

SLOW-RELEASE NITROGEN

Sustainability could be reason for using slow-release N formulations and additives.

By Richard Keller, editor

When it comes to fertilizer discussions, nitrogen (N) fertilizer and its impact on yield and its impact on the environment go hand in hand. Nitrogen can be applied in a number of ways and with a number of different products, but recent discussions related to “sustainability” often turn toward N applied to the soil in slow-release formulations so that crops are “spoon fed” N during the growing season.

The agricultural sustainability conversations have looked at slow-release N products as fitting many sustainability goals. They are products that are seen as limiting the negatives of N moving off site while helping crops reach their yield potential.

Major companies’ introductions of completely new soil-applied slow-release N products has been limited in the last few years. The major products on the market have been available for a few years. These manufacturers and distributors are gaining market share in commodity crop production. Slow-release N products previously have been adopted extensively in some other business segments such as turf and ornamentals and selected vegetable production.

Included here are the company descriptions of four established soil-applied products that promote slow-release of N and one new product promoted as an N stabilizer. These are major brands sold nationally for commodity crop production. Evaluating these products is no easy task; therefore, the companies are being allowed to present their description and marketing position. But the real evaluation comes with on-farm use in various weather conditions in various soil types.

AGROTAIN

When fertilizing crops with urea or liquid nitrogen (UAN), nitrogen loss can start the moment it’s applied. And after the nitrogen moves into the soil with rainfall or irrigation, it can be lost over time through denitrification and leaching—totaling average losses as much as 30 percent. But not if fertilizer is stabilized with Agrotain technology.

Agrotain technology controls nitrogen loss by blocking the enzyme urease, which allows nitrogen to stay in the ammonium form longer. It helps crops to access the nitrogen it needs immediately, controlling losses for the first critical weeks after application.

Agrotain is blended with urea-based fertilizer products to create enhanced efficiency fertilizers, which control surface



PHOTO COURTESY OF JOHN DEERE

Dry nitrogen can be slow release formulations and product combinations for spreading across pre-planted fields.

loss by blocking the enzyme urease. This action is unique to Agrotain nitrogen stabilizers. Agrotain Plus contains a second, additional nitrogen stabilizer that can reduce denitrification and leaching losses, as well as control loss due to volatilization.

No other product works the way Agrotain does. Agrotain works for any crop where urea or 28 percent, 30 percent or 32 percent liquid nitrogen (UAN or urea/ammonium nitrate) fertilizers are used. The urease inhibitor will not work on other forms of nitrogen fertilizer.

For just pennies per pound of nitrogen, Agrotain keeps a fertilizer investment from disappearing into thin air; resulting in more productive plants that convert that nitrogen into higher yields.

Agrotain is the world’s leading urease inhibitor and has been available since 1997. It is the only urease inhibitor certified by the American Association of Plant Food Control Officials.

For more information, go to www.agrotain.com.

ESN SMART NITROGEN

ESN Smart Nitrogen is the only controlled-release nitrogen fertilizer widely available in agriculture, providing growers with a return on investment through increased nitrogen efficiency, says the manufacturer, Agrium.

ESN controlled-release technology reduces N loss due to leaching, volatilization and denitrification, providing significant benefits to the environment. What makes ESN different is its method of nitrogen delivery: a flexible, micro-thin polymer coating encapsulating each urea granule and gets N to crops

when they need it most.

ESN's controlled N release feeds the crop throughout the growing season. ESN can be used as a sole source of nitrogen or blended to meet a grower's yield and economic targets for specific crops and geographies. ESN Smart Nitrogen is available for use in a wide variety of field crops such as corn, canola, cotton, wheat and potatoes.

The latest research is available at www.SmartNitrogen.com.

NITAMIN NFUSION

Soil-applied Nitamin Nfusion liquid fertilizer blends from Georgia-Pacific Plant Nutrition offer quick, enhanced uptake followed by extended delivery throughout the season. Featuring 94 percent slowly available nitrogen, Nitamin Nfusion fertilizer is formulated for custom blending with quick-release N sources to provide a high-efficiency fertility source that matches the nutritional uptake needs of the crop. It can be applied in corn, cotton, soybeans, wheat and other grain crops.

Nitamin Nfusion fertilizer is a 22-0-0 liquid slow-release nitrogen product that provides a steady delivery of N through polymer release and soil enzyme action. It is blended with other liquid N fertilizers, which make up 70 percent to 90 percent of the N in the final blended product. The patented polymer technology in the fertilizer provides an effective slow-release nitrogen source for crops.

By essentially metering out the nitrogen in the soil over time, the nutrients stay in the root zone so nitrogen is available for the crop at key growth stages. The formulation of the polymers allows more overall nitrogen to bind with the soil and stay in the root zone so it is more readily available for crop uptake. This helps growers lower overall N application rates, cover more acres during critical application windows which may reduce labor and fuel costs. Growers may also be able to reduce in-season applications while increasing/enhancing yields and crop quality.

Nitamin brand fertilizers are manufactured by Georgia-Pacific and distributed by Wilbur-Ellis and other suppliers. Additional information is available at www.gp.com/plantnutrition/.

NUTRISPHERE-N

NutriSphere-N is an additive for granular or liquid nitrogen fertilizer that creates an active zone of protection around the nitrogen fertilizer to reduce volatilization and nitrification, thus leaving more nitrogen in the soil for plant uptake.

Research shows NutriSphere-N increases nitrogen availability and can increase yield potential as much as 10 percent to 15 percent, and is the only product on the



PHOTO COURTESY OF AGCO

UAN fertilizer can be combined with products for slow release during the growing season and then combined with herbicides for soil application.

market that protects nitrogen fertilizer from volatilization and denitrification from fertilization to harvest.

Developed and manufactured by SFP, NutriSphere-N, a biodegradable, water-soluble, non-toxic nitrogen fertilizer coating, leaves no environmental footprint. NutriSphere-N manages nitrogen fertilization in any soils and in a variety of crops, including wheat, corn, potatoes, cotton, grasses, sugar beets, rice and onions.

NutriSphere-N provides: greater nitrogen fertilizer efficiencies, optimized nitrogen availability to the crop, protection against volatilization and leaching.

For more information, visit www.nutrisphere-n.com.

INSTINCT

Instinct nitrogen stabilizer optimizes the yield potential of corn by ensuring N is available in the root zone during key stages of corn growth when used with liquid N, manure or dry fertilizer blends.

Instinct contains proven technology in an innovative, encapsulated formation from Dow AgroSciences. Application timing is preplant, at-plant row or band injection. It can be used with liquid manure in the fall or spring.

Instinct supports environmentally beneficial farming practices by reducing N leaching into groundwater and reducing denitrification, the escape of N into the atmosphere. As an encapsulated product, Instinct can remain on the soil surface for up to 10 days; it is designed to stay on the soil surface without volatilizing until the N can be incorporated into the ground either with a one-half-inch rain or mechanical incorporation.

More extensive information is available at www.dowagro.com/usag/prod/090.htm. **AG**