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COMPARISON OF SOYBEAN ROW SPACING WITH DELAYED PLANTING

Flanary, W., Agronomy Specialist, University of Missouri Extension
Crawford, J.J.W., Superintendent of Graves Chapple Research Center, University of Missouri Extension

ABSTRACT

The use of 15-inch soybean row spacing has decreased in northwest Missouri and more growers are adopting 30-inch row spacing. University of Missouri Extension recommends using narrow row spacing when soybean planting is delayed. The objective of these experiments was to demonstrate soybean yield response of 15-inch row spacing compared to 30-inch when soybean planting was delayed from the optimum planting date. Group III indeterminate soybeans were planted as single experiments in a complete randomized block design. In 2011, five varieties were planted in 30-inch and 15-inch rows on June 5. In 2010, ten varieties were planted May 25. Soybeans planted in 15-inch rows mean yields were greater than those planted in 30-inch rows across all varieties in both years. In 2011, the average yield increase of using 15-inch row spacing compared to 30-inch row spacing resulted in a 15 percent yield increase averaged across the five varieties. In 2010, the average yield increase of 15-inch rows increased yields by 28 percent compared to 30-inch rows. Consideration should be given to narrow row spacing when soybean planting is delayed.

Introduction

When soybean planting is delayed past the optimum planting date, yields can be improved by using 15-inch rows compared to 30-inch rows. The narrow row spacing allows the plants to form a canopy earlier compared to 30-inch rows. Full crop canopy captures sunlight which is critical at the start of pod set (Soybean Production, Ohio).

Research by MU indicates that yields will be reduced after May 1 planting date in north Missouri (MU Guide 4091). Narrow rows will canopy with 10-inch rows in 35 days and will take more than 55 days in 30-inch rows (MU Guide 4415). Iowa State University research found canopy closure of 15-inch rows was generally 15 days earlier than 30-inch rows by the start of pod set (Pedersen). University of Illinois researchers found 15-inch rows canopied within a couple days of drilled soybeans (Agronomy Day 2000). The use of narrow row spacing compensates canopy closure which is critical for sunlight capture.

The objective of this study was to determine if 15-inch row spacing would increase soybean yields compared to 30-inch row spacing when soybean planted is delayed from what would be the optimum planting date May 1.

Materials and Methods

The study was conducted 2011 and 2010 on a Dockery silt loam soil located at the Graves Chapple Research Center, University of Missouri, Corning, Mo. Each experiment was conducted in a randomized complete block design with five replications. Each variety was a separate experiment and analyzed as such.

Soybean seeding rates were 180,000 seeds per acre and adjusted for row spacing. Plots measured 10 feet wide by 35 feet in length. The study was planted into corn residue and no-till planted. Yields were measured by harvesting the center two rows of 30-inch rows and three rows of 15-inch plots.

Group III varieties are the maturity group commonly planted in north Missouri and were used in these experiments. The 2011 planting date was June 6 and 2010 was May 25.

Yield data was analyzed by Proc ANOVA using AGSTATS (Oregon State University, 2009).

Results and Discussion

In 2011, three of the five varieties significantly increased soybean yields in 15-inch rows compared to 30-inch at the June 6 planting date. The other two varieties, though not statistically significant, mean yields of 15-inch rows were higher than 30-inch as shown in Table 1.

Table 1. The effect of 15-inch rows compared to 30-inch row spacing for five different soybean varieties planted June 6, 2011.

	Pioneer 93M61	Pioneer 93Y70	NK S37-F7	Asgrow 3730	Asgrow 3803
Row Spacing	bu/A	bu/a	bu/a	bu/a	bu/a
15-inch	68.4	66.3	72.5	66	55.2
30-inch	62.8	63.4	56.1	62.6	52.2

LSD .05	5.3	NS	NS	3.1	2.2
CV%	4.6	4.4	11.1	2.1	1.9

Six out of the ten varieties in 2010 significantly increased yields in 15-inch rows compared to 30-inch rows when planted May 25. Four varieties, though not significantly different, produced higher yields in 15-inch rows as shown in Table 2.

Table 2. The effect of 15-inch rows compared to 30-inch row spacing for ten different soybean varieties planted May 25, 2010.

	NK S39-A3	NK S37-F7	Asgrow 3504	Asgrow 4005	Asgrow 3803	Asgrow 3705	Wilcross RR2386	Wilcross RR2386	Pioneer 93Y51	Pioneer 93M61
Row Spacing	bu/a	bu/a	bu/a	bu/a	bu/a	bu/a	bu/a	bu/a	bu/a	bu/a
15-inch	60.7	71.6	57.4	70.2	47	65.5	35.8	57.9	54.4	71.9
30-inch	45.5	51.4	46	44.2	44.3	47.4	25.9	46.7	51.3	47.8
LSD .05	13.7	12.8	6.8	NS	NS	7.3	NS	11	NS	9.9
CV%	11.3	12.3	7.5	6.5	12.5	7.3	29.8	9.35	11.3	7.3

Soybean row spacing research conducted at MU which compared 7 and 10-inch row spacing to 30-inch showed a significant yield response at normal planting date (MU Guide 4415). The yield results may have also shown differences in row spacing at optimum planting date as well as late. However, it would seem given the issue of crop canopy and the results from these experiments, that growers should consider narrow row spacing when soybean planting is delayed.

Summary

When all varieties are averaged in 2011, there was a 15% yield increase using 15-inch row spacing compared to 30-inch. In 2010, with ten varieties, the 15-inch row spacing increased yields by 28% compared to 30-inch row spacing. Growers should choose narrow row spacing rather than using 30-inch row spacing when soybean planting is delayed.

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