

INDIAN CREEK FACT SHEETS

SPLIT APPS

SPRING AND SPLIT APPLICATIONS OF NITROGEN

Fall applications of nitrogen (N) have long been popular for their convenience, and because they reduce the risk of delayed fieldwork and late planting due to spring rains. However, fall-applied nitrogen is at greater risk of loss to the environment through volatilization, leaching and runoff. Lost N represents lost investment in the crop, lost potential, and a threat to water quality.

Switching all or some of the nitrogen application to spring can improve nitrogen use efficiency (NUE) and reduce environmental loss of N. It's no surprise that shifting some or all N application fits the 4Rs of Nutrient Stewardship: the right source, at the right rate, at the right time and in the right place.

Split Applications

Among the best management practices demonstrated widely during the five-year Indian Creek Watershed Project is split timing of N application. A portion of the crop's nitrogen need is applied in the fall or early-preplant in the spring, and supplemented with an application later in the spring. In many demonstrations, various sources of nitrogen were compared to ascertain their nitrogen use efficiency (NUE) – the amount of N utilized by the crop rather than potentially lost to the environment.

Spring timing varied between an early side-dress application and late-season top-dressing – guided by monitoring weather and crop conditions – during the rapid period of growth immediately prior to tasseling.

In all, spring side-dress applications typically resulted in the highest yield, while fall applications delivered the lowest yield and lowest NUE. Split applications were similar to fall applications in yield, but had higher NUE levels.

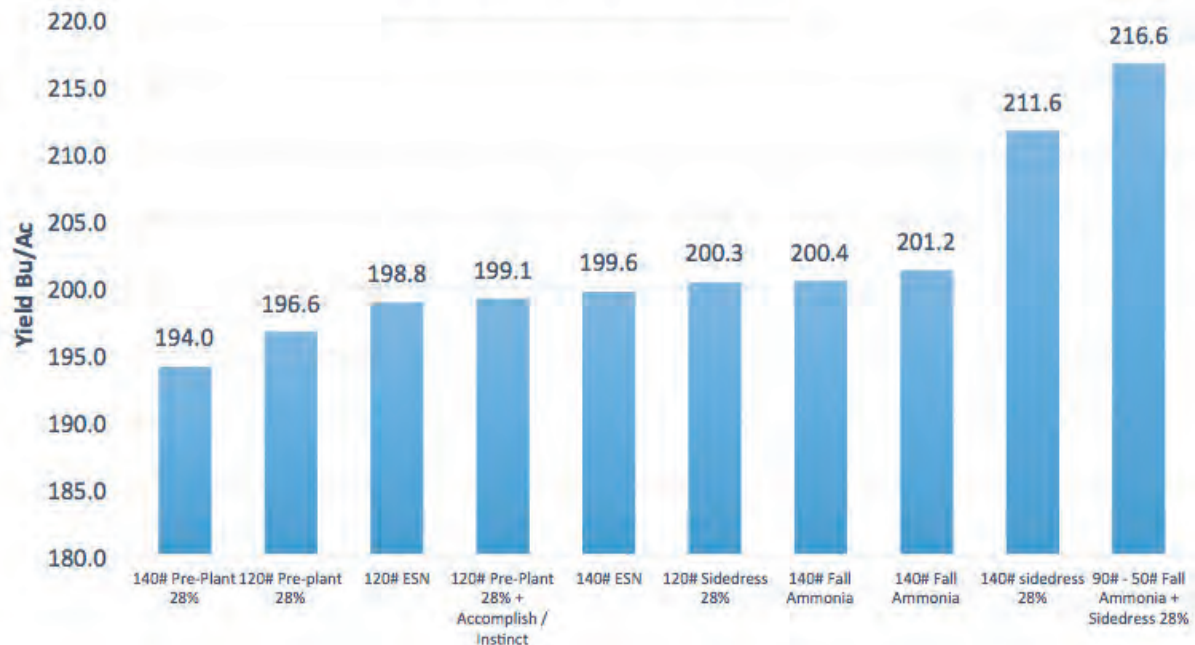
Harms Farm

In 2011, Kevin and Dan Harms began a series of nitrogen timing demonstrations. That year, each practice plot received 100 pounds of MicroEssentials (MESZ) fertilizer, a granule combining phosphorus, sulfur and zinc in a 10-40-0-10S-1Zn formulation, delivering 12 pounds of N. An additional 42 pounds of actual N per acre were applied when the Harms used 28-percent UAN solution as carrier for pre-emergence herbicides. In all, three full-rate treatments received 204 pounds of applied N, and plots testing the NUE of ESN stabilized nitrogen received 179 pounds of N, or 80 percent of the full rate.

The N rates were relatively high and variability across the fields may have influenced the results, but researchers with the Indian Creek Watershed Project noted that spring side-dress plots had the highest yield. A 2013 trial on the same farm demonstrated the best results from a split application of fall anhydrous and a spring side-dress application of 28% UAN solution.



Demonstration Trials



By applying some or all of the season's N closer to the period of root uptake, a greater percentage of applied nitrogen is available for the crop. That improves nitrogen use efficiency, maximizes the potential of your fertilizer and your crop, and reduces the chance that your costly nutrients will wash downstream or into the groundwater with winter or spring rains.

Those reasons – and the results of many trials in the Indian Creek Watershed Project showing yield benefits from spring-applied nitrogen – make split applications a great Best Management Practice for protecting the environment and your bottom line.

For more information on the 4Rs of Nutrient Stewardship, visit www.nutrientstewardship.com. For information about the Indian Creek Watershed Project, visit www.ctic.org/IndianCreek or call CTIC at (765) 494-9555.

