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## **FALL NITROGEN APPLICATION – IS IT RIGHT FOR YOUR SPRING-PLANTED CROPS?**

**Recent USDA Economic Research Service (ERS) data indicate that farmers are achieving higher corn yields, which is resulting in higher N recovery and greater crop harvest nutrient removal than in the past.** Data from 2010 by the ERS showed that 25% of corn fields (range from 11 to 49%) in surveyed northcentral states received some amount of fall N. In states where university research and recommendations supported some or all of the N for corn in the fall from specified fertilizer sources, farmers and agricultural retailers have increasingly waited to fall-apply until soil temperatures at the 4- to 6-in. depth were consistently below 50° F. That fall application timing helps reduce the risks of nitrification (microbial conversion of ammonium to nitrate) and lowers the risks of nitrate leaching losses from the root zone and soil profile before active crop uptake in the spring.

**The unparalleled, back-to-back, record-breaking drought of 2012 ... and record-breaking spring rains in much of the upper Midwest in 2013 ... have made many re-think their N crop nutrition strategies.** Crop advisers and knowledgeable farmers are striving to better synchronize the soil supply of N with dynamic corn uptake demand. That synchrony leads to improved crop yields, higher farmer profits, and increased crop and soil recovery of the applied N.

**Agricultural retailers, seed companies, leading farmers, some farmer organizations, crop advisers—as well as university and government scientists—are conducting more in-field and on-farm N experiments and demonstrations.** Changes in crop N source, rate, time, and place of application—more consistent with 4R Nutrient Stewardship—are being evaluated to learn what may work best for different rotations, soils, climate, and individual farmer's management abilities. The agricultural community is also trying to learn what also works within the confines of the existing N supply, storage, and delivery infrastructure. In addition, new and novel soil testing for plant-available N is being explored along with in-season crop N monitoring and variable rate technologies.

**Clearly, the present and future of corn N management is evolving from some of the past paradigms, as farmers—and their industry partners—focus on getting more of the applied N in the crop, and retained in the field in forms that are less prone to environmental losses.**

Since it is absolutely clear that we cannot accurately predict the weather from year to year, or even within a season, ... the time is right to re-examine the logistic, economic and environmental costs and benefits of fall N applications for spring-planted crops like corn. Where the research clearly supports economic benefits and low risks for environmental losses, perhaps there is little need for change from the status quo. **If recent data and common sense indicate unacceptable risks for loss and low recovery of the applied N, ... maybe it is time to develop new, innovative, profitable and responsible N management strategies.**

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Abbreviations: N = nitrogen.