

Comparison of Liquid Swine Finishing Manure to 28% UAN as a Corn Sidedress Nitrogen Source

Garth R. Ruff, Ohio State University Extension Educator, Henry County
Glen Arnold, Ohio State University Extension Field Specialist, Manure Nutrient Management

Objective

To compare corn yield response of incorporated swine finishing manure and 28% UAN as a corn sidedress nitrogen sources.

Background

Table 1. Plot background summary.

	Plot A	Plot B
Crop Year:	2018	2018
Location:	Holgate, OH	Hamler, OH
County/Town:	Henry/Pleasant	Henry/Marion
Soil Type:	Hoytville Silty Clay Loam	Hoytville Clay Loam
Drainage:	Systematic Tile	Systematic Tile
Previous Crop:	Soybeans	Soybeans
Tillage:	Fall Conventional, Spring No-Till	Fall Disc
Planting Date:	5-12-2018	5-28-2018
Seeding Rate:	33,000 seeds/acre	33,500 seeds/acre
Harvest Date:	12-8-2018	12-12-2018

Methods

This experiment utilized a randomized block design with three replications. Plot widths were 30 feet. Plot lengths varied. Plot A was planted at a 45-degree angle to accommodate dragline. Plot B was planted in straight rows and application was made using a hose "humper." Swine manure from a finishing building was incorporated using a Bazooka Farmstar (Plot A) or Zoskes (Plot B) manure application toolbar attached to a drag hose. Manure was applied when corn was at the V2-V3 growth stage. Manure nutrient analysis is summarized in Table 2.

Table 2. Manure analysis summary

	1 st Year Avail. N (lbs/1,000 gal)	Phosphorus, P ₂ O ₅ (lbs/ 1000 gal)	Potassium, K ₂ O (lbs/1000 gal)
Plot A	34	11	36
Plot B	26	10	27

Calibrated yield monitor data was utilized for collection of harvest data. Treatments consisted of the same rate of total N applied using swine finishing manure or commercial liquid 28% UAN



(Table 3). Nitrogen rate was determined by each cooperating farmer. The combine was calibrated in-season. Stand counts were taken at V5.

Results

Table 3. Trial results.

	Treatment (N Source)	Sidedress Rate (lbs N/Acre)	Yield (Bu/Acre)	N Application Cost/Acre (\$)
Plot A	Swine Manure 6,500 gal/ac	220	198 _b	46
	28% UAN	220	207 _a	98
LSD: 5.85 CV: 1.21%				
Plot B	Swine Manure 6,000 gal/acre	156	201 _a	42
	28% UAN	156	198 _a	72
Non-Significant CV: 0.98%				

Summary

Corn yields were adjusted to 15% moisture. Corn yield in Plot A showed a significant response to N Source ($P < 0.1$), whereas there the yield difference in Plot B was non-significant. This data supports previous research demonstrating that incorporated swine manure is comparable to commercial corn sidedress N sources.

Using data from the 2018 Ohio Custom Farm Rates survey, commercial manure applicators charge roughly 0.7 cents per gallon to apply manure. In comparison, 28% UAN costs \$.40 per lb. of N. plus the application cost of \$9.50 per acre.

Acknowledgements

The author expresses appreciation to Tim Brinkman, Jaymes Maciejewski, and Ron Schweibert for their investment of time to complete these trials, and their continued support of OSU Extension. Also, thanks to Frey Brothers for providing pumping equipment.

For more information, contact:

Garth Ruff

OSU Extension – Henry County

104 E. Washington St., Suite 302

Napoleon, Ohio 43545

ruff.72@osu.edu

