

Evaluation of Three Seeding Rates and Two Row Widths in Soybeans

Andy Kleinschmidt, AGNR Extension Educator- Van Wert County
Gary Prill, Program Manager- Farm Focus Research- Van Wert County

Objective

The objective of this study was to evaluate the yield response of soybeans to two different row widths planted at three different seeding rates.

Background

Crop Year:	2008	Herbicide:
Cooperator:	Farm Focus/Marsh Foundation	PREPLANT Scepter 70DG at 2.1oz/A +
County/Town:	Van Wert/Van Wert	(May 5) Roundup OriginalMax at 22
Soil Type:	Hoytville silty clay loam, Haskins loam	oz/A + 2,4-D LVE6 at 10 oz/A + AMS at 17 lb/100 gal
Drainage:	Nonsystematic tile	POST Roundup WeatherMax at 22
Previous Crop:	Corn	(July 7) oz/A + AMS at 17 lb/100 gal
Tillage:	No-till	Variety: Seed Consultants SC 9317-RR
Soil Test (2005):	pH 6.5, P 47 ppm, K 126 ppm	Row width: Variable- see Methods
Fertilizer:	195 lb/A 0-0-60 surface broadcast (November 2007)	Planting Rate: Variable- see Methods
		Planting Date: May 29, 2008
		Harvest Date: October 4, 2008

Methods

This study was set up with two different planting widths consisting of three different seeding rates replicated four times in a randomized complete block design. The treatments were:

- 1) 15 inch row spacing @ 100,000 seeds/A
- 2) 15 inch row spacing @ 150,000 seeds/A
- 3) 15 inch row spacing @ 200,000 seeds/A
- 4) 7.5 inch row spacing @ 100,000 seeds/A
- 5) 7.5 inch row spacing @ 150,000 seeds/A
- 6) 7.5 inch row spacing @ 200,000 seeds/A

The 15 inch row width plots were planted using a John Deere 7000 Maxemerge six row planter equipped with a five row splitter attachment. The 7.5 inch row width spacing was planted with a John Deere 750 no-till drill. Each plot consisted of one round of the planting equipment for a width of 27.5 feet. Plot length for all plots was 1030 feet long.

Harvest populations (September 26, 30) were estimated by counting the number of plants in the row on each side of a 10 foot section at five different locations in each plot. The average number of plants counted per 10 feet section was converted to plants per acre. Harvesting was accomplished with a John Deere 6620 combine equipped with a calibrated AgLeader PF3000 yield monitor. Plot weights were determined with a calibrated weigh wagon. Moistures were taken from the combine yield monitor. All yields were adjusted to 13% moisture.

Results

Table 1. Harvest population, moisture, and yield means¹ for each treatment.

Treatment	Harvest Population (plants/A)	Moisture (%)	Yield (bu/A)
15 inch rows @ 100,000	58,100 c	11.5	43.0 c
15 inch rows @ 150,000	71,500 b	11.6	45.4 bc
15 inch rows @ 200,000	96,900 a	11.6	50.6 a
7.5 inch rows @ 100,000	65,900 bc	11.5	43.5 c
7.5 inch rows @ 150,000	92,300 a	11.6	47.6 abc
7.5 inch rows @ 200,000	101,800 a	11.6	48.7 ab
LSD (P=0.05)	12,200	NS	4.8
F-test	20.2	<1	3.4
CV (%)	10.0	<1	6.9

¹ Means followed by the same letter in the same column are not significantly different.
NS= not significant

Summary

The results of this one year trial suggest there were statistical differences between the treatments for harvest population and yield. It would be expected to see some significant differences in harvest populations because of the variations in seeding rates. It was not expected to observe harvest populations that were approximately 50-65% of target seeding rates. We attribute this mainly to cool, wet soils in the study field.

Results from this soybean study support research conducted at Farm Focus in 2006 that has shown 15 inch row planting width comparable in yield to 7.5 inch row planting width (http://farmfocus.osu.edu/bean_row_width-06.pdf). In this 2008 trial, yield was not statistically different when comparing different row widths of the same seeding population. That is, the 15 inch row spacing at 100,000 seeds/A was not statistically different than the 7.5 inch row spacing at 100,000 seeds/A, and so forth.

From an economic standpoint, the harvest populations observed in this year's trial were likely too low to achieve maximum net return. According to the Ohio Agronomy Guide, 14th Edition, harvest populations for both the 7.5 inch row spacing and the 15 inch row spacing should be greater than 100,000 plants per acre for maximum yield. Since we did not achieve this minimum population in all but one treatment, it is difficult to draw economic conclusions on soybean seeding rates from this trial.

Acknowledgement

OSU Extension-Van Wert and Farm Focus express appreciation to Seed Consultants for supplying the seed, and to BASF and Monsanto for supplying the herbicides used in this study.

For additional information contact:

Gary Prill

1055 South Washington Street

Van Wert, OH 45891

419-238-1214

prill.1@osu.edu



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Keith L. Smith, Ph.D., Associate Vice President for Agricultural Administration and Director, Ohio State University Extension

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