

Three Nitrogen Programs Effect on Corn Yield

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Objective

To determine what affect the nitrogen program has on corn yield.

Background

Crop Year:	2010	Soil Test	pH = 6, OM = 3.5%, P = 60 ppm, K = 140 ppm CEC = 9.9
Cooperator:	Morrow SWCD/County Home Farm		
County/Town:	Morrow/Mt. Gilead	Planting Date:	May 10,
Soil Type:	Centerburg Silt Loam	Nitrogen:	150 lb./ac
Drainage:	Random Tiled	Seeding Rate:	27,000
Previous Crop:	Soybeans	Row Width:	30 inches
Hybrid:	Moews 3618VT3	Herbicide:	Lexar
Tillage:	One pass, Cultivator followed by disks and roller	Harvest Date:	November 2

Methods

The study consisted of four replications in a randomized complete block experimental design. Three nitrogen sources; urea (46-0-0), urea-ammonium nitrate (28-0-0), and Environmentally Smart Nitrogen (ESN) (43.5-0-0) were evaluated at the same application rate (150 lb N/A). The treatments were 60 feet wide broadcast for the ESN and urea treatments. The 28% treatments were 90 feet wide to accommodate the broadcast toolbar. Urea, ESN and half the 28% were applied on May 7 along with 300 lb of 0-14-42 and incorporated with a one pass finishing tool (cultivator followed by disks and roller). The other half of the 28% was injected by toolbar into the middle of the row as sidedress on June 18 at Growth Stage V6.

Twelve rows from the center of each treatment were harvested and weighed with a weigh wagon. Row length averaged 691 feet. Yields were adjusted to 15% grain moisture.

Results

Corn Yield (bu/ac) Response to Nitrogen Source			
Nitrogen	N Cost/Ac ^a	Application Cost/A ^b	Yield (bu/A)
28%	\$90	\$12.90	182.08
ESN	\$81	\$5.15	169.92
Urea	\$66	\$5.15	169.38
LSD (0.05)			19.41

a Nitrogen prices from quotes in spring 2010

b Application cost from Ohio Farm Custom Rates 2010

Summary

No significant difference in yields existed between the three nitrogen sources used. Yields were typical for most years at this location. Thus for this one year study, the three N programs had similar yields but would have had different input costs depending on fertilizer price and application method.

Acknowledgement

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