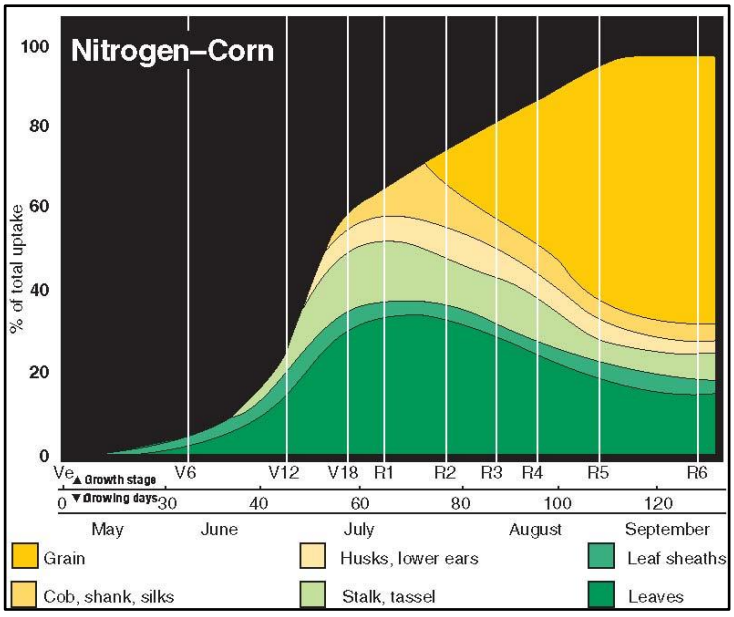
In-Season Nitrogen Management Tips for Corn

As we look at the seven most important factors that contribute to corn yield the second on the list can be a very difficult target to hit: nitrogen. There are more regulations coming down the pipeline and multiple clean water initiatives, producers need to look at new ways to manage nitrogen without jeopardizing yields. An important consideration is nitrogen efficiency. One way to greatly enhance the nitrogen efficiency is to understand the nitrogen demand of the growing crop. Once the demand curve is understood, then we can make an educated nitrogen recommendation for your fields.

Rank	Factor	Value	
		bu/acre	%
1	Weather	70+	27
2	Nitrogen	70	26
3	Hybrid	50	19
4	Previous Crop	25	10
5	Plant Population	20	8
6	Tillage	15	6
7	Growth Regulators	10	4
		Total = 260 bu	100%

Should I side dress nitrogen?

This is a very common question amongst growers who want to split apply their nitrogen. As you can see in the graph to the right there is very little demand for nitrogen prior to V6. The vast majority of nitrogen is taken up from V8 to VT, so we would recommend applying prior to V8 to ensure the crop does not get shorted on any nitrogen needs. Another option is to "spoon feed" the crop along with multiple applications, such as at V6, V10, and VT. In season nitrate samples can be an effective gauge to measure how much nitrate is available in the soil profile and what needs to be added to feed the crop. According to Iowa State University, a critical level of soil nitrate is 20-25 ppm at a sample timing of early June when corn is 6-12" tall.



Does side dressing nitrogen pay?
Every circumstance is different but side dressing nitrogen in addition to pre-plant nitrogen application in corn has several advantages compared to pre-plant applications only. Some of the benefits include:

- Providing nitrogen closer to when it is needed by the crop
- Reducing the potential for losses of nitrogen
- In some cases, reducing the overall total applied nitrogen to the crop compared to a 100% pre-plant application.

A potential disadvantage of relying on a side dress application is not being able to apply nitrogen in a timely fashion due to prolonged wet soil conditions. Secondly, for some operations this can require additional labor during a busy time of year.

What are the best ways to side dress nitrogen?
There is no "one size fits all" for nitrogen management, to be truly efficient a grower should have a different management strategy for every piece of ground they operate, because each field has different soil textures, organic matter, cation exchange capacities and topography. Of course, we realize that is not feasible for most operations.

There are three common forms of nitrogen that we can use when applying side dress:

- UAN (28% or 32% liquid)
- Urea (46-0-0, dry)
- Anhydrous Ammonia (82-0-0)

A best management practice would be to ensure that we place the nitrogen in the soil, or use a stabilizer if we are laying it on top of the ground. If laying the nitrogen on top of the ground is the only option the producer has, keep a few things in mind:

- If using urea, once broadcasted and without the use of a stabilizer that urea can lose 30% of its nitrogen to volatilization in as little as 7 to 10 days. To minimize leaf speckling apply the urea when the foliage is dry.
- Similarly, when liquid UAN is being dribbled in the row, UAN is in the plant available form and is highly volatile. As a result, it is highly recommended to add a stabilizer to the UAN.
- Broadcasting UAN (spraying over top of crop) is not recommended after V4 due to foliage burn, but if a broadcast application is the only option do not exceed 90 lbs of nitrogen.

Timing any application of side dress nitrogen ahead of a rainfall event can greatly reduce the amount of volatilization of nitrogen into the atmosphere. This happens because the nitrogen is sitting on the soil and is not soaked into the ground after a rain.

Dale Viktora| Legend Sales Agronomist | Hollandale, Minnesota