

## IMPORTANCE OF STABILIZING NITROGEN TO PREVENT DENITRIFICATION & LEACHING

Nitrogen (N) is an essential nutrient for plant growth, development and reproduction. Despite nitrogen being one of the most abundant elements on earth, nitrogen deficiency is probably the most common nutritional problem affecting plants worldwide. Nitrogen is so vital because it is a major component of chlorophyll, amino acids, and nucleic acids such as DNA. Nitrogen deficiencies can occur due to nitrogen being susceptible to loss after application to the field. The use of nitrogen stabilizers to reduce nitrogen loss is important. Consider the three main factors of application timing, N rates and protection needs when determining which nitrogen stabilization solution is right for your individual situations.

### How is Nitrogen Lost?

Substantial amounts of nitrogen fertilizer can be lost from farm fields under certain conditions.

Loss Mechanism	Reaction	Where / When it Occurs	How Much N is Lost
Leaching	Nitrate (NO <sub>3</sub> ) nitrogen, which is highly mobile in soil, moves below root zone	Heavy rainfall in well-drained soils	Nitrate can move down 8 inches per inch of rainfall in well-drained soils.
Denitrification	Anaerobic soil microorganisms convert nitrate into plant unavailable gases	Saturated soils	10% of nitrate per every 3 days of saturated soils, and 10% more is lost each additional day soils stay saturated.



### Why is Nitrogen so vital to plants?

- Assists with photosynthesis.
- Component of amino acids that are the building blocks of protein – without protein plants wither and die.
- Significant component of DNA, which allows plants to grow and reproduce.

**N-Serve<sup>®</sup>**

Optinyte™ technology

**NITROGEN STABILIZER**

## How do Nitrogen Stabilizers Work?

Reaction	Where it Occurs	What Happens
Nitrification	Throughout soil	Conversion of ammonium ( $\text{NH}_4$ ) by soil bacteria to nitrate ( $\text{NO}_3$ ), which is vulnerable to leaching and denitrification.

The active ingredient in N-Serve® works to inhibit the nitrosomonas bacteria in the soil. The nitrosomonas bacteria feed on ammonium nitrogen and ultimately convert it into nitrate nitrogen, which is susceptible to leaching and denitrification. By working on the nitrosomonas bacteria and slowing the conversion of ammonium to nitrate, N-Serve keeps nitrogen in the root zone longer into the growing season for when the corn plant needs it most.



### Considerations for selection the best Nitrogen Stabilization program

The best nitrogen stabilizer program needs to consider your location and production practices, as well as the form of your nitrogen fertilizer and rate applied. If you're applying nitrogen in areas where it will be prone to loss through any of the three reactions, consider always including a nitrogen stabilizer.

Work with your local Equity sales person to identify products that meet these criteria and deliver the greatest value per acre.

## When to use a Nitrogen Stabilizer

When applying anhydrous, our goal is to make sure that nitrogen is still available to the corn plant late into the growing season. Consider the following questions:

### When should I use a nitrogen stabilizer?

- You should always consider using a nitrogen stabilizer. It's nearly impossible to predict what environmental conditions we will experience during a growing season. If there is a warm season with plenty of moisture, nitrogen loss is almost certain to occur.

### How long does N-Serve protect my nitrogen application?

- N-Serve, on average, protects nitrogen applications for up to 90 days (we do not count days below 40-degree soil temperature).

### I do multiple applications of nitrogen - which application should I stabilize?

- A good rule of thumb is to stabilize your largest application of Nitrogen where the most amount of N is being applied. Nitrogen stabilizers are like insurance for your nitrogen investment. The bigger the investment, the more you get for your insurance.

### Is there value in stabilizing multiple applications of nitrogen?

- Absolutely. The most important application of nitrogen to stabilize is your largest application, but there is still added value to protecting additional applications. N-Serve protects nitrogen 6-8 weeks when applied at planting and 3-4 weeks when applied at v4-v5 side dress. Remember, corn still requires a large percentage of its total nitrogen needs late in the season post tasseling and during kernel fill.



Contact your local Equity sales person to learn more.