The Effects of Seeding Rate on White Mold in Soybeans

Glen Arnold, Agriculture and Natural Resources Extension Agent
Edwin Lentz, Extension District Agronomy Specialist
Anne Dorrance, Extension State Specialist, Soybean Pathologist

Objective

To evaluate the response of white mold in soybeans to seeding rate.

Background

Cooperator:	Dan Heitzman	Fertilizer:	120 lb/A K_2O in fall 1999
County:	Putnam	Herbicide:	BRNDWN: Roundup Ultra (1 qt/A),
Nearest Town:	Dupont		POST: Classic (0.33 oz/A),
Soil Type:	Colwood loam		Flexstar (1 pt/A)
	Lenawee silty loam		Poast Plus (1.5 pt/A)
Drainage:	Tiled	Variety:	Sandusky
Tillage:	No-till	Seed Treatment:	Bin run seed with Rival and Apron
Previous Crop:	Corn	Planting Date:	June 4, 2000
Soil Test:	pH 6.3, P 50 ppm,	Planting Rate:	See treatments
	K 150 ppm	Row Width:	15 inches
		Harvest Date:	October 11, 2000

Methods

Experimental design was a randomized complete block with four replications. Treatments were three seeding rates: 110,000, 165,000, and 220,000 seeds per acre. Plots were 32.5 feet wide x 1,201.2 feet long. Soybeans were planted with a White 6100 planter with a splitter attachment. The center 20 feet (16 rows) of each plot were harvested by a Gleaner L3 combine. A 1993 custom-made weigh wagon with an Artsway 700E Digital scale was used for grain weights. Harvest populations were estimated by counting plants from four adjacent rows in 25-foot sections.

Results

Even though this field has a history of white mold, environmental conditions in 2000 were not conducive for disease development. Thus, the results only discuss the relationship between yield and seeding rate. These observations are given in the table on the following page.

Table 1. Soybean Seeding Rates and Yield.

Seeding Rate (seeds/A)	Yield (bu/A)	Harvest Population (plants/A)
220,000	50.9 a	147,320 a
165,000	48.4 ab	113,648 b
110,000	46.8 b	83,897 c
LSD (0.05)	2.7	4,748

Means with the same letter are not statistically different.

Summary

Stands were reduced approximately 30% from seeding to harvest, but populations were statistically different among all treatments. Seed quality may have caused stand reduction. The seed used in this experiment had a warm germination test score of 90%, but a cold test was not performed. Many 1999 seed lots had cold test scores that were much lower because of seeds damaged from harvesting and disease. In some cases, handling from treating seeds with fungicide may have caused additional germination losses. It was not uncommon for 1999 soybean seed lots to have emergence rates as low as 60-70%.

Even with the stand reduction, yields were statistically similar between the upper and middle seeding rates. Yield differences were only detected between the upper- and lower-end seeding rates (upper-end seeding rate yielded 9% more, approximately 4 bushels). The two lowest seeding rates had similar yields.

This data would suggest no advantage for seeding rates larger than 165,000 seeds per acre at 15-inch row spacing. Some yield reduction may be expected if harvest populations drop below 100,000 plants per acre.

For additional information, contact:

Ed Lentz, Glen Arnold, or Anne Dorrance
The Ohio State University Extension
lentz.38@osu.edu, arnold.2@osu.edu, dorrance.1@osu.edu