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## Corn roots are just reaching anhydrous bands

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# Corn roots are just reaching anhydrous bands

## **Abstract**

Fall or early spring applications of anhydrous ammonia commonly are assumed to prevent deficiencies of nitrogen (N) in young corn plants. Corn plants in many fields this year indicate that this assumption should be questioned.

Corn plants often show exactly when their roots first reach bands created by injection of anhydrous ammonia. This time is most detectable when the bands are not parallel to rows of plants. Plants directly over the bands benefit first. These plants become darker green and grow more rapidly than plants not directly over the bands. For a few days, streaks of green plants reveal the exact locations of the bands. These streaks tend to disappear as root systems develop enough that all plants reach the fertilizer.

## **Keywords**

Agronomy

## **Disciplines**

Agricultural Science | Agriculture | Agronomy and Crop Sciences

# INTEGRATED CROP MANAGEMENT

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Corn plants often show exactly when their roots first reach bands created by injection of anhydrous ammonia. This time is most detectable when the bands are not parallel to rows of plants. Plants directly over the bands benefit first. These plants become darker green and grow more rapidly than plants not directly over the bands. For a few days, streaks of green plants reveal the exact locations of the bands. These streaks tend to disappear as root systems develop enough that all plants reach the fertilizer.

Differences in growth and color indicate deficiencies of N in some plants. Deficiencies of N for short periods usually do not have detectable effects on final yields of grain. It is not clear, however, whether these short-term deficiencies are unimportant or whether previous studies have lacked the sensitivity to detect some yield losses that are economically important. It seems reasonable to assume that such deficiencies are not desirable.



**Spatial patterns in color and growth often reveal exactly when corn plants first reach fertilizer N in anhydrous bands.**

[Enlarge](#) [1]

Streaks of green plants near fertilizer bands are most likely to occur in years with above-average amounts of spring rainfall. The rainfall promotes losses of soil-derived nitrate from the surface layer of soil and leaves inadequate amounts for plants having small root systems. Deficiencies usually are not found if some fertilizer N is applied near seeds at planting. Although some of this fertilizer N may be lost on wet springs, the plants benefit from any N that remains within their small root systems.

It takes relatively little N to correct deficiencies in small plants. The observation of green streaks, therefore, should not be considered evidence that the fertilizer N was not lost from the soil. It is a good sign if cornfields have a uniform, dark green color by the end of June. However, corn showing no signs of N deficiency in mid-to-late June often shows strong deficiencies in July and August (see the article [Monitoring nitrogen deficiencies in corn](#) [2], which appeared in the May 5, 1999, issue of this newsletter).



## Corn plants can reach sidedressed nitrogen soon after application.

[Enlarge](#) [3]

Most Iowa soils supply adequate N for young corn plants during springs having average or below-average amounts of rainfall. For corn grown after soybean, the effects of N fertilization often are not apparent until after the corn is more than 3 feet in height. The plants, therefore, do not benefit from having the N applied several weeks or months before this time.

Temporary streaks of green plants over anhydrous bands have been detectable in several years within the past decade in Iowa. These streaks indicate that it usually is into June before corn plants benefit from N applied as anhydrous ammonia on wet years. Most plants do not find the anhydrous ammonia bands before they find sidedressed N on these years. A noteworthy difference is that a higher percentage of the sidedressed N is likely to be available to the crop when needed.

Time of N application seems to be most critical on years with above-average spring rainfall. Until weather forecasting improves, it seems advisable to select application times that are suitable for these problem years. This makes 2001 an important year to watch the crops in your area and learn which N fertilization practices tend to work best. It is not too late to explore what can be learned if a little extra N is applied in a few strips across a few fields.

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<http://www.ipm.iastate.edu/ipm/icm//ipm/icm/2001/6-25-2001/reachanhy.html>

### Links:

[1] <http://www.ent.iastate.edu/imagegal/plantpath/corn/ndeficiency/ndressed.html>

[2] <http://www.ipm.iastate.edu/ipm/icm/1999/5-5-1999/moncorn.html>

[3] <http://www.ent.iastate.edu/imagegal/plantpath/corn/ndeficiency/sidedressing.html>

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