Corn Population Study, Darke County

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Objective

To determine the effects of corn seeding rate on corn yields to determine best management practices for corn seeding rates and provide data points for determining variable rates for corn seeding.

Background

Crop Year: 2018
Location: Harrison Township
County/Town: Darke/New Madison
Soil Type: Crosby Silt Loam
       Celina Silty Loam
Drainage: non-systematic
Previous Crop: Soybeans

Tillage: Minimum Tillage
Planting Date: May 8, 2018
Nitrogen: 200 units/acre
Seeding Rate: Varied
Harvest Date: October 29, 2018
Rainfall: 18.17 inches, April - August

Methods

Six corn populations, including the farmer's typical variable rate, were replicated three times in a randomized complete block design. Treatments were planted with a 16 row Kinze planter, field length and .93 acres each. The farmer's variable rate ranged from 26,000 to 38,000 in 4,000 unit increments and were prescribed based on soil type. All treatments received the same tillage and herbicide applications. Variety used was Pioneer P0483AM and PO977AM in a split planter. Stand counts were taken at V4 by obtaining two counts using $1/1,000^{th}$ of an acre per treatment and calculating the simple average. Plots were harvested with a commercial combine equipped with a 12 row header. Yields and moistures were obtained using a calibrated yield monitor. Yields were adjusted to 15.5% moisture. Precipitation data were obtained from cocorahs.org and recorded daily.

Results

No.	Target Planting Population	V4 Stand Count	Grain Moisture %	Treatment Average (bu./acre)	Return Above Seed ($/ac)
1	22,000	21,125	16.1	227 c	718
2	26,000	20,250	15.9	235 b	732
3	30,000	24,938	16.3	246 a	756
4	34,000	30,000	16.4	246 a	742
5	38,000	31,813	16.3	253 a	753
6	farmer variable	28,625	16.2	252 a	N/A

Grain Moisture CV %: 1.52 not significant - Yield LSD (0.10): 7.72, CV%: 2.57

Summary

In this plot, there was not a significant difference in the grain moisture at harvest. There was a significant difference in yield between the two lower seeding rates and the three higher seeding rates. The optimal return above seed cost per acre was the 30,000 rate.

Acknowledgement

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