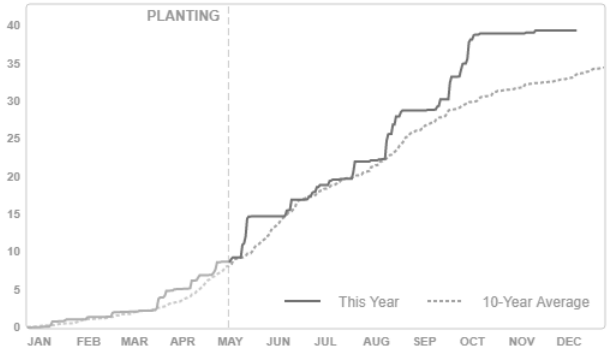
Anhydrous Ammonia Nitrogen Rates Following Manure Application on Corn

Study ID: 572177201701
County: Washington
Soil Type: Marshall silty clay loam 0-6% slopes
Planting Date: 5/8/17
Harvest Date: 11/25/17
Population: 30,316
Row Spacing (in): 30
Hybrid: P1309WYHR
Reps: 5
Previous Crop: Soybean
Tillage: No-Till
Herbicides: 0.5 pt/ac 2,4-D, 1 gal/100 COC, 4 oz/ac Corvus®, 1.5 pt/ac Atrazine, 32 oz/ac glyphosate, and 17 lb/100 AMS
Seed Treatment: PPST 250
Foliar Insecticides: None
Foliar Fungicides: None
Fertilizer: 20 ton/ac of cattle manure
Irrigation: None
Rainfall (in):



Introduction: The goal of this study was to determine how much N fertilizer was needed following a manure application on the field. Cattle manure was applied evenly with a West Point vertical beater manure spreader at 20 ton/ac in December of 2016. No manure sample was taken. Three rates of anhydrous ammonia were tested. The N rate recommended by using the UNL N rate equation was 90 lb N/ac. Rates of 30 lb N/ac higher and lower were also evaluated. Anhydrous ammonia was applied on April 3, 2017.

Results:

	Moisture (%)	Yield (bu/acre)†	Marginal Net Return‡ ($/ac)
60 lb N/ac Anhydrous Ammonia	16.3 B*	227 B	696.57 A
90 lb N/ac Anhydrous Ammonia (UNL Rate)	16.4 AB	231 A	699.47 A
120 lb N/ac Anhydrous Ammonia	16.5 A	234 A	697.96 A
P-Value	0.015	0.002	0.732

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre corrected to 15.5% moisture.
‡Marginal net return based on $3.15/bu corn and $0.32/lb N.

Summary:

- The grain moisture for the 60 lb N/ac treatment was drier than the 120 lb N/ac treatment.
- The 60 lb N/ac rate yielded 4 bu/ac lower than the UNL rate (90 lb N/ac). There was no statistical yield increase for the 120 lb N/ac rate, indicating that the UNL N rate was likely adequate.
- There was no difference in marginal net return between the three treatments tested.

Sponsored by:

In Partnership with: