Roundup Ready Soybean Planting Rates

Chris Bruynis, Agriculture and Natural Resources Extension Agent
Ed Lentz, Extension Agronomy Specialist, Northwest District

Objective

To determine the effect on soybean yield of different seeding rates utilizing Roundup Ready seed.

Background

Cooperator:	Dean Koehler	Soil Test:	pH 6.5, P 23 lbs/A,
County:	Wyandot		K 233 lbs/A, OM 2.3%
Nearest Town:	Upper Sandusky	Fertilizer:	None
Soil type:	Blount	Herbicides:	Roundup Ultra
Drainage:	Surface, minimal tile	Variety:	Callahan 9366
Tillage:	No-till	Planting Date:	May 10, 1999
Previous Crop:	Corn	Harvest Date:	October 16, 1999

Methods

With the increase in seed cost and technology fees associated with Roundup Ready soybean seed, a study was designed to compare different seeding rates to determine the most profitable population. A 30-foot John Deere Air Seeder, set up with seed monitors, was used to no-till plots into corn stubble. The three targeted seeding rates were 100,000, 150,000, and 200,000 seed per acre. The plots were randomized and replicated four times. Each of the 12 plots were 0.77 acres (30' x 1,175') in size. Yield was measured by a weigh wagon provided by Reile Farms. Harvest populations were based on randomly selecting 10-foot strips across the plots and counting the stand for two rows in each strip. Two strips were measured at the east third of the field, two strips in the center third, and two at the west third. Counts were averaged for each plot and adjusted to represent plants per acre. These counts were made one week prior to harvest.

Results

Planted Population (seeds/A)	Harvest Population (plants/A)	Yield (bu/A)
100,000	87,483 a	28.85 a
150,000	141,933 b	32.24 b
200,000	178,233 c	33.58 b

Analysis of the data reveals that each harvested population range is statistically different from each other (LSD 0.05 = 23,192) at the 95 percent confidence level. Harvested yields of the two highest plant populations were not significantly different from each other at the 5 percent significance level. The lowest population yield was significantly lower than the yields of the higher two planting rates (LSD 0.05 = 2.45).

Summary and Notes

The field was in a very dry weather pattern during the growing season. The decreased yield in the lower population strips is believed to be partially due to the moisture lost because it took longer for these plants to canopy. Early in the season, increased weed pressure was expected as the population rate decreased. There was no visible difference in weed populations at harvest. This was also partially attributed to the dry growing season.

The difference between the three treatments, assuming a $5 value for soybeans and a $22 cost for seed beans (50 pound bag @ 2,800 seeds per pound) and using the 200,000/150,000 as the standard, is as follows:

Planted Population (seeds/A)	Change in Seed Cost ($/A)	Change in Soybean Sales ($/A)	Net Revenue Difference ($/A)
200,000 and 150,000	Standard	Standard	
100,000	14.26	-23.65	-9.39

These differences are based on one location and one growing season. Additional sites and years of data will better define the optimal plant population for Roundup Ready soybeans.

For additional information, contact:

Chris Bruynis
The Ohio State University Extension
bruynis.1@osu.edu