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: 2016
County: Fulton
Location: Fayette, OH
Drainage: Systematic, 40-50' laterals
Previous Crop: Soybeans
Variety: Pioneer 0216
Planting Date: May 22, 2016
Harvest Date: October 9, 2016
Herbicide: Cinch ATZ, Instigate

Soil Type: Blount, Glynwood
Tillage: strip-tilled with fall fertilizer
Soil Test (2014): pH 6.1
P 16 ppm (Bray-P1)
K 95 ppm
CEC 8.4 meq/100g
OM 2.7%
Applied Fertilizer: 200-65-75/ac
Rainfall (May-August): 14.7"

Methods

This trial was designed with five treatments replicated three times in a randomized complete block design. Plots were 12 rows wide (30 ft), by 2250 feet long. All treatments received the same starter fertilizer, herbicide and sidedress nitrogen. The trial was planted, sprayed, sidedressed and harvested with commercial farm equipment by the producer. Stand counts were taken prior to harvest by obtaining eight 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. 35,000 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	22,100	$79	18.0	191.3	ab	$590
28,000	27,000	$96	18.0	193.4	ab	$581
33,000	33,200	$114	18.5	191.6	ab	$557
35,000	33,600	$120	18.1	195.5	a	$564
43,000	42,100	$148	18.6	186.0	b	$503
LSD (P<.05, CV 2.08)				7.5		

*Based on $3.44/1,000 seeds and $3.50 market price (OSUE Corn Production Budget 2016)

Discussion:
There was no statistical significance for yield among the seeding rates 23,000-35,000 seeds per acre. However, there was a significant statistical difference in yield for the highest seeding rate of 43,000 seeds per acre, which yielded 9.5 bushels per acre lower than the highest yielding treatment. According to rainfall data, this site received adequate and timely rains during the 2016 growing season. Further data in the form of multi-year replications will add to the validity of these results.

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