Nutrient Utilization and Water Quality Are Related
Follow These Practices to Improve Both

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Contact: Jean Payne, IFCA: 309.827.2774
Ryan Arch, ILICA: 309.883-3790

The Illinois Fertilizer & Chemical Association (IFCA) and the Illinois Land Improvement Contractor's Association (ILICA) urge you to take steps this fall to improve your nutrient utilization and protect water quality by following these practices when it comes to fertilizer application and drainage:

Drainage

Nitrogen moves with water, and in some cases phosphorus can as well. Installing drainage systems correctly and managing water that leaves your field can help reduce nutrient losses. Consider these steps:

- Install tile drainage systems in accordance with the Illinois Drainage Guide for the soil types in your area. Go to http://www.wq.illinois.edu/dg/.

- Plan ahead when designing new drainage systems; consider incorporating end of pipe practices such as drainage water management. These systems can store water in the field for crop use in critical times and also be designed to provide sub-irrigation to reuse drainage water.

Fertilizer

Follow the **4Rs** (**R**ight Source, **R**ight Rate, **R**ight Time, **R**ight Place) to optimize nutrient utilization and reduce nutrient losses.

Right Source

- For fall-applied nitrogen in the form of anhydrous ammonia, wait to apply until the daily maximum soil temperatures at the 4-inch depth in bare soil fall to 50 degrees at 10 a.m. Go to www.ifca.com for a link to soil temperatures around the state.

- Use an approved nitrification inhibitor such as N-Serve™ at the appropriate rate. Fall-applied anhydrous should not be applied on poorly drained soils, soils with excessive drainage, soils low in organic matter content, sandy soils or soils that cool down late or warm up early (roughly south of IL Route 16).

Right Rate

- Consult the Maximum Return to Nitrogen (MRTN) Calculator at http://cnrc.agron.iastate.edu/ and talk to your crop adviser to determine your optimum nitrogen rate. On-farm research in Illinois, funded by NREC, is keeping the MRTN current based on Illinois nitrogen rate trials and yield responses. To view examples of nitrogen rate response curves from 2014 and 2015 on-farm trials, go to http://ifca.com/nrate_map/.

- Feed the crop by splitting your total nitrogen rate. This reduces the risk of excessive nitrogen loss due to an extreme weather event such as heavy rains in the spring, or drought in the late summer.

- For phosphorus and potassium (P & K), base your rate of application on a recent soil test and follow the recommendations in the *Illinois Agronomy Handbook*, located in Chapter 8: http://extension.cropsciences.illinois.edu/handbook/pdfs/chapter08.pdf. Variable rate applications can also improve nutrient efficiency and economic return. Soil pH is also important to fertility and is also discussed in Chapter 8.

Right Time

- Do not spread fertilizer on frozen or snow covered soil. Snow melt or early spring rains can transport fertilizer that has not had a chance to be incorporated into the soil.

Right Place

- When applying P & K fertilizer in the fall, apply it right after harvest and/or prior to any fall tillage to allow it to attach to the soil. Some incorporation of P & K in either the fall or the spring will help hold these nutrients in place.

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