Twin Row Corn: Evaluation of increasing seeding rates across two hybrids.

Harold Watters, Ohio State University Extension Field Specialist Agronomic Systems
Steve Foster, UNCE Extension Educator Pershing County Nevada

Objective

To determine the yield response of diverse corn hybrids to increased seeding rates with twin row planting.

Background

Crop Year:	2003	Tillage:	No till
Location:	Greenville	Soil Test:	pH 6.1, LTI 67, CEC 14.5, P 82 ppm, K 248ppm
County:	Darke		
Soil Type:	Eldean-Miamian	Fertilizer applied:	Preplant 36 lbs N, 92 lbs/A P_2O_5 and 122 lbs/A K_2O, Sidedress 154 N/A as 28%
Drainage:	non-systematic tile	Planting Date:	April 29
Previous Crop:	soybeans	Harvest Date:	October 30

Methods

The trial was designed as a randomized complete block with four replications, row type was blocked within replication.

A Great Plains Precision Plant 1510P drill with CPH 15 no till cart was used to plant both the twin row treatments and the single 30-inch row plots. The Precision Plant drill is equipped with a seeding mechanism capable of singulating seed corn, with a preference for medium round seed size as used in the trial. The twin row plots were set on 30-inch centers, with two rows 7.5 inches apart every 30 inches. For the 30-inch plots one seed placement unit of each pair was used per row. Plot sizes planted were 15 feet wide by 465 feet long, and the center four 30-inch or eight twin rows were harvested for yield.

Hybrids were chosen based on their expected reaction to population levels. Pioneer 33Y18 is a relatively tall hybrid with a flexible ear reported to perform well at low to medium populations. Pioneer 34G13 is a short hybrid with less flexibility in the ear size and reported to yield well at higher population levels.

Stand counts were determined ten days before harvest by counting plants in 17.4 feet ($1/1,000^{th}$ acre) in the third row or pair of rows in each plot. Harvest of all plots was done with a John Deere 9500 combine, yield and moisture were determined with an on-board Ag Leader 3000 yield monitor. A single evaluation of root or stalk lodging was made by the combine operator and rated on a scale of 1-10 with 1 equal to no lodging.

Results

Table 1. Row spacing effects across hybrid and seeding rate on yield, final stand and lodging, for the twin-row corn trial, Greenville, OH.

Row Spacing	Yield	Final Stand	Lodging Score†
	----Bu/A----	--plants/A--	
30-in	184	30083	1.1
Twin-Row	184	31125	1.3
LSD (0.05)	NS	NS	NS

†Lodging score on a 1-10 scale, with 1=no lodging

Table 2. Hybrid effects across planting method and seeding rate on yield, final stand and lodging, for the twin-row corn trial, Greenville, OH.

Hybrid	Yield	Final Stand	Lodging Score†
	--Bu/A--	--plants/A--	
Pioneer Brand 34G13	190	30042	1.1
Pioneer Brand 33Y18	178	31167	1.3
LSD (0.05)	11	NS	NS

†Lodging score on a 1-10 scale, with 1=no lodging

Table 3. Row spacing and population effects on yield, final stand and lodging, for the twin-row corn trial, Greenville, OH.

Row Spacing	Seeding rate	Yield	Final Stand	Lodging Score†
	---plants/A---	--Bu/A--	--plants/A--	
30-in	30,000	184	25,000	1.1
	35,000	185	29,250	1.1
	40,000	182	36,000	1.2
Twin-Row	30,000	173	27,000	1.3
	35,000	192	31,250	1.3
	40,000	188	35,125	1.3
LSD (0.10)		10	NS	NS

†Lodging score on a 1-10 scale, with 1=no lodging

Table 4. Row spacing and hybrid effects across seeding rates on yield, final stand and lodging, for the twin-row corn trial, Greenville, OH.

Row Spacing	Hybrid	Yield	Final Stand	Lodging

				Score†
		--Bu/A--	--plants/A--	
30-in	Pioneer Brand 34G13	185	29,667	1.0
	Pioneer Brand 33Y18	182	30,500	1.2
Twin-Row	Pioneer Brand 34G13	194	30,417	1.1
	Pioneer Brand 33Y18	174	31,833	1.5
LSD (0.05)		10	NS	NS

†Lodging score on a 1-10 scale, with 1=no lodging

Summary

Simply planting corn in a twin row pattern does not increase yield. As seen in Table 1, there was no significant difference in yield across the treatments comparing twin row corn to 30-inch row corn.

There was a yield difference between the two hybrids. As shown in Table 2, Pioneer 34G13 was higher yielding than the Pioneer 33Y18.

The interaction effects are the true interest of the trial – genetics by population differences and row pattern. Here we saw significant differences.

- Table 3 indicates that increasing seeding rates in 30-inch rows did not increase yield. Increasing seeding rates in a twin row pattern however, did have a significant yield impact for both the 35,000 and 40,000 seeding rates.
- Finally in Table 4 we show the hybrid by planting pattern interaction effects. While no difference appears between Pioneer 34G13 and 33Y18 in 30-inch rows, a difference does occur when planted in twin rows with the shorter statured, fixed eared Pioneer 34G13 providing greater yield than the taller, flex eared 33Y18.

There were no significant differences amongst the treatments in lodging score, with all treatments having little lodging. Final stands were not affected by planting method.

Acknowledgement

The author expresses appreciation to Allen Geyer for data analysis and to the Darke County Commissioners for the use of the Drake County farm.

For more information, contact:
Harold Watters
OSU Extension
1100 South Detroit St.
Bellefontaine, OH 43311
watters.35@osu.edu

THE OHIO STATE UNIVERSITY EXTENSION

For more information, contact:
Steve Foster
University of Nevada Cooperative Extension
810 6th St. P.O. Box 239
Lovelock, NV 89419-0239
fosters@unce.unr.edu