

# Evaluation of Row Widths and Planting Populations with Two Different Corn Hybrids

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## Objectives

To evaluate yield response of field corn to three different row widths at two different planting populations using two different corn hybrids.

## Background

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Soil Type:	Hoytville silty clay loam, Haskins loam	Herbicide:	
Drainage:	Tile- nonsystematic	PRE (May 10):	<b>Beck's 5228-</b> 1.5 oz/A Resolve DF + 1.5 oz/A Balance Pro + 1.5 qt/A Atrazine 4L
Previous Crop:	Soybeans	PRE (May 24):	<b>Beck's 5444RR-</b> 2.6 qt/A Harness Xtra 5.6L
Tillage:	Fall disk/ripper; Spring field cultivate 1 pass (April 29); Spring field cultivate 1 pass (May 9)	POST (June 8):	<b>Beck's 5444RR-</b> 22 oz/A Roundup OriginalMax+ 17 lb/100 gallons AMS
Soil Test(2005):	pH 6.5, P 40 ppm, K 149 ppm	Hybrid:	Beck's 5228 (106 day) and 5444RR (110 day)
Fertilizer:	575 lb/A 33-4-12 surface broadcast perpendicular to rows and incorporated (May 9, 2006)	Row Width:	Variable- see methods
		Planting Rate:	Variable- see methods
		Planting Date:	May 10, 2006
		Harvest Date:	October 24-25, 2006

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## Methods

This study was set up with six treatments consisting of three different row widths at two different planting populations replicated four times in a complete randomized block design with two different hybrids. The two different hybrids were not intermixed within blocks, rather the field was separated in two halves with one hybrid planted on each half. The majority of the study field was Hoytville silty clay loam, with pockets of Haskins loam on both halves. Each hybrid will be analyzed separately. The treatments were:

- 1) 30 inch row width @ 30,000/acre
- 2) 15 inch row width @ 30,000/acre
- 3) Twin row spacing @ 30,000/acre
- 4) 30 inch row width @ 40,000/acre
- 5) 15 inch row width @ 40,000/acre
- 6) Twin row spacing @ 40,000/acre

Twin row spacing plots consisted of two corn rows spaced 7.5 inches apart with a 22.5 inch gap between each set of twin rows. This spacing arrangement keeps the twin rows spaced at 30 inches on centers which allows the twin row planted corn to be harvested with a regular 30 inch corn head by squeezing the twin rows together as they enter the stalk rolls.

The twin row plots were planted using a Great Plains Precision Planter model 1525P that planted six sets of twin rows in a pass. Both 30 inch and 15 inch row width plots were planted using a John Deere 7000 Maxemerge six row planter equipped with a five row splitter attachment. The splitter attachment was engaged for planting 15 inch rows and disengaged when 30 inch rows were planted. Each plot consisted of one round of the planter (12- 30 inch rows, 12- twin rows, 22- 15 inch rows). Plot length for all plots was 585 feet.

Harvest populations (September 7) were estimated by counting the number of plants on each side of a 17.5-foot section at three different locations in each plot. The average of the number of plants counted per 17.5 feet was converted to plants per acre. The 15 inch row plots were harvested with a custom built 11 row corn head set up for 15 inch row spacing. The 30 inch and twin row plots were harvested using a 6 row head set up for 30 inch spacing. The entire plot was harvested and yields were calculated based on weights measured by a calibrated weigh wagon and moisture readings taken by a hand held moisture meter. Yields are adjusted to 15% moisture.

## Results

**Table 1.** Beck's Hybrid 5228 harvest population, moisture, and yield means.

Treatment	Harvest Population (plants/A)	Moisture (%)	Yield (bu/A)
30 inch rows @ 30,000	22,300	19.7	117.6
15 inch rows @ 30,000	23,700	18.8	135.6
Twin rows @ 30,000	24,300	19.5	126.6
30 inch rows @ 40,000	31,300	18.9	128.5
15 inch rows @ 40,000	27,300	19.3	137.2
Twin rows @ 40,000	30,300	19.4	134.3
LSD (0.05)	3,000	0.6	11.4
F-test	13.7	3.1	3.8
CV (%)	7.5	2.1	5.8

**Table 2.** Beck's Hybrid 5444RR harvest population, moisture, and yield means.

Treatment	Harvest Population (plants/A)	Moisture (%)	Yield (bu/A)
30 inch rows @ 30,000	23,400	22.3	163.4
15 inch rows @ 30,000	23,800	23.1	172.8
Twin rows @ 30,000	23,900	22.5	179.6
30 inch rows @ 40,000	31,600	21.1	170.9
15 inch rows @ 40,000	31,500	22.2	181.4
Twin rows @ 40,000	30,000	21.6	179.5
LSD (0.05)	1,600	0.6	9.3
F-test	55.9	13.1	5.0
CV (%)	4.0	1.8	3.5

## **Summary**

The results from this 2006 study indicate significant differences between treatments for harvest population, moisture, and yield. In looking at the results the first thing to note is the significant drop in stands between the planting populations and harvest populations. This reduction in stand can be attributed to rainfall of 2.9 inches received in the 6 days following planting, with 1.7 inches of that within 24 hours of planting the trial.

Noticeable differences in yield between the two hybrids can be attributed to herbicide injury with the Beck's 5228 hybrid as this half of the field received a preemergence herbicide application immediately following planting prior to heavy rainfall. The half of the field with the Beck's 5444RR hybrid did not receive a herbicide application until a later date closer to emergence, so a different herbicide program was used on this half of the field.

Yield differences between the different row spacings and populations indicate a yield advantage to planting narrower row widths. This advantage shows up even more with the reduced harvest stands, with the 30 inch rows with harvest populations in the 22-23,000 stand range showing the lowest yield with both hybrids. A similar study conducted in 2005 also showed an advantage to 15 inch rows, but yields were lower with twin rows and 30 inch rows at the higher 40,000 planting population when final stand counts were not significantly reduced from original planting populations. Results of the 2005 study can be accessed on the Farm Focus website at [http://farmfocus.osu.edu/row\\_spacing\\_corn-05.pdf](http://farmfocus.osu.edu/row_spacing_corn-05.pdf).

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