertilizer with a fungicide application can actually improve disease suppression and address in-season nutrient deficiencies to maximize yield.

## FOLIAR N AND ROI

Even though nutrients may be present in sufficient quantities in the soil at planting, there are many factors that contribute to inadequate nutrient uptake as the season progresses. Nitrogen loss through volatilization, leaching deep into the soil and denitrification (loss of plant-available N from factors such as waterlogged soil) are common factors. In addition, environmental stresses from insects, disease or weather can slow root development and nutrient uptake.

Because the corn plant's root system provides the main artery for nutrient transfer to the plant, a foliar application of N will never replace soil-applied programs. However, researchers who have studied the practice say that adding controlled-release nitrogen to an in-season fungicide application can be an effective addition to an overall, planned fertility program.

Kelly Nelson, Ph.D., research agronomist at the University of Missouri, is one of those researchers. Nelson studied foliar applications of Nitamin 30L Steady-Delivery nitrogen and Headline fungicide at tassel (VT) in 2008 and 2009. The fertilizer alone produced yield increases of 14 to 19 bushels per acre (bu/A) compared to check plots. For the fertilizer-fungicide tank mix, Nitamin 30L fertilizer at 1

gallons per acre combined with Headline boosted yield by 23 bu/A in 2008 and 27 bu/A in 2009, compared to untreated checks.

Nelson said that the cost of the additional N application is well offset by the yield benefit. "A well-timed application can add value to the yield potential that is already present in the plant. No one is suggesting that it's a substitute for a good soil-applied fertilization program. But if you're in a nitrogen deficiency situation and if you're applying a fungicide in-season, it makes sense to look at the practice, especially in high-yield environments," he said.

## APPLICATION FACTORS

Nelson points to studies from Iowa State University that have shown a continued, steady uptake of N by corn between 60 and 110 days after planting, averaging more than two pounds per acre of N per day for 50 days. Therefore, application of foliar nitrogen up to VT stage is optimal. At that stage of growth, when there is a lot of translocation of nutrients from the leaves to the ear, a boost in N can make a difference in yield and crop quality.

The timing of late-season foliar feeding works well with a planned application of a fungicide. Retailers and their agronomists can conduct chlorophyll tests of the leaves to determine whether the crop will respond to a foliar N application. They also can run test plots and seek out results from independent, third-party studies.

One factor to consider is that slow-release nitrogen products provide a lower burn risk. Nelson said that all products are not created equal. In Georgia-Pacific Plant Nutrition studies, the unique formulation of its Steady-Delivery nitrogen, which is compatible with most crop protection products, remained on the foliage longer than most nitrogen sources, enhancing nutrient uptake with a low risk for burn.

Nelson concluded: "There are new developments and new technologies that we need to be constantly evaluating. We always have to be creative in our research and look for what's going to boost the grower's bottom line." **AG**

For additional articles,  
see the Crop Fertility  
Info Center at  
[www.agprofessional.com](http://www.agprofessional.com)