

3 Things to Know About Nitrogen Hibernation

Farmers who apply nitrogen fertilizer in the fall understand that nitrification—the process that contributes to nitrogen loss—is chemically halted when the weather gets cold and then begins again as temperatures rise. However, gaining a deeper knowledge of what happens to fall-applied nitrogen over the winter and into spring can help them be better prepared to make the best nitrogen management recommendations year-round.

Here are a few things to know about fall-applied nitrogen as it hibernates over the winter:

50 F is the temperature benchmark

- The nitrification process is set in motion by a bacteria called *Nitrosomonas* that causes the conversion of nitrogen to a nitrate form that can be easily lost. *Nitrosomonas* bacteria is very active when it is warm, but decreases activity significantly at 50 F and nearly halts under 40 F.
- For fall nitrogen application, temperatures can be anywhere above, at or below this *Nitrosomonas* activity threshold, but ideally application should be made at 50 F or colder to minimize the amount of potential nitrogen lost.

Beware of the transitional weather danger zone

- Fall-applied nitrogen must endure two transitional weather periods—spring and fall—when nitrogen is particularly vulnerable to loss.
- Spring can be unstable and unpredictable, often with large shifts in temperatures and rain amounts.
- Fall can be equally unpredictable. Unexpected heavy rain, extended periods of warm weather and delayed harvest can impact when (and if) fall nitrogen can be applied, and can especially affect how vulnerable it is to loss before crops are ready to use it.

Moisture + warmth = more loss potential

- Warm weather makes *Nitrosomonas* more active in converting nitrogen to a form vulnerable to loss, but moisture from rain or snowmelt occurring at the same time leads to an even higher potential for nitrogen loss due to leaching.

Fall-applied nitrogen can prepare fields for the coming year and help alleviate some of the workload in spring. However, nitrogen is vulnerable to loss from the moment it is applied. To get the benefits of fall-applied nitrogen while ensuring it's there for crops come spring, it's best to help protect it with a proven nitrogen stabilizer such as N-Serve® nitrogen stabilizer.

N-Serve nitrogen stabilizer helps protect nitrogen from leaching and denitrification, guarding it during the warm and wet transitional weather periods. It also extends nitrogen's availability in the soil, so it's there in the spring when crops need it during critical growth periods.

See how much nitrogen stabilizers can add to your customer's bottom line with this profit calculator.



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