

Planter Applied Wide-Row Soybean Treatments

Harold D. Watters, Ohio State University Extension, Field Specialist Agronomic Systems

Objective

To determine if planter applied treatments in 30-inch rows may increase yield over lower input 15-inch row planted soybeans.

Background

Crop Year: 2013	Tillage: No till
Location: Western Agricultural Research Station	Soil Test: pH 7.4, CEC 12.5, OM 1.8%, P 8 ppm, K 151 ppm
County/Town: Clark/ South Charleston	Planting Date: May 30
Soil Type: Strawn-Crosby complex SiCilLo	Seeding Rate: 100,000 seed/A in 30-inch, 150,000 seed/A in 15-inch rows
Drainage: Random tiled	Harvest Date: October 11
Previous Crop: Corn	

Methods

The trial was established as a randomized complete block, with six treatments, replicated four times. The row placed materials were applied through a 4-row John Deere 1750 planter. The soybean variety was Seed Consultants SCS9319RR. Harvest was accomplished with a Massey 8XP plot combine with on-board scales and moisture meter. Two rows were harvested from the 30-inch spacing and five from the 15-inch rows. Yield was calculated in bushels/acre at 13% moisture. Treatments chosen for the trial were based on suggestions from growers and manufacturers along with challenges presented with the site.

- Products used and row width:
 - Untreated check - planted with a four-row John Deere 1750 planter in 30-inch rows
 - Rhizobia seed inoculant – Novozymes Optimize, seed treated immediately before planting in 30-inch rows
 - Rhizobia furrow applied – Novozymes Optimize, applied with water as the carrier via CO₂ compressed gas applicator through the planter behind the seed in 30-inch rows
 - Diammonium phosphate fertilizer (DAP, 18-46-0 analysis) – at 100 lbs/A of material or 46 lb/A P₂O₅ through the planter's dry fertilizer system in 30-inch rows
 - DAP plus sulfur and manganese – 125 lb/A of material through the planter, S + Mn was as Tiger Micro 65% S and 15% Mn at a 20% level providing 46 lbs P₂O₅, 16 lbs/A as S, 4 lbs/A Mn in 30-inch rows
 - Untreated check 15-inch rows, planted with a Kinze 2600 7-row planter

Results

Results for soybean yield are shown in Table 1. An ANOVA (analysis of variance) was conducted to determine treatment differences. An LSD (least significant differences) was calculated to indicate mean differences; an NSD indicates no significant differences.

Table 1. Soybean yield effects of row-applied treatments at planting, So. Charleston, Ohio 2013.

Foliar treatment	Yield (bu/A)
Untreated check 30-inch rows	53.9
Rhizobia inoculant seed applied, 30 inch rows	54.6
Rhizobia inoculant furrow applied, 30 inch rows	51.6
DAP 100 lb/A planter applied, 30 inch rows	53.8
DAP + S, Mn planter applied, 30 inch rows	57.1
Untreated check 15-inch rows	55.6
LSD (0.10)	NSD

Summary

No significant differences are noted in the trial ($p=0.3798$) as shown in Table 1, The C.V. (coefficient of variance) was relatively low at 6.4.

An attempt was made to increase the likelihood of a response to rhizobia treatments. It was expected that with a concentrated load of rhizobia placed in the furrow that perhaps yield would increase. There was no difference in the response between seed-applied or furrow-placed rhizobia.

With the low testing phosphorus level (Bray P1 at 8ppm) it was assumed there would be a yield response to row-applied fertilizer. And although there were visual differences noted on July 1st, in that both treatments with DAP were darker green than other treatments, no yield response occurred.

Another concern in conducting a trial with wide-row soybeans is the difficulty in weed control. The farm applicator reported spraying the trial four times with a post emergent herbicide to control weeds. A visual observation on September 5th indicated excellent weed control in the 15-inch row check plots but numerous weed escapes in the wider 30-inch rows. The lack of significant differences across the trial makes for an unexpected surprise when comparing the 15- to the 30-inch row yield, especially with a May 30 planting date.

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For more information, contact:
Harold D. Watters
OSU Extension
1100 S. Detroit St.
Bellefontaine, Ohio 43311
Insert watters.35@osu.edu



THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES