Twin row corn: an alternative to narrow row corn production

Conducted by:
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Objective

To determine the response of corn to increased seeding rates with three planting methods; with a drill in 30-inch rows, with a drill in twinned rows on 30-inch centers and with a conventional corn planter in 30-inch rows.

Background

Cooperator:	Darke County Farm	Herbicide:	glyphosate + 2,4-D April 16, Bicep Magnum at plant
County:	Darke		
Soil Type:	Miamian		
Drainage:	non-systematic tile	Variety:	Pioneer 34G13 or 33Y18
Previous Crop:	alfalfa & grass hay		
Tillage:	no till	Row Width:	30 inch
Soil Test (2002):	pH 7.0, LTI 70, CEC 16, P 189 lbs/A, K 594 lbs/A	Planting Rate:	30, 35 or 40,000 s/A
		Planting Date:	April 29, 2004
Fertilizer applied:	163lbs N/ A	Harvest Date:	November 9, 2004

Methods

The trial was designed as a randomized complete block with four replications. Treatments were blocked by planting method and by seeding rate.

We used a Great Plains Precision Plant no-till drill to plant the “drill 30” and “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 appropriately sized seed to work best in this seed mechanism – medium rounds. 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 200 feet long, with 10 feet of the middle harvested (center four rows of six).

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 one month 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. Weed control and fertilizer were applied as needed. The side dress nitrogen was applied in crop, as 28% solution, for all treatments including the twin row plots.

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

Results

Table 1. Effect of planting method on corn grain yield, lodging score*, and early season stand, 2004.

Planting method	Grain yield, bu/acre	Lodging	Stand (plants/1000th A)
Drill 30”	213	2.62	31.2
Twin row	205	2.13	30.5
Planter 30”	214	2.04	30.6
$LSD_{0.10}$	7	NS	NS

Table 2. Effect of seeding rate on corn grain yield, lodging score*, and early season stand, 2004.

Seeding rate, seeds/acre	Grain yield, bu/acre	Lodging	Stand (plants/1000th A)
30 000	208	1.85	26.4
35 000	210	2.15	30.7
40 000	213	2.67	34.4
$LSD_{0.10}$	NS	0.59	1.3

Table 3. Effect of hybrid on corn grain yield, lodging score*, and early season stand, 2004.

Hybrid	Grain yield, bu/acre	Lodging	Stand (plants/1000th A)
P34G13	214	1.30	30.1
P33Y18	207	3.08	31.3
$LSD_{0.10}$	4	0.48	1.1

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

Summary

For 2004, we added the planter comparison to evaluate the drill’s planting ability for corn. We also moved into a hay field, this caused us some problems with a delayed burndown and the following insect feeding.

From trial work conducted by other OSU Extension Agents in the mid-1990s with 15-inch row corn, we knew that we could increase yields with higher populations.

But harvest of 15-inch row corn can be difficult without expensive modification to harvest equipment. With twinned rows (7.5 inches) spaced on 30-inch intervals, harvest can be done with no modification to harvest equipment. Over the past two years, the grower comments of twin rows at harvest – “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. In 2003 there was a significant interaction, with the Pioneer 34G13 yielding more in twin rows at the higher populations.

The trial results by planting method are shown in Table 1. While there was no difference in the yield for 30-inch rows by either drill or planter, both yielded significantly more than the twin row planting method. It is interesting to note that the planting tool made little difference in stand counts.

Shown in Table 2 are the effects of seeding rate. Yields were not affected by seeding rate. Lodging did increase with seeding rate. Although not achieved, expected harvest populations were 27, 32 and 36 thousand from seeding rates of 30, 35 and 40 thousand. There was a 10% stand reduction by late May, and a further 10% reduction between late May and harvest – stand counts shown here are for the spring counts.

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

Additions to this trial planned for 2005 - increase seeding rates to 30, 37, 43 and 50 thousand seeds per acre. We also plan to make counts and distance measurement within the row to determine consistency of stand by planting method.

Submitted by Harold Watters.