ESN Smart Nitrogen

ESN Smart Nitrogen forage grasses

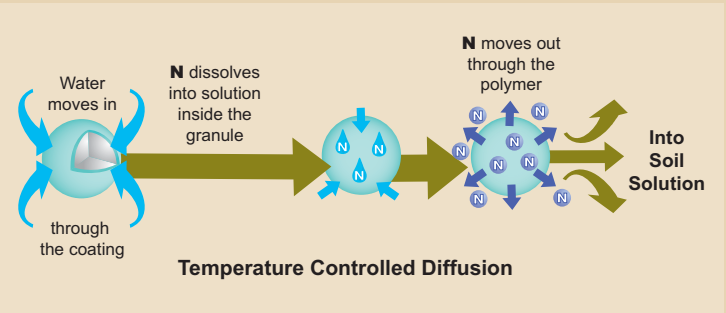
Maximize **Forage Productivity** with **ESN** Smart Nitrogen

FORAGE GRASSES HAVE A HIGH NITROGEN REQUIREMENT. Managing a forage grass stand for optimal production requires at least an annual application of nitrogen fertilizer. The goal of any fertilizer application should be to ensure that as much of the applied nutrient reaches the crop, and that as little as possible is lost to the environment. Because of this, the type of fertilizer applied, and the timing of application, needs to be carefully managed to minimize potential losses.

What is ESN Smart Nitrogen?

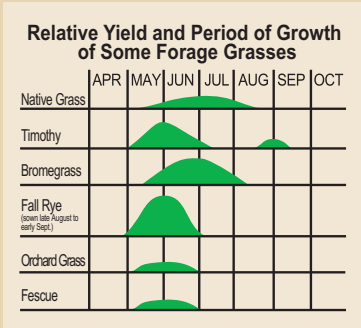
ESN is a polymer coated fertilizer, delivering nutrients to the crop with control and predictability. This is accomplished by the flexible, micro-thin polymer coating over the top of each individual nitrogen granule.

How It Works



This unique membrane allows water to diffuse into the granule, dissolving the N within. The N liquifies into asolution, yet remains encapsulated within the coating. The tightly controlled and consistent coating process produces a product that performs consistently. The N solution moves through the membrane in a predictable manner, matching the N demand curve of the crop.

Nutrient Release Matches Crop Need



The release rate is determined by soil temperature, which also determines the growth rate of plants. This makes **ESN** the perfect match for crop needs. It also ensures predictable nutrient release and longevity. Nitrogen uptake of forage crops follow predictable patterns. The N release from **ESN** is matched to these nitrogen profiles to deliver balanced crop nutrition even during peak periods of rapid uptake. In addition, **ESN** can be blended with other fertilizers to provide an optimum total nutrient delivery package. **ESN** can be applied in early fall (September) for available nitrogen prior to next spring green-up. Or, a blend of **ESN** with another nitrogen source can be spring applied. This combination provides both early, and later season nitrogen, eliminating the need for an in-season nitrogen application.

the **benefits**

High Yielding Crops

ESN contributes to high yielding crops under a variety of soil and weather conditions. When compared to regular conventional fertilizer practices, **ESN** offers a "protected" form of nitrogen, not offered by traditional "in crop" applied nitrogen sources.

Improved Crop Uniformity

ESN provides a consistent nitrogen supply throughout the field, resulting in improved crop uniformity. Because the nutrient is protected inside the membrane, **ESN** stays in the root zone, even in sandier fields.

Precision nitrogen release results in greater crop uniformity.

ESN
SmartNitrogen

ESN reduces the need for in-season nitrogen applications.

Agrium

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Reduced Applications

ESN can be applied as a fall or spring fertilizer which may provide all of the crop nitrogen requirements, without the need for in-season supplemental nitrogen applications. The sustained precise release of nutrients from **ESN** avoids the peaks and valleys associated with multiple, or single in-season fertilizer applications.

Less Potential for Environmental Impact

ESN is less susceptible to leaching, denitrification and volatilization (gassing off) as compared to other nitrogen fertilizer sources. (*Figure 1.*)

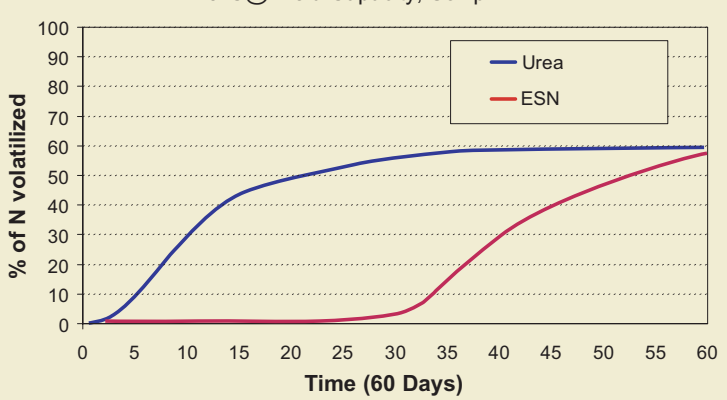

Figure 1. Measured ammonia losses from surface applied urea and ESN (Agrium, 2005)

Figure 1 shows losses of N as ammonia, when urea is surface applied under high loss potential conditions. Volatile losses from ESN are greatly reduced.

ESN
Polymer Coated Urea
44-0-0 • 260 SGN

Effective: March 1, 2004
Location: Carseland Production
Issue: 1.00 MN-256

CHEMICAL ANALYSIS	MIN	MAX	TYPICAL
TOTAL NITROGEN (wt. %N)	44.0		
• UREA FORM (wt % N)	44.0		
BIURET (wt. %)			1.3
CONDITIONER (wt. % as Methylene Di-Urea)			1.2
MOISTURE (wt. %H_2O)			0.08
pH of 10% wt./wt. AQUEOUS SOLUTION			7.0
COATING WEIGHT (wt. %)			< 3.0
PHYSICAL ANALYSIS			
ANGLE OF REPOSE (Degrees)			30
BULK DENSITY (kg per m^3/lbs per ft^3)			
• LOOSE			769/48
SIZE GUIDE NUMBER (SGN)			260
AQUEOUS RELEASE ANALYSIS			
ESTIMATED DAYS TO 80% RELEASE (23°C)	30	60	

SCREEN ANALYSIS (% BY WEIGHT)

Tyler	Millimeters	Cumulative %
+6	3.35	0.8
+7	2.80	18.1
+8	2.36	87.9
+9	2.00	99.7
+10	1.70	100.0

Please obtain a Material Safety Data Sheet for more information.