

FUSN™ Responses to Corn in Improving Yield and Nitrogen Use Efficiency

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Introduction:

When farmers first began applying nitrogen (N) to their fields around 100 years ago, it enabled unprecedented population growth. That growth came with a price as growers found that most readily available N sources had drawbacks. While N is an essential nutrient for crop production, different forms of nitrogen produce different outcomes. Traditional N sources raise concerns about air quality, environmental degradation, nutritive inefficiency, and the explosion potential.

Challenge:

Today's growers need an alternative N source that is low-detonable, plant-available, and reduces N loss into the air or below the root level. FUSN™ was created by agronomists to chemically combine ammonium sulfate (AMS) with ammonium nitrate (AN). Its low detonability makes it an appealing option for growers, but research was needed to determine its effectiveness in ammonia volatilization, plant nutrition, and crop yield.

Research:

Agronomists planted 42,000 corn seeds/acre in several fields in southwest Idaho to test seven different N sources, including the grower standard practice (urea) and FUSN. Fields were either furrow irrigated or pivot irrigated. Results were studied for four years to ensure data collected was consistent across several years and in different growing conditions.

Methodology:

The field was subdivided into 21 zones with two replications of each different treatment plan every year; treatments included a control, urea (46-0-0), SSP (11-52-0 + Avail®), SSN (46-0-0 + NutriSphere™), FUSN (26-0-0-14), a blend (20-0-0-14), JRS (15-01), and Eclipse-N®.

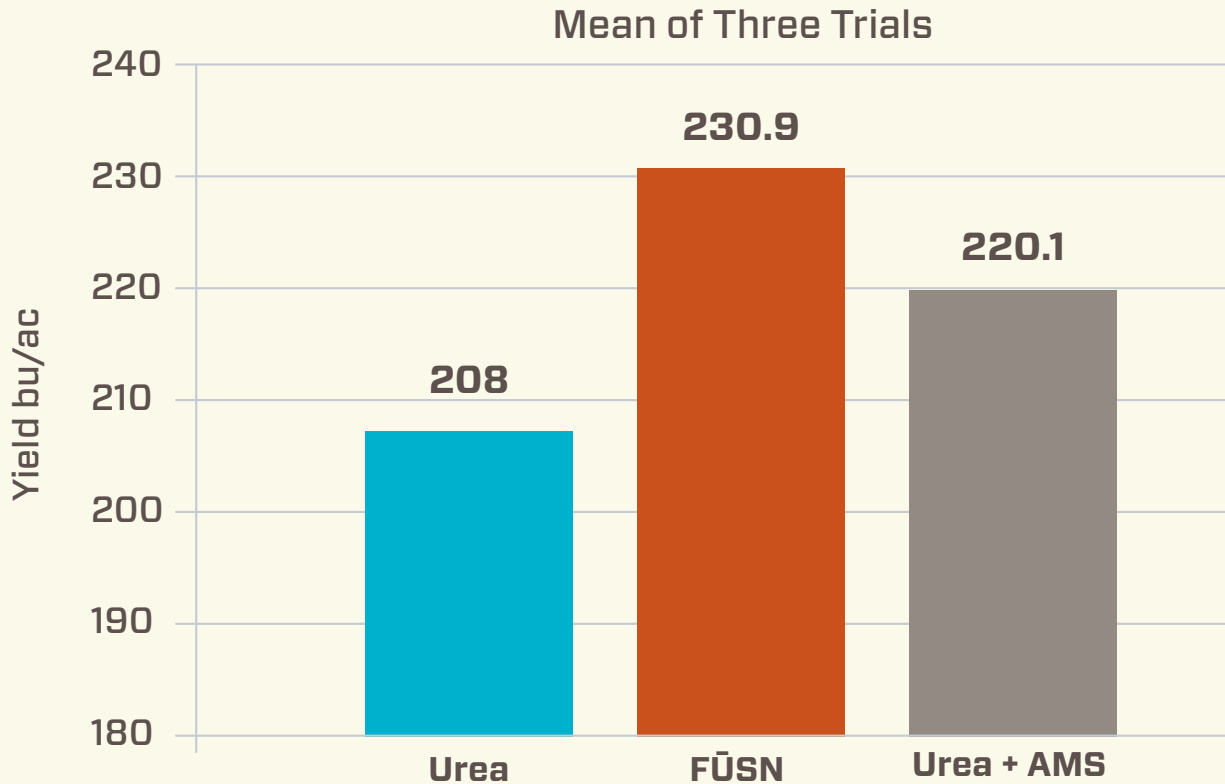
Standard full-scale farming equipment was used to harvest the corn and yield was measured by bushels/acre from 2012 to 2015.

Results:

The most significant results were found between urea and FUSN. Zones treated with FUSN experienced an average of 12% improvement in yield over urea. Actual average yield increased from 227 to 254 bushels/acre. In-season satellite imagery taken during 2015 showed increased depth of color in FUSN sectors.

Practical Applications:

FUSN is a more effective source of N than urea, and is not subject to the same drawbacks of other N sources. Irrigated corn fields can receive significant benefits in crop yield from switching from urea to FUSN as their N source.



Nitrogen treatments were broadcast applied at 200 lbs N/ac.
Plots were approximately 0.5 ac/plot. Replication=6

Corn yields from FUSN source of dry fertilizer compared to urea and a urea + ammonium sulfate (AMS) blend under pivot irrigation at Arena Valley near Wilder, Idaho—2015.