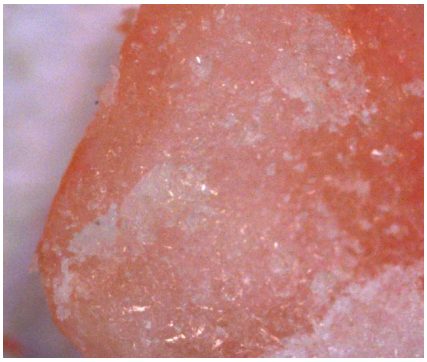
InnoSolve™ 45N

InnoSolve 45N is a patent-pending encapsulated and infused 45-0-0 nitrogen product with a new combination of components and technologies that work with the soil chemistry and biology to maximize nitrogen and nutrient uptake (P, K, secondary, and micronutrients) into the plant.

Product Description

InnoSolve 45N a patent-pending encapsulated and infused 45-0-0 nitrogen product with a new combination of components and technologies that work with the soil chemistry and biology to maximize nitrogen and nutrient uptake (P, K, secondary, and micronutrients) into the plant. The technologies and components working in synergy create the most effective, broad spectrum fertilizer technology in the market. It's so different than anything else on the market, it even has its own new category: EIF—Encapsulated Infused Fertilizer.

InnoSolve 45N is a urea product that has been infused with specific nitrogen stability enhancers, followed by a proprietary process that encapsulates the infused urea with specific food sources for microorganisms and a polymer that acts as a nutrient-uptake enhancer and nitrogen stabilizer. Once the urea is cured during this encapsulation process, InnoSolve 45N is treated with a proprietary blend of polymers with varying molecular weights and solubilities that create a durable shell over the prill—enhancing product stability and integrity. This allows InnoSolve 45N to move from our facility to the field with no issues of product melting or prill destruction.



InnoSolve 45N is infused and encapsulated in a multi-stage process in high-energy mixers that maximize infusion and coverage during the curing and drying processes

How It Works

InnoSolve N45 stabilizes the nitrogen at each step in the process.

- Reduces volatilization on the soil surface.
- Prevents loss from immobilization.
- Controls nitrogen conversion by delaying nitrification.
- Reduces leaching by keeping nitrogen in the form of ammonium (NH_4^+) longer.
- Reduces denitrification by reducing nitrate (NO_3^-) levels.
- Increases nutrient uptake in the form of ammonium N, P, K, secondary, and micronutrients.
- Builds beneficial microorganism populations through short-term and long-term food sources.

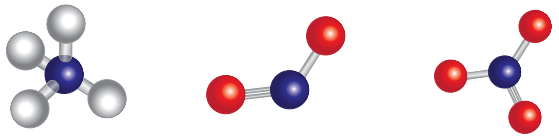
Closeup of Encapsulated Infused Fertilizer (EIF)

Nitrification Process

Nitrification

NH_4^+ → NO_2^- → NO_3^-

ammonium — nitrite — nitrate

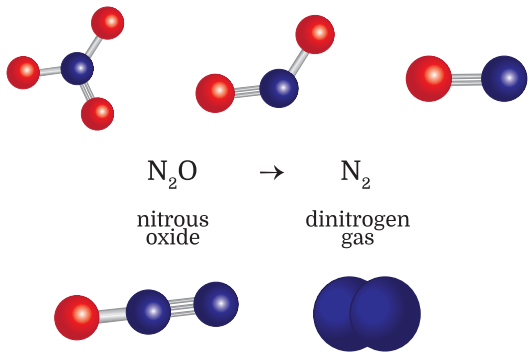


Denitrification Process

Denitrification

NO_3^- → NO_2^- → NO → N_2O → N_2

nitrate — nitrite — nitric oxide — nitrous oxide — dinitrogen gas



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InnoSolve™ 45N

What Makes Innosolve 45N Different

Competitive products in the industry that claim to stabilize nitrogen fall short for a variety of reasons. Most do not have any encapsulation technologies, which leaves their prills prone to failure due to lack of strength. This results in a product that doesn't perform as well in the field. Others have no provision for stabilizing the nitrogen beyond simple urease and nitrification inhibitors. In this scenario the nitrogen will convert from urea to ammonium. In this process, and in that microcosm of the soil, the ammonium levels build-up dramatically if there's a nitrification inhibitor present. This creates issues as the negatively-charged soil colloids and mineral complexes in that immediate area begin to fill up.

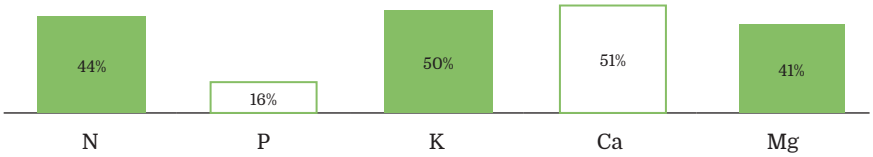
Once the negative sites are all filled up, two things happen: (1) Either the ammonium begins to move in the soil away from that area (and possibly away from the growing area of the plant's roots) and/or (2) ammonium begins to displace potassium (as they have a similar molecular radius), leaving potassium unattached, and prone to movement away from the roots and eventually at risk to be become immobile in a mineral complex; this reduces the available potassium to the plant. InnoSolve 45N is the only enhanced nitrogen product on the market that solves this issue by encapsulating the nitrogen with an anionic (negatively-charged) polymer. The anionic sites along the polymer attract ammonium (and other positively charged nutrients that enter the soil solution temporarily), and serve to stabilize it, thus slowing its movement, and shielding it from the nitrification organisms that want to turn it into nitrate through the nitrification process.

In addition to all of this, while specific nitrogen-stabilizing components in InnoSolve 45N work to hold down the effectiveness of specific species of microorganisms and their respective enzymes, the short-term and long-term food sources work to build up the beneficial population of microorganisms that help to further enhance the uptake of nitrogen and other plant nutrients.

InnoSolve 45N, with its all–new combination of specific components and technologies, allows for an increase in uptake of nitrogen at every stage of the process—allowing for a holistic management of the nitrogen from application in the field to uptake in the plant.

Product Benefits

- Increases nitrogen uptake.
- Increases nutrient uptake.
- Increases microbial health of the soil.

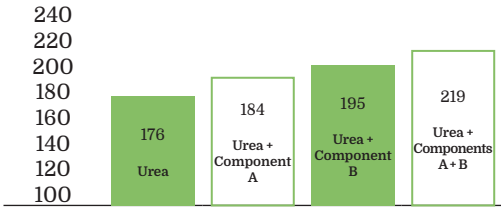


Dr. Fred Below, University of Illinois

Root Hair VIsual (right) Translated To Increased Nutrient Uptake–Wheat

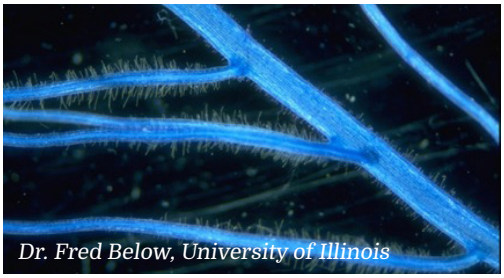
Research and Data

Corn Yield Advantage

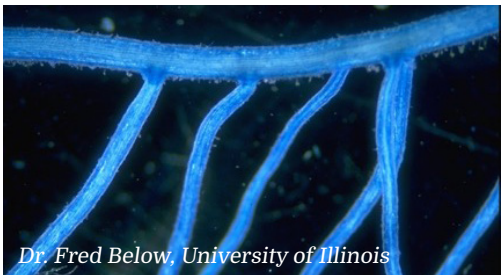


N @ 241 lb/A

Root Hair Increased with Innosolve 45N Technology



Plants treated with standard nutritional program and InnoSolve 45N.



Plants treated with standard nutritional program and urea.

With an increase in overall nutrient uptake, as well as an increase in the health of the soil biology at the rhizosphere due to the short-term and long-term food sources, InnoSolve 45N improves soil and nutrient conditions for better overall root growth.

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