Technical Bulletin

ESN® Blends for Corn Production in Michigan

STUDY DESCRIPTION

Fertilization programs for corn in northern geographies are typically a one- to two-pass program, usually with some combination of nitrogen applied up to planting followed by a post-emergence, side-dress application. Polymer-coated, controlled-release fertilizers can be used as part of this two-pass program, or as a single application to apply all of the nitrogen needed for the entire growing season in one application. The following study was designed to evaluate ESN (a form of polymer-coated urea) as a controlled-release fertilizer source for corn in the state of Michigan. ESN was applied either at pre-plant, planting, or side-dress.

RESULTS SUMMARY

- Pre-plant incorporated applications of at least 75-100% of the total N as ESN produced greater yield with 75% ESN producing a 9 bushel increase over the next greatest pre-plant treatment
- Side-dress treatments that included ESN resulted in yields similar to or greater than the best yields produced by pre-plant treatments.
- Yields produced by treatments at 150 lbs N/ac containing ESN were all greater than the yield produced by urea at the corresponding rate and application time. Applications of at least 50% ESN outyielded 100% urea by 15 bu/A.
- ESN in the blend did appear to affect SPAD readings, leaf firing, and stalk nitrate but only at lower, suboptimal N rates.

TRIAL DETAIL

- *Conducted in Lansing, MI by Dr. Kurt Steinke and Andrew Chomas*
- *Soil type = Sandy Loam, pH = 7.6, OM = 2.4%*
- *Previous crop = Corn*
- *Three replications/treatment; Plot size = 200 ft2 (4 rows)*
- *Irrigation method = Rainfed*
- *Corn planted May 24; Hybrid = DeKalb 46-61*
- *Harvested October 27*

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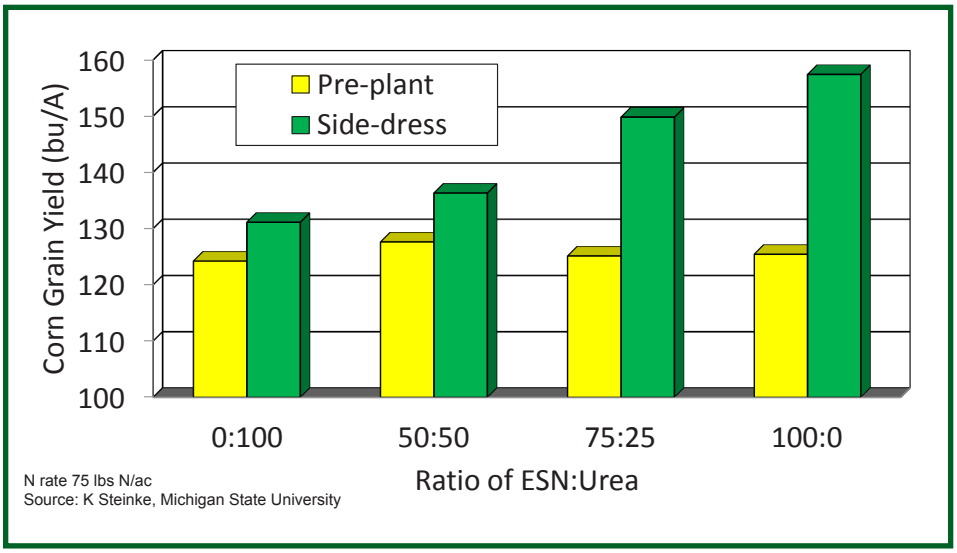
FERTILIZER TREATMENTS

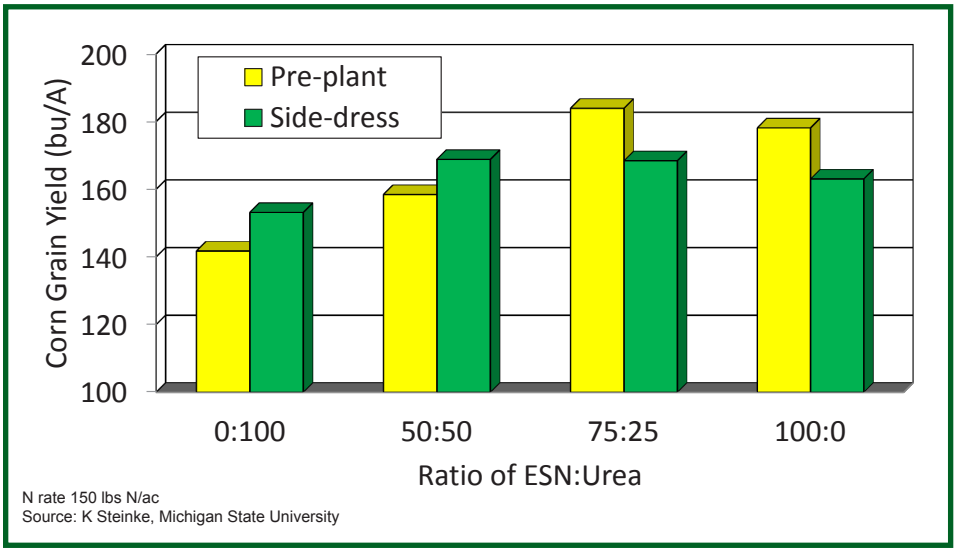
Fertilizer Treatment[1]	Comments[2]
Control	No fertilizer N applied
0:100	100% Urea PP, PI, and SD
25:75	25% ESN, 75% urea PP, PI, and SD
50:50	50% ESN, 50% urea PP, PI, and SD
75:25	75% ESN, 25% urea PP, PI, and SD
100:0	100% ESN PP, PI, and SD

[1] *All treatments were applied at 75 and 150 lbs N/A. Check yield was 84 bu/A.* [2]*All applications were applied PP=pre-plant, PI=planting, SD=side-dress. The PP and PI applications were broadcast incorporated, while the SD application was surface applied. ESN = Environmentally Smart Nitrogen (44-0-0).*

SUPPORTING DATA



N rate 75 lbs N/ac
Source: K Steinke, Michigan State University



N rate 150 lbs N/ac
Source: K Steinke, Michigan State University

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ESN®

ESN Technology Goes Beyond Traditional Nitrogen

- *Enhances N use efficiency*
- *Improves crop yield and quality*
- *Provides convenience through ease of use*
- *Environmentally responsible*

How ESN Technology Works

ESN technology uses a flexible polymer coating to encapsulate a nitrogen (N) granule. The coating protects the N from loss mechanisms, releasing it when the crop needs it most.

Nitrogen release thru the polymer coating is controlled by two of the factors in crop growth: soil moisture and temperature. Moisture creates an N solution inside the coating, and the solution moves through the coating at a rate controlled by soil temperature. Nitrogen supply is, therefore, more closely matched with crop demand.

ESN is backed by over 600 crop years of testing by independent, third party researchers. The data is proof of performance for a unique product.

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