Seeding Rate Effects on Soybeans Planted in 15 Inch Rows

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Objective

To determine yield response of soybeans planted in 15 inch rows to three seeding rates.

Background

Cooperator:	Lawrence Onweller	Planting Date:	May 9, 2004
County:	Fulton	Seeding Rate:	methods below
Soil Type:	Hoytville clay loam	Row Width:	15 inches
Tillage:	Disk Chisel, Soil finisher	Herbicides:	32 oz Roundup plus 2.4 oz Gangster
Previous Crop:	Corn		
Soil Test:	pH, P ppm, K ppm, Mn ppm, % OM, CEC meq/100g	Harvest Pop:	various
		Harvest Date:	October 7, 2004
Fertilizer Rate:	None		
Variety:	Pioneer		

Introduction

The cost of soybean seed has increased in the past several years due to technology fees and genetic improvements to the point that reducing population can reduce seed cost per acre. This experiment used three seeding rates of 115,000, 155,000 and 196,000 seeds per acre resulting in seed cost per acre of $19, $26 and $33 per acre respectively. If the population reduction does not results in yield loss this is a true savings in input cost and risk. Past research has indicated that 100,000-120,000 plants per acre can maximize yield when soybeans are planted prior to May 20th. Later planting dates require increased seeding rates.

Methods

The field area selected for this experiment was a Hoytville Clay Loam with tile line running perpendicular to the planting direction. Plots were established in a randomized replicated block with three replications running the full length of the field. Resulting plot dimension were 57 feet wide and 1700 feet long. The field was planted with a John Deere 7200. A John Deere9660 equipped with Greenstar and a 35 foot head was used to harvest the entire plot. The swath width was adjusted appropriately to accomplish this. Yield results were then processed using ArcView 3.3 and Enhanced Farm Research Analyst. Moisture was adjusted to 13.5%. Final yield determination was made on an area 1050 feet long by plot width to exclude end rows and other soil type areas. Population counts were made on June 16th in growth stage V4. Soybean aphids were scouted reaching over threshold population on July 28th of 252 aphids per plant. The plot was treated on July 23rd with Asana at 6 oz per acre.

Results and Discussion

The lowest rate was not significantly different from the higher seeding rates. But there was no benefit and actually a cost at the highest seeding rate. Final stand were 80-85% of targeted populations. The actual breakeven seeding rate falls in between 115,000 and 155,000 based on the economic data in Table 2. Overall the growing season was good until during pod fill when dry conditions existed and seed abortion occurred in many area fields cutting yields.

Table1. Population Counts and Yield in 15 inch rows.

Seeding Rate (Seeds/A)	Average Final Plant Stand (Plants/A)	Average Spacing between seed (inches)	Yield (bu/A)
115,000	101,350	4.1	57.0a
155,000	129,034	3.2	60.4a
196,000	167,754	2.4	59.9a
LSD(0.05)	8,715	--	NS
CV %	2.4	--	5.4

* numbers followed by the same letter are not significantly different

Table 2. Net dollars per acre after seed cost based on absolute yield from each treatment.

Seed Rate	Final Population	Seed Cost 1,000	Seed cost/A	Yield bu/A*	Price/bu	Net/A
115000	101349	0.17	19.55	57.0a	$ 6.50	$ 350.95
155000	129034	0.17	26.35	60.4a	$ 6.50	$ 366.25
196000	167754	0.17	33.32	59.9a	$ 6.50	$ 356.03

* numbers followed by the same letter are not significantly different

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