Twin row corn: an alternative to narrow row corn production, Greenville Ohio, 2005.

Conducted by:
Harold Watters, Extension Agent AgNR – Champaign County
Steve Foster, Extension Agent AgNR – Darke County

Objective

To determine the response of corn to increased seeding rates with two planting methods, with a Great Plains Precision Plant drill in twin rows on 30-inch centers and with a conventional corn planter in 30-inch rows.

Background

Cooperator:	Darke County Farm	Herbicide:	Mirage glyphosate April 16, Cinch ATZ May 10 Cinch ATZ at plant
County:	Darke		
Soil Type:	Eldean-Miamian		
Drainage:	non-systematic tile	Variety:	Pioneer 34G13 or 33Y18
Previous Crop:	soybeans		
Tillage:	no till	Row Width:	30 inch, single or twin-row
Soil Test (2005): pH 6.1, LTI 67, CEC 14.5, P 163 lbs/A, K 496 lbs/A		Planting Rate:	30, 36.7, 43.3 or 50 thousand s/A
Fertilizer applied: Starter 70 lbs N/A, side dress 140 lbs N/A		Planting Date:	May 7, 2005
		Harvest Date:	November 22, 2005

Methods

The trial was designed as a randomized complete block with four replications.

We used a Great Plains Precision Plant no-till drill to plant the “twin row” plots and a John Deere 6-row no-till corn planter for the “planter 30” plots. The Precision Plant drill has a seeding mechanism capable of handling seed corn. We chose medium round seeds because they work best in this seed mechanism. The twin row plots were set up on 30-inch centers, with two rows 7.5 inches apart every 30 inches. Plot sizes planted were 15 feet wide by 300 feet long, and the center 10 feet of each plot was harvested (center four rows of six) for yield.

The hybrids were chosen based on their expected reaction to population levels. Pioneer 33Y18 is a relatively tall hybrid that performs well at low to medium populations with a flexible ear size. Pioneer 34G13 is a short hybrid with less flexibility in the ear size but does well at higher population levels.

We made two stand counts, the first 30 days after planting and the second at harvest.

Harvest of all plots was done with a CaseIH combine, yield and moisture were determined with an on-board yield monitor. The lodging scores were determined

by the combine operator during harvest, generally this score would equate to the square root of the lodging count.

The side dress nitrogen was applied in crop as 28% solution knifed into the soil for all treatments including the twin row plots.

Data analysis was performed by Dr. Robert Mullen using SAS.

Results

Table 1. Interaction effects of planting method and seeding rate on corn grain yield, 2005.

Planting method	Seeding rate, s/acre	Grain yield, bu/acre
Planter 30”	30,000	117
	36,700	111
	43,300	113
	50,000	106
Twin row	30,000	121
	36,700	121
	43,300	114
	50,000	99
$LSD_{0.10}$ (within planting method)		5
$LSD_{0.10}$ (across planting methods)		12

Table 2. Effect of hybrid on corn grain yield, 2005.

Hybrid	Grain yield, bu/acre
P33Y18	105
P34G13	121
$LSD_{0.10}$	3

Table 3. Interaction effects of planting method, hybrid, and seeding rate on lodging, 2005.

Planting method	Hybrid	Seeding rate, s/acre	Lodging score (1-10)
Planter 30”	P33Y18	30,000	6.1
		36,700	6.8
		43,300	7.0
		50,000	6.6
	P34G13	30,000	2.1
		36,700	2.0

		43,300	3.1
		50,000	5.0
Twin row	P33Y18	30,000	4.9
		36,700	6.9
		43,300	6.8
		50,000	6.8
	P34G13	30,000	3.3
		36,700	2.9
		43,300	3.9
		50,000	2.9
$LSD_{0.10}$ (within planting method)			1.1
$LSD_{0.10}$ (across planting methods)			1.6

* Lodging was determined by the combine operator on a 1-10 scale with 1 being fully upright and 10 being completely flat.

Summary
From trial work conducted by other OSU Extension Agents in the mid-1990s with 15-inch row corn, we knew that we should be able to increase yields with higher populations. But harvest of 15-inch row corn can be difficult without modification to harvest equipment. With twin rows (7.5 inches apart) spaced at 30-inch intervals, harvest can be done with no modification to harvest equipment. Over the past three years, the grower comments regarding harvest of twin rows have been, “as fast and as easy as 30-inch row corn”. Our expectation for the twin rows was that we could increase populations with most any hybrid, and still have healthy stalks and roots with increased yield. Only in 2003 was there a significant interaction, with the Pioneer 34G13 yielding more in twin rows at the higher populations.

For 2005, the trial results by planting method and seeding rate are shown in Table 1. With dry weather in July, we actually saw a yield reduction with higher seeding rates. For both the twin-row planting method and conventional 30-inch rows, our yield was maximized at a 30,000 to 36,700 seeds per acre seeding rate. The twin-row planting method did not contribute to increased yields for any seeding rate over the conventional 30-inch rows.

Hybrid differences are noted in Table 2. Pioneer 34G13 did yield significantly more than the 33Y18, this is as predicted by the seed supplier. Lodging differences were noted (Table 3) with the Pioneer 33Y18 having significantly more lodged plants than Pioneer 34G13.

Shown in Table 3 are the effects of seeding rate by planter method on lodging. Lodging generally did not increase with seeding rate but was affected by hybrid choice.

Submitted by Harold Watters.