

THE LEADING EDGE

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A PUBLICATION DEDICATED TO MAXIMIZING YIELD POTENTIAL

Side-dress for success

Nobody likes to eat once a day. As human beings, our bodies react and function best when we spread out our food intake to three times a day. Growing corn plants are similar; to maximize their potential they require nitrogen (N) at different times throughout the season. In-season nitrogen application (side-dressing) can benefit crops and boost yields if the conditions are right and the application is properly handled. Studies have shown that "applying N multiple times, including the time of maximum crop uptake, can spread the risk of N loss and crop deficiency, improve profitability by reducing N rates and benefit the environment." i.



New equipment on the market, such as all steer high capacity carts and liquid fertilizer coulters pictured here, allows for faster, more efficient side-dress applications

Granted, applying nitrogen during the growing season requires more management than nutrients applied in the fall or spring before planting. However, due to the availability of precision placement equipment that protects young plants and also high-clearance equipment designed to give later-growth-stage crops a boost, side-dressing fertilizer has emerged as a

solution for producers who want to get the most out of their fertilizer dollars.

With reduced risk, increased profitability, environmental benefits, and availability of efficient equipment, it's clear that side-dressing is an option that should be considered in nitrogen management plans.

Side-dressing to increase yield

Nitrogen stress at any time during a corn plant's life can reduce yield, so planning to stagger two or more smaller applications of nitrogen throughout the growing season can allow growers to respond to weather conditions and produce the best yields. ii. Nitrogen tends to leach down through the soil and away from the roots after rains—side-dressing replenishes those needed nutrients for enhanced growth.

Application after the plant has emerged puts nutrients where crops need them most. Placing fertilizer beside the row where the roots can grow into the band allows plants to feed throughout the growing season.



John Deere self-propelled sprayers, equipped with liquid fertilizer toolbars, offer a greater window for side-dress application

When roots hit the fertilizer, there is a growth explosion. As more roots develop, they too encounter the fertilizer for an ongoing boost during critical growth stages. Almost half of a corn plant's roots are within 12" of the soil surface during tasseling.

Side-dressing with the right equipment also allows you to apply essential fertilizer without causing damage or burning of the roots or leaves, which could come into contact with the fertilizer if it were applied too near the plant.

Some growers have even chosen to apply an early side-dress application as well as a later application during tassel. Certain studies have proven that late-season nitrogen application after earlier applications increase yields.

Saving costs and the environment

Apart from increased yield, there are monetary and environmental benefits to side-dressing. Because it cuts down on the amount of nitrogen that could potentially be lost due to rainfall, side-dressing can be economically efficient if planned properly. It is important to determine where and how much nitrogen to apply in-season.

The United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) recommends considering conducting a pre-side-dress soil nitrate test (PSNT), tissue testing, or chlorophyll meters to determine the need of additional nitrogen to be applied during side-dress nitrogen application. These types of tests will determine how much nitrogen a field needs, and can end up lowering the total amount of fertilizer applied, improving efficiency. iii.

In addition to economical crop production, the USDA NRCS notes that "efficient use of N fertilizer is important for... water and air quality enhancement. Split side-dress or top-dress applications of fertilizer N improve the efficiency of nutrient uptake and protect water and air resources." iv.

Additional benefits of side-dressing

- Typically side-dress nitrogen is lower priced than fall or preplant nitrogen.
- Improved water quality.
- Spoon feed nitrogen closer to crop uptake
- Reduced power requirement.

- Higher speed—more acres per hour.
- More free time in spring to plant earlier; planting date is crucial to top yields.
- No grace period before planting begins.
- Reduced soil compaction.
- Better use of available labor.
- Meet lower nitrogen recommendations from universities without lowering yield.
- Can tank mix other nutrients with liquid nitrogen.
- Ability to raise or lower nitrogen rate based on yield potential of growing crop.

The right tools

With the advantages of side-dressing well-documented, the next step is to choose the right tools for effective side-dressing. Some people cite lack of labor availability and a narrow window of time as disadvantages to side-dressing, but new technology has made it much more efficient. v.

One good option for nitrogen injection is a simple coulter and liquid injection system. Producers can start with an existing toolbar (for instance, a row crop cultivator), remove all ground-engaging equipment, and add coulters with rear knives or injectors. Then, by adding a simple pump and plumbing, as well as saddle tanks on the tractor or pulling an All Steer High Capacity Fertilizer Cart, they have created an easy and inexpensive liquid side-dress applicator.

If anhydrous is the preferred nitrogen source, then similar toolbars can be made to handle it as well. New fertilizer coulters designed with side-dressing in mind are readily available. For example, the 2987 Magnum from Yetter Farm Equipment features a 22-inch single-disc design that facilitates high-speed anhydrous application and low soil disturbance. When time is of the essence in the spring, growers appreciate the ability to fertilize quickly.



Hi speed, low disturbance coulters create new efficiencies in anhydrous application.

Some machines on the market are getting as big as 60' which, when coupled with high speed, allows producers to cover acres very quickly.

To have a bigger window of time in which to side-dress, producers can consider toolbars equipped with an injection system on high-clearance sprayers. Setups such as a Yetter 3600 Series Toolbar equipped on a John Deere 4710/4720/4730 Sprayer makes it possible to feed crops later in the growing season. This toolbar is equipped with an injection system that can take on the task of side-dressing as soon as plants emerge and continue well into the growing season.

A smart choice

With the right tools and the right planning, producers can use side-dressing as an effective part of their nitrogen management plan. Flexibility is key in today's production agriculture, and side-dressing nitrogen gives growers the ability to change inputs during the season to maximize profit potential. Better agronomics, better flexibility, and more efficient equipment makes side-dressing the reason for higher profits in today's production agriculture.

i. Steve Butzen, "Nitrogen Application Timing in Corn Production," Crop Insights, Vol. 21, No. 6, pg 1.

ii. Ibid.

iii. Split applications of nitrogen based on a PSNT or other crop-based indicators," United States Department of Agriculture Natural Resources Conservation Service, April 13, 2010, www.nrcs.usda.gov , accessed on May 3, 2011

iv. "Split applications."

v. Carrie J. Allen, "Sidedressing Nitrogen in Corn Makes Sense," Fluid Journal, Spring 2002, www.fluidfertilizer.com, accessed on May 3, 2011.

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