2010

Evaluation of Narrow Row Soybeans

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Abstract
Producers continue to look at different management practices to increase corn and soybean yields. One area of interest is planting corn and soybeans in narrow rows. Traditionally, these crops have been planted in row widths of 30 to 38 in. Planters on the market today have the capability to plant corn and soybeans in 15- and 20-in. rows, as well as in twin rows that are spaced 8 in. apart. This study was set up to evaluate the yield impact of planting soybeans in 15-in. rows versus the traditional 30-in. row spacing.

Keywords
RFR A9087

Disciplines
Agricultural Science | Agriculture

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RFR-A9087

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Introduction

Producers continue to look at different management practices to increase corn and soybean yields. One area of interest is planting corn and soybeans in narrow rows. Traditionally, these crops have been planted in row widths of 30 to 38 in. Planters on the market today have the capability to plant corn and soybeans in 15- and 20-in. rows, as well as in twin rows that are spaced 8 in. apart. This study was set up to evaluate the yield impact of planting soybeans in 15-in. rows versus the traditional 30-in. row spacing.

Materials and Methods

The 30-in. row treatments were planted with an 8-row John Deere 7000 planter. The 15-in. rows were seeded by double planting the plots with the 30-in. row planter. Seeding rates were 160,000 and 161,000 seeds/acre for the 30- and 15-in. row treatments, respectively.

The study had four replications in 2008 and compared the two row widths in tilled seedbed conditions. In 2009, the study compared the 15- and 30-in. rows in both tilled and no-till conditions, with three replications. Kruger 201 RR/SCN (Roundup Ready/Soybean cyst nematode resistant) soybeans were planted on May 14, 2008 and on May 19, 2009. Weed control consisted of two post-emergent applications of glyphosate in 2008. In 2009, a pre-emergent application of Domain herbicide was followed by a post-emergent application of glyphosate. A single insecticide application was made in both 2008 and 2009 to control soybean aphids.

Individual plot size was 20 ft wide by 64 ft long in 2008 and 20 ft wide by 94 ft long in 2009. Stand counts were done prior to harvest in 2009 to compare plant populations of each treatment. Harvest was completed on September 26, 2008 and October 9, 2009. Five rows (12.5 ft wide) were harvested from the 30-in. rows and 10 rows were harvested from the 15-in. row treatments. Soybean yields were adjusted to 13% moisture. Statistical analysis was used to analyze the yield data, with a significance level of $P \leq 0.05$.

Results and Discussion

Data from 2008 showed a 3.9 bushel/acre increase in yield by planting 15-in. row soybeans (Table 1). In 2009, narrow row soybeans out-yielded wide rows by 4.5 bushels/acre in tilled conditions and 3.0 bushels/acre in no-till (Table 2). There were no yield differences between tillage and no-tillage treatments.

Plant populations differed numerically among treatments in 2009 (Table 2), but there were no statistical differences. All populations were well above the 100,000 plants/acre needed to maximize yield, and thus, shouldn't have limited yield in any of the plots.

Over two years of data, 15-in. rows have demonstrated a 4.2 bushel/acre yield increase over 30-in. rows in tilled conditions. A smaller response of 3.0 bushels/acre was found in no-till conditions in 2009. This study will continue in the future.

Table 1. Row spacing influence on soybean yields in 2008.

Row spacing	Tillage	2008 yield	Grain yield significance[1]
inches		bushels/acre	
15	tillage	67.4	a
30	tillage	63.5	b

[1]Treatment means with any letter in common are not significantly different from one another.

Table 2. Row spacing influence on soybeans yields in 2009.

Row spacing	Tillage	Plant population	Plant population significance[1]	2009 yield	Grain yield significance[1]
inches		plants/acre		bushels/acre	
15	tillage	134,000	a	69.3	a
30	tillage	121,300	a	64.8	b
15	no-tillage	153,300	a	67.6	a
30	no-tillage	136,300	a	64.6	b

[1]Treatment means with any letter in common are not significantly different from one another.