



Slow release urea versus anhydrous ammonia on corn yield

George Silva, ANR Agent, Eaton County

County: Eaton

Cooperator: Gary Parr

Nearest town: Charlotte

Tillage: No-till

Previous crop: Soybean

Planting date: April 29, 2004

Starter: 16 lb N/A

PSNT: 25 lb N/A credit (June 5, 2004)

Nitrogen application dates: ESN - April 28, 2004; Anhydrous Ammonia - June 19, 2004

Variety: Pioneer 36N70

Yield goal: 150 bu/A

Row width: 30 inches

Harvest population: 33,000

Harvest date: December 4, 2004

Experimental design: Alternate Strips 4 replications

Results:

Environmentally smart nitrogen (ESN) and anhydrous ammonia on corn yield

Gary Parr Farm, Charlotte 2004

Nitrogen Treatment*	Moisture (%)	Yield Bu/A**
ESN (135 lb N)	20.0	127 a
Anhydrous Ammonia (135 lb N)	20.0	186 b

*Cost estimates for 135-lb/A N as ESN was \$59.60 and as Anhydrous Ammonia was \$39.80, both custom applied.

**Treatment means significantly different at 1percent

Slow release form of urea fertilizer use on corn has several advantages over conventional sources of nitrogen. We can achieve increased nitrogen use efficiency, eliminate multiple nitrogen applications and potentially reduce the risk of nitrogen leaching to groundwater. In 2004, however, corn yield produced by ESN was significantly lower than the conventional anhydrous source. Furthermore, pound for pound as a source of nitrogen, ESN was much more expensive than anhydrous ammonia.

In 2004 all the ESN was applied on April 28 and we received an unprecedented 12.2 inches of rainfall in the month of May. It is conceivable that even the ESN could not retain its nitrogen under those conditions. The anhydrous ammonia was side-dressed on June 19 (well after the heaviest of spring rainfall), and apparently was able to meet most of the corn nitrogen needs during the season.

The slow release fertilizer technology is evolving and the costs are expected to come down in the future. Even then ESN may not be a fit for the whole farm. However if the slow release technology improves a great deal and ESN becomes price competitive, it will certainly deserve some practical considerations in the future, particularly on sandy soils and fields adjacent to surface water.

Sponsor(s): Michigan Groundwater Stewardship Program, Capital Area Innovative Farmers and Agrium Inc. Company.

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