

To All Ag Reporter Email Recipients:

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[It's rained again.... What should I do about nitrogen?](#)

Posted on [June 26, 2017](#) [June 26, 2017](#) by [Carrie Laboski](#)



With continued precipitation and water lying on fields in many areas, growers are becoming concerned about nitrogen loss. This article will explain how to determine if N loss from excessive rainfall has occurred and what corrective measures may be taken.

Once N is in the soil, nitrate is the form of N that can be lost via leaching or denitrification. Nitrogen in the form of ammonium or organic-N will not be lost. The first step is to determine how much of your applied N may be nitrate. It takes 1 to 2 weeks for ammonium forms of nitrogen to transform to nitrate, while it takes 1.25 to 2.5 weeks for urea, and 3 to 8 weeks for anhydrous ammonia. Urea ammonium nitrate, UAN (28% or 32%), is 50% urea, 25% ammonium, and 25% nitrate. This means that 25% of the N applied in UAN may be lost immediately.

Nitrate leaching will occur when precipitation (or irrigation) exceeds the soil's ability to hold water in the crop root zone. Leaching is a much bigger issue on sandy, coarse-textured soils that typically hold 1 inch of water per foot of soil compared to medium- and fine-textured soils that hold 2.5 to 3 inches of water per foot of soil. To determine if nitrate could leach out of the root zone, compare the rainfall totals in your area to the number of inches of water that your soil can hold in the crop root zone.

Losses of N through denitrification can occur on medium- and fine-textured soils when the following conditions are present: 1) N is in the nitrate form. 2) The soil is saturated with low oxygen content. A glistening soil surface can indicate soil saturation. The longer the soil is saturated the more N may be lost. 3) Denitrification proceeds faster on warmer soils, especially when soil temperatures are greater than 75°F. The following is an example of how length of time the soil is saturated and soil temperature impact N loss. When soil temperature is 50°F, 3% of the nitrate may be lost when the soil is saturated for 4 days compared to 6% lost when saturated to 10 days. By comparison, when the soil temperature is 75°F, 20% of the nitrate is lost after 4 days of saturation and 43% is lost after 20 days of saturation.

Keep in mind that soil saturation causes physiological damage to a corn crop. Bob Nielsen from Purdue explains that young corn can survive 4 days of ponding if temperatures are below the mid-60's °F, but if temperatures are over the mid-70's °F, then corn survival will be less than 4 days. Thus, depending on the temperature it may not matter how much N has been lost, the corn crop may never fully recover even if supplemental N is applied.

By assessing soil texture and drainage, form of N applied, time between N application and heavy rainfall(s), you can make an educated guess about if and how much N may have been lost. For a more detailed explanation of this please read: <http://bit.ly/2teVpRt>

If all or most of your N for corn is coming from manure and/or a forage legume, then the PSNT can still be used to estimate N credits. Note, when average May-June soil temperatures are more than 1°F below the long-term average, the N credit is often underestimated and book value estimates of credits are more reliable. The PSNT is not suggested for use on sandy soils. For more details on how to use the PSNT see UWEX Publication A2809 *Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin* (<http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>).

Where the entire crop N requirement has not yet been applied, sidedress or other postemergence applications should contain the balance of the crop N requirement. Additional N to replace 25 to 50% of the fertilizer N that was lost could be applied.

If all of the N was applied prior to the heavy rainfall, try to determine how much N loss may have occurred. The next step is to decide whether or not you need or want to apply supplemental N fertilizer to your corn crop. When making this decision, compare the amount of N loss (in lb N/a) that you think may have occurred to UW's price adjusted corn N rate guidelines at several different N to corn price ratios. (See UWEX publication A2809 for details).

For each N:corn price ratio, UW guidelines have a target N rate, the maximum return to N rate (MRTN) and a range of N rates that produced profitability within \$1/a of the MRTN. The profitable range of N rates will typically produce a yield that is more than 95% of maximum yield. Yield at the MRTN rate is 98 to 99% of maximum yield. Remember maximum yield is not the most profitable yield. Based the estimated amount of N loss, as well as your cost of production, you may not want to replace all of the lost N.

Options for applying supplemental N when it is needed include traditional sidedressing, late/pre-tassel applications, or fertigation. UAN solutions can be applied as a surface band or as a broadcast spray over the growing crop. Dry N fertilizers (urea, ammonium sulfate, or ammonium nitrate) can also be broadcast applied to the crop. Leaf burning from solution or dry broadcast applications should be expected. Applying the dry materials when foliage is dry will help minimize burning. Broadcast N rates should be limited to 90 lb N/a for corn with 4 to 5 leaves and to 60 lb N/a for corn at the 8-leaf stage. Under N deficient conditions, corn will respond to supplemental N applications through the tassel stage of development if the N can be applied. Recent research conducted at Marshfield, WI showed that 40 lb N/a as UAN applied 7 to 10 days prior to tassel was successful at rescuing yield, when preplant applied N was lost because of wet soil conditions.

### **Shawn says about soybeans!!**

If you follow me on Twitter [@badgerbean](#) you have already learned that one of my variety trial sites was impacted by off-site movement (likely volatilization) of a dicamba product. Below are a few resources to help mitigate and understand reasons for off-site movement.

- [Managing 2,4-D and Dicamba in Enlist™ and Xtend® Soybean](#)
- [Top Four Considerations for Reducing Spray Drift](#)
- [Minimizing the Risk of Drift: Synthetic Auxin Herbicides on Soybean and the Factors that Lead to Off-target Movement](#)
- [Herbicide injury during and after emergence in soybean](#)

Coolbeans!

Shawn

Shawn P. Conley  
UW Soybean and Wheat Extension Specialist

**MOSES**  
**IN HER BOOTS**  
**WORKSHOP**

**Grass-Fed Beef & Dairy**  
**in a Diversified System**

**JULY**  
**12**



**WEDNESDAY, JULY 12, 2017**  
**10 A.M. TO 3 P.M.**

Three generations of women run the 290-acre Brattset Family Farm which has organically managed crops, pasture, restored prairies, woodland, and wetland, plus 100% grass-fed beef cattle, pastured hogs and chickens, and dairy cows. The farm is preserved for farm use and wildlife habitat in perpetuity through a conservation easement. This is Wisconsin's first farm to be Certified Grassfed by Animal Welfare Approved.

**LEARN ABOUT:**

- Rotational grazing
- Conservation easements
- CRP-funded prairie
- Silviculture for fruit and nuts
- Honeybee hives
- Warm-season pasture experiments

**REGISTRATION FEE**

\$50 (includes lunch)

**LOCATION**

Brattset Family Farm  
N2437 Brattset Lane  
Jefferson, Wisconsin

**BONUS**

Wisconsin Farmers Union Youth Day Camp—  
bring your kids ages 6 and up for fun, farm-focused activities!

*A MOSES Rural Women's Project "In Her Boots" workshop for women who farm or want to begin farming*

**Register online at [mosesorganic.org/july-12](http://mosesorganic.org/july-12) or call 715-778-5775.**

Summertime safety – at fairs, festivals, and farm tourism venues

Millions of people visit county and state fairs, farm festivals, and “agritourism” destinations every summer. Visiting a petting zoo, spending a day at the fair to check out the grand champion steer, or a taking a late summer walk through a corn maze or pumpkin patch provides opportunities for people to connect with people and places where their food is produced.

“Agritourism attractions are increasing in popularity,” said John Shutske, University of Wisconsin-Extension bio systems specialist at UW-Madison. “Almost 70 million people visit farms each year and at least 40 percent of these visitors are children. Along with the fun aspects of these venues, there are also unique and often unseen hazards. During a 16-year period, 200 multi-person infectious disease outbreaks involving animals in public settings were reported to the Center for Disease Control (CDC), and an estimated 3,700 children are injured while visiting farms every year.”

The increase in attendance at these venues has also brought an increase of interest in how to keep agritourism visitors safe and prevent injuries and illnesses that can occur at farms and festivals that feature potentially dangerous activities. Agritourism businesses, which are often family farming operations, are extremely interested in protecting their visitors; and insurance companies and others need to pay close attention.

Teams of safety and health experts working closely with advisors from the agriculture industry have produced resources for agritourism owners, including the Agritourism Safety website developed by a team facilitated by the National Children’s Center for Rural and Agricultural Health and Safety (<http://safeagritourism.org/>).

Another resource, developed by the CDC with groups like the National Association of State Public Health Veterinarians, is aimed at preventing illness among fair, petting zoo, and livestock/dairy show visitors where visitor contact with animals is expected. This resource (<https://www.cdc.gov/features/animalexhibits/index.html>) provides detailed recommendations that address the prevalence of infectious bacteria, viruses, and other disease-causing agents.

Some key recommendations from these sources for visitors and those who operate these venues and facilities include:

#### **For Visitors:**

- All children need close supervision – remember that young children are very curious and active. Pre-teen kids often don’t have a strong appreciation for safety and might take chances and risks that could have terrible consequences.
- Read and FOLLOW all posted warning signs and written or verbal instructions.
- Adults and youth should stay away from large animals such as horses, cattle or pigs: you can be bitten, kicked, stepped on, or rammed. If a 1,500 pound animal decides you’re in its way, resulting injuries can be catastrophic.
- Stay behind all barriers and NEVER approach moving equipment – belts, chains, gears, and other rotating parts can lead to severe injury including amputations or even death.
- Never ride on or allow a child to ride on a tractor or other machine unless there is a specific, designated seat made for such purposes (most extra seats on newer farm tractors are designed to train new operators, and they are NOT designed for children)
- ALWAYS wash your hands thoroughly during and after a farm visit – Use soap, warm water, and paper towels. Never eat unless your hands are thoroughly washed. Hand sanitizers are not discouraged, but, they are NOT a replacement for good handwashing.

#### **For Owners, Managers, or Supervisors:**

- Take the time to educate yourself and all workers (including volunteers). To make a difference, you must take action; awareness alone is not enough. Many great resources are now available including: <http://safeagritourism.org/>

- Realize all farms, fairs, shows, and expos are different – identify the types of potential hazards and activities that your visitors will participate in – conduct “safety walkthroughs” and use the checklists to identify all hazards.
- Once you’ve identified hazards, develop an action plan; actions can include making specific changes (like re-routing a hayride so that you are not crossing a public highway or hiring extra employees to make sure nobody gets lost in a corn maze).
- Always err on the side of “over communicating” with your visitors. People who did not grow up around farm machines, animals, and other hazards may not appreciate the risks they are exposed to. Ensure that ALL activities are carefully supervised by staff or trained volunteers.
- The websites cited earlier have excellent information will help agritourism businesses talk with their insurer, as well as comply with local and state regulations, safety codes and standards including food safety.

### WI Crop Manager Reports

Here is the link to the Crop Manager reports for this week.

<http://ipcm.wisc.edu/wcm/>

The Ag Reporter “Snapshot” is presented to you each week by George Koepp, Columbia County UW-Extension Agriculture Agent. If you have any questions about these articles or need other ag-related information, please contact George at 608-742-9682 or by email [george.koepp@ces.uwex.edu](mailto:george.koepp@ces.uwex.edu).

### Weekly Emails Online!

<http://columbia.uwex.edu/ag-calendar-and-deadlines/>