

Corn Response to Nitrogen in Muck Soil

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Objective

To determine the response of corn yield to nitrogen rates in muck soil

Background

Crop Year: 2017

Location: Roundhead Township

County/Town: Hardin/Alger

Soil Type: Roundhead Series

Drainage: 50 ft Pattern

Previous Crop: Corn

Tillage: Conventional

Soil Test: P 136 lbs/ac, K 340 lbs/ac, OM 52.8%

Planting Date: May 16, 2017

Nitrogen: Various Rates

Seeding Rate: 32,000 seeds/ac

Harvest Date: November 3, 2017

Methods

Five nitrogen rates were replicated three times in a randomized complete block design. All treatments received the same tillage and herbicide applications. 12 rows were planted in each plot. Seed used for this trial was Steyer 10102 VT2 Pro. No starter nitrogen was used as this muck soil provides adequate starter nitrogen. The corn was side-dressed with the appropriate rates of urea ammonium nitrate (UAN) 28% nitrogen at the treatment levels outlined below. The middle 8 rows were harvested with a commercial combine equipped with a 4 row corn head. Yield and grain moisture were obtained by using a weigh wagon and portable moisture tester. Growing season rainfall from April 15-October 15 was 28.85 inches for the township with a 10 year county average rainfall of 23.35 inches.

Treatments

1. 0 lbs Nitrogen/acre
2. 100 lbs Nitrogen/acre
3. 150 lbs Nitrogen/acre
4. 200 lbs Nitrogen/acre
5. 250 lbs Nitrogen/acre



Results

Treatment	Nitrogen Rate per Acre	Grain Moisture	Yield
1	0 lbs N	16.40 %	147.07 a
2	100 lbs N	16.20 %	182.37 b
3	150 lbs N	16.43 %	183.30 b
4	200 lbs N	16.03 %	184.33 b
5	250 lbs N	16.37 %	185.53 b
		CV% 2.09 *not significant	LSD (0.10): 5.52 CV% 2.06

Summary

Corn yield response to side-dress nitrogen treatment rates of 100 lbs N per acre, 150 lbs N per acre, 200 lbs N per acre, and 250 lbs N per acre did not show a significant difference in this muck soil which has a high amount of mineralized nitrogen. The only significant yield difference was 0 lbs N per acre. Therefore, 100 lbs N per acre provided the maximum return to nitrogen in this study given this Roundhead Series muck soil. More than adequate rainfall moved the nitrogen to the plant roots where it could be utilized for grain yield. Grain moisture also did not show a significant difference in this study with the different nitrogen treatments.

Acknowledgement

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