

Effect of Seeding Rate on Corn Yield in Two Varieties

Eric Richer, Ohio State University Extension Educator, Fulton County

Objective

To determine effects of corn seeding rate on grain yield for two seed varieties.

Background

Crop Year: 2014

Location: Fayette, OH

County: Fulton

Soil Type: Blount/Glynwood loam

Drainage: Systematic

Previous Crop: Soybeans

Tillage: No-till

Soil Test: pH 6.0, P 22 ppm*, K 115 ppm

Planting Date: May 5, 2014

Nitrogen: 200 lbs at split at plant and sidedress

Harvest Date: October 10, 2014

Rainfall April-Sept: 10.94"

*Reported as Bray P1

Methods

This trial was designed with four treatments replicated four times in a randomized complete block design. Treatment plots were field length (at least 1,000 feet) by 15 feet wide. A 12-row Kinze 3600 planter was used to plant the plot. Pioneer 0604 was used in 6 rows and Pioneer 0636 was used in the other 6 rows. All treatments received the same starter fertilizer, herbicide and sidedress nitrogen. Stand counts were taken prior to harvest by obtaining 8 counts per treatment and calculating the simple average. Plots were harvested with commercial combine. Yields and moistures were measured by using a calibrated Ag Leader yield monitor. Yields were shrunk to 15% moisture. Precipitation data was downloaded from weather.com.

Treatments for both varieties:

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

Results

Table 1. Corn Yield (bu/ac) Response to Seeding Rate - Pioneer 0604

<u>Treatment</u>	<u>Harvest Stand</u>	<u>Moisture</u>	<u>Dry Yield</u>
28,000 seeds/ac	27,100 plants/acre	20.9%	150.6 a
33,000 spa	32,800 ppa	20.5%	148.8 a
38,000 spa	36,700 ppa	20.3%	148.0 a
43,000 spa	40,000 ppa	20.2%	145.7 a

LSD 8.54 (p<.05), CV 3.6 – No significant difference among treatments



Table 2. Corn Yield (bu/ac) Response to Seeding Rate - Pioneer 0636

<u>Treatment</u>	<u>Harvest Stand</u>	<u>Moisture</u>	<u>Dry Yield</u>
28,000 seeds/ac	27,100 plants/acre	22.9%	169.7 a
33,000 spa	32,800 ppa	22.1%	164.3 ab
38,000 spa	36,700 ppa	22.0%	163.7 ab
43,000 spa	40,000 ppa	22.1%	160.6 b

LSD 7.03 (p<.05), CV 2.67 – Yes Significant

Summary

Pioneer 0604

Seeding rate (x1,000)	Yield Bu/acre	Gross Revenue per acre	Seed Cost per acre	Net Revenue per acre
28	150.6	\$602.40	\$96.04	\$506.36
33	148.8	\$595.20	\$113.19	\$482.01
38	148.0	\$592.00	\$130.34	\$461.66
43	145.7	\$582.80	\$147.49	\$435.31

Pioneer 0636

Seeding rate (x1,000)	Yield Bu/acre	Gross Revenue per acre	Seed Cost per acre	Net Revenue per acre
28	169.7	\$678.80	\$96.04	\$582.76
33	164.3	\$657.20	\$113.19	\$544.01
38	163.7	\$654.80	\$130.34	\$524.46
43	160.6	\$642.40	\$147.49	\$494.91

Economics: Gross income= yield x \$4.00/bu; Seed cost= \$3.43 per 1,000 seeds x seeding rate; Net revenue= Gross revenue – seed cost.

Discussion:

There was no statistical significance among any of the treatments for Pioneer 0604. However, there was a significant statistical difference between the top and bottom treatments in the trial involving Pioneer 0636. Based on one year of data, a planted population of 28,000 seeds per acre resulted in the greatest returns per acre for both varieties. It should be noted that this field location received lower than average seasonal rainfall, which could have affected “normal” results. Further data in the form of multi-year replications will add to the validity of these results.

Acknowledgement

The author expresses appreciation to on farm collaborator Les Seiler for his help in planting and harvesting this plot.