

December 2024

First off, from everyone at Illini FS, I would like to wish every reader a Happy and Prosperous New Year!

I would pose a question to producers: how will you improve your yields this year while maintaining profitability at the local level? Farm budgets may be tighter this year than in previous years. I want to remind producers of some of the key takeaways from the 2024 growing season as we are in the middle of prepay season, and many management decisions for 2025 are being finalized.

Soil Fertility

During this past fall, many producers could complete almost all the fieldwork that needed to be done except for one major item. Anhydrous Ammonia or NH_3 : For much of this past fall, we saw soil conditions that were warmer and drier than desired to effectively apply fall NH_3 . We were hopeful that we might see some days in December, but much of December did not produce many good days for field work. This leaves many growers still needing to apply the bulk of nitrogen needs this spring. A few questions about spring-applied nitrogen usually center around the following:

“Do I still need a nitrogen stabilizer?” and “Are spilt applications necessary?”

The short answer is YES!

Soil microbial activity starts to become active once soil temps warm to about 50°F , but once the soil warms up above 70°F , they are entirely active. These naturally occurring soil microbes include the ones that are responsible for converting applied forms of nitrogen from anhydrous ammonia, urea, and UAN to undesirable forms that are prone to loss. Loss may occur from the leaching of nitrate, denitrification (nitrate converted to gaseous forms of nitrogen, nitrous oxide, a greenhouse gas or N_2 , and volatilization of ammonia gas. The goal of including a nitrogen stabilizer is to delay this natural process to ensure the applied nitrogen will remain in the system long enough for plant uptake.

Much of corn's peak demands for nitrogen do not begin until sometime around growth stage V8. Research from the University of IL suggests that nitrogen loss in saturated soils may be as much as 5% daily. I ask growers, can you afford to lose 5% of your applied nitrogen per day? I think most growers will agree that often when

Agronomist Notebook

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rain events occur in the springtime, fields do not dry up in a day's time. This documented 5% loss can add up quickly, leading to some major losses of nitrogen just through denitrification. Just like the approach of layered soil residual herbicides with the goal of preventing weed germination. Spilt application of nitrogen can achieve similar results by keeping nitrogen in the systems longer into the growing season. Close to the time of peak demand from corn plants.

Match nitrogen stabilizers to the appropriate form of nitrogen as well as the application method. For example, if liquid UAN is broadcast on the soil surface and incorporated immediately, a denitrification inhibitor may only be required. However, suppose liquid UAN is broadcast on the soil surface and not incorporated. In that case, an inhibitor that will protect against denitrification and volatilization is required to prevent unnecessary loss that is likely to occur.

I strongly encourage growers to speak with a Crop Specialist now about their spring nitrogen needs, especially if fall applied NH_3 did not occur. Another guidance I would like to offer growers is if there are any opportunities for NH_3 applications this winter and spring to avoid conditions that may create air pockets below the soil surface from wet soils. These soil conditions may create zones of free ammonia, which is known to lead to ammonia burn of corn seedlings. To prevent this condition, applications should be applied at a slight angle from normal traffic patterns to avoid planter rows landing directly or near NH_3 application.

Sulfur, Boron, and Zinc

In-season nutrient testing from NuTracker Plus in 2024 indicated Sulfur, Boron, and Zinc are deficient in many fields locally. Sulfur has quickly become a “macronutrient,” much like NPK. Growers should be aware that the sulfate forms of sulfur are plant-available and that the elemental forms of sulfur are not. They require time and active soil microbial activity to convert



elemental sulfur to sulfate for plant uptake. Sulfate forms of sulfur are best applied to actively growing crops. Elemental forms are best applied in the fall for next year's crop use. Corn will benefit from 1 pound of applied sulfur for every 10 bushels of expected yield (250 bu/A corn will need 25 lbs/A of sulfur). Soybeans also greatly benefit from sulfur applications, requiring 4 lbs of sulfur for every 10 bushels of expected yield (70 bu/A soybeans will need 28 lbs/A of sulfur). Boron and Zinc, in most cases, are needed in much lower quantities, often-times only a few pounds per acre. Avoid the application of boron anywhere near corn or soybean seeds. Boron is highly toxic to seedlings and must be avoided. Zinc is a cation, making it a good candidate to even apply with fall fertilizer. The response that growers see from these key nutrients beyond NPK continues to improve crop yields and remain profitable.

Weed Control

This is the time of year when many weed management plans are made for the next growing season. I ask growers: were you happy with your weed management plan in 2024? If not, the following are some key ways to maximize herbicide applications in 2025.

1. Target effective active ingredients to match known weed pressures. If a particular field is known to have problems from grasses, large-seeded broadleaves, and small-seeded broadleaves, it is likely that 3 to 4 different sites of action may be required for effective control.
2. Match full labeled rates of soil-applied residuals to field-specific soil types. Often, if herbicide premixes are utilized, this may require the use of individual active ingredient products to max out rates.
3. Apply soil residuals shortly before planting or shortly after planting. Remember that once soil residuals are applied, the countdown timer begins for the length of effective control, most lasting 21-30 days. Be sure to use the approach of overlapping residuals. This means applying another residual before the prior residual has lost its effective control.
4. Most soil-applied herbicide residuals do not require incorporation. When soil residuals are not effective, one of two things often occurs: one, the herbicide was buried too deep with tillage and diluted by too much soil mixing, or two, there was not enough soil moisture for herbicide application.
5. Proper adjuvant selection for post-applied herbicide. Many herbicides are considered to be weak acids and require the pH of the water carrier to be lowered because of the calcium cations found in many local water

sources to prevent herbicide tie-ups. Most post-herbicide applications require 1-3 pounds per acre of spray-grade ammonium sulfate to achieve the necessary water conditioning. Post-applied herbicides often require the addition of some surfactant to aid in coverage and absorption.

6. Target post-applied herbicide applications before weeds reaching 4 inches in growth.
7. Successful post-applied herbicide applications, especially for waterhemp control, include more than one different effective site of action, not simply different active ingredients. An example would be approved formulations of 2,4-D and glufosinate.
8. Also, remember to use the proper gallons per acre to match tank-mix components and spray tip selections.

The last item I would encourage growers to consider is implementing new products or practices. While it's a great idea to try new things, it's also a great idea to avoid products or practices that are not proven or, at very least, provide a break-even return on investment. For example, if a new product is being considered and yield data is presented, does it meet the following criteria?

1. Was the research conducted in an area similar to your operation? Were the growing conditions similar to yours, such as soil fertility, planting methods, and so on?
2. Was multiple locations and multiple years' worth of data collected? If only one location and one year's worth of data are presented, the outcome may not be repeatable.
3. Finally, what statistics represent the data that may indicate repeatability? The following link from Bayer CropSciences provides a great explanation. {<https://www.cropscience.bayer.us/articles/bayer/plot-results-evaluation>}

Energy Update

Chris Olson, Illini FS's Energy Marketing Manager, offers insights for users of liquid propane and liquid fuels this winter. During the month of December, we saw many days well above normal temperatures. If above-normal temperatures remain throughout January, LP and fuel prices could witness an even stronger selling pressure than currently expected. You may see opportunities to contract fuel for the 2025 growing season. Please stay tuned to current market trends to take advantage of buying opportunities to layer in some of your energy needs.

