Corn Yield Response to Seeding Rate

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Objective

To determine effects of corn seeding rate on grain yield and profitability.

Background

Crop Year: 2017
Location: Fayette, OH
County: Fulton
Drainage: Random
Previous Crop: Soybean
Variety: Pioneer 0843
Planting Date: May 24
Harvest Date: November 10

Soil Test (grid avg):
pH 6.42
P 124 ppm*
K 140 ppm
CEC 2.98
O.M. 10.3%

Soil Type: Colwood Loam
Dixboro FSL
Herbicide: Instigate, Cinch ATZ
Starter Fertilizer: 99-65-75-9S/ac
Tillage System: No-till
Rainfall (Apr-Aug): 18.7”

Methods

This trial was designed with five treatments replicated four times in a randomized complete block design. Plots were 12 rows wide (30 ft), by 1400 feet long. All treatments received the same starter fertilizer, herbicide and sidedress nitrogen applied by the cooperator with commercial farm equipment. Stand counts were taken after emergence was complete by obtaining ten counts per treatment and calculating the simple average. Ears counts were taken on the day of harvest by obtaining ten counts per treatment and calculating the simple average. Yields and moistures were measured with a calibrated Ag Leader yield monitor. Yields were adjusted to 15% moisture. Precipitation data was recorded at the nearest CoCoRaHS station (OH-FL-9).

Treatments:

1. 23,000 seeds per acre
2. 28,000 seeds per acre
3. 33,000 seeds per acre
4. 38,000 seeds per acre
5. 43,000 seeds per acre

Results: Corn Yield Response to Seeding Rate (All results listed per acre)

Seeding Rate (seeds)	Harvest Stand (plants)	Seed Cost* ($/ac)	Moisture (%)	Yield (bushels)		Return Minus Seed Cost* ($/ac)
23,000	23,900	$79	22.8	191.5	c	$591
28,000	26,200	$96	23.0	202.8	b	$613
33,000	32,600	$114	23.2	213.8	a	$635
38,000	38,300	$131	23.4	208.9	ab	$600
43,000	41,600	$148	23.9	210.6	a	$589
LSD (P<.05, CV 2.3)				7.3		

*Based on $3.44/1,000 seeds and $3.44 market price (Source: OSUE Corn Production Budget 2017)

Discussion:
There was no statistical significance for yield among the seeding rates 33,000-43,000 seeds per acre. Seeding rates of 23,000 and 28,000 seeds per acre resulted in a significantly lower yield than the other, higher seeding rates. Further data in the form of multi-year replications will add to the validity of these results.

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