

Identifying intensive management practices to increase soybean net return, 2009

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Overall goal of this study

Identify individual and/or combination of factors including row spacing, planting rate, and special foliar inputs that will economically increase yield for ND soybean growers.

Materials and methods

2009 was the second year of the multi-year field study conducted at two high-yielding locations [Carrington Research Extension Center (CREC) – irrigation; Prosper]. Experimental design was a randomized complete block with split plot arrangement with four replications. Whole plots were row spacing (14 and 28 inches) and split plots consisted of a factorial combination of cultivars, planting rate (150,000 and 200,000 pure live seeds/A), and foliar inputs versus untreated check. The trials were conducted on conventionally-tilled soil with spring wheat as the previous crop. Inoculated Croplan cultivars 'RT0268' and 'RT0669' were planted on May 22 at the CREC and May 28 at Prosper. Foliar treatments were applied with a CO₂-pressurized hand-boom sprayer using TJ Technologies 'Sunflower/Canola/Soybean Mix' at 48 fl oz/A plus an experimental EMD Crop BioScience 'LCO promoter' at 4 fl oz/A at the second to third trifoliolate stages (V2-3), followed by an early-pod development stage (R3) application of Headline fungicide at 6 fl oz/A + NIS at 0.125% v/v. Plant disease was evaluated but notes were not taken due to very low incidence. The trials were harvested on October 13 at the CREC and October 27 at Prosper.

Results

At both locations, soybean seed yield was similar between row spacings (Table). At Carrington, the high planting rate resulted in a seed yield advantage of 3.8 bushels/acre. Yield was similar at both locations with use of the foliar inputs compared to the untreated check.

Using the yield mean of the two sites and economic assumptions listed in the table, net income for the narrow row spacing was \$8.10/A compared to the wide row. A loss of \$18.45/A occurred by using the high planting rate. Also, use of the special foliar inputs resulted in a loss of \$9.70/A compared to the untreated check.

Factor interactions affecting yield and other agronomic factors will be discussed at the completion of the study.

Additional study details may be obtained by contacting the principal investigators.

The study continues in 2010 at the two sites.

Table. Yield and net return with main factors in soybean intensive management study, ND, 2009.

Location	Yield (bu/acre)*					
	Row spacing (inches)		Planting rate (pls/acre)		Special foliar inputs	
	14	28	150,000	200,000	Yes	No
CREC (irrigated)	53.7	53.4	51.7	55.5	54.3	52.8
Prosper	53.8	53.7	55.5	51.9	54.7	52.8
Mean	53.8	53.6	53.6	53.7	54.5	52.8
Net \$/acre**	1.80			-18.45	-9.70	

*Bold numbers indicate statistically significant differences between treatments (LSD 0.05).

**Assumptions: \$9/bu soybean price; seed costs: \$70/140,000 seeds (RR2, treated); \$5/acre foliar application cost; \$20/acre foliar input cost.

¹Principal investigators.



RT0286 14 inch row spacing with 150,000 seeding rate on July 31, 2009 at Prosper



RT0669 14 inch row spacing with 150,000 seeding rate on July 31, 2009



RT0286 14 inch row spacing with 200,000 seeding rate on July 31, 2009 at Prosper



RT0669 14 inch row spacing with 200,000 seeding rate on July 31, 2009



RT0286 28 inch row spacing with 150,000 seeding rate on July 31, 2009 at Prosper



RT0669 28 inch row spacing with 150,000 seeding rate on July 31, 2009 at Prosper



RT0286 left and RT0669 right 28 inch row spacing with 200,000 seeding rate on July 31, 2009 at Prosper



Carrington trial (irrigated), 2009.



14-inch rows and two varieties, Carrington, 2009.



28-inch rows and two varieties, Carrington, 2009.