

The Effect of Tillage on Soybean Yields

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Objective

As fuel prices increase, there is continued interest in minimum and no-till soybean production. Some producers are tilling the soil in very early spring and planting into a stale seedbed. The objective of this study was to evaluate soybean yield as affected by three tillage systems: no-till, stale seed bed and fall chisel/spring cultivate.

Background

Cooperator:	Tom Weiler	Fertilizer:	None
County:	Morrow	Herbicides:	Canopy XL 3 oz. Pre-plant Glyphosate – 1 quart (twice)
Nearest town:	Chesterville	Planting Date:	April 11, 2005
Drainage:	Well drained	Planting Rate:	186,200 seeds/Ac.
Soil Type:	Chili Silt Loam	Row Width:	10-inch
Tillage:	See table	Harvest Date:	October 4, 2005
Previous Crop:	Corn		
Variety:	Vigoro V315RR		
Soil Test:	pH = 6.5		
	P = 82 ppm		
	K = 217 ppm		

Method

The study was conducted using a randomized complete block design with three treatments replicated three times. Plots were 30 x 800 feet in size with a twenty-foot wide center section harvested and weighed using a weigh wagon. Each treatment was planted using a 750 John Deere drill. The stale seedbed and tilled treatments were chiseled the previous fall. ***Due to the weather, the stale seedbed was worked in March rather than in the fall. The spring tilled treatments were worked the day prior to planting. The tillage utilized was field cultivating with a rolling basket one time across the field.***

Results

Table 1. Effects of Tillage on Soybean Yields

<u>Treatment</u>	<u>Burndown Cost (a)</u>	<u>Cost of Tillage/Ac. (b)</u>	<u>Total Cost Burndown and Tillage</u>	<u>Yield (Bu/Ac)</u>
No till	\$11.00	-	\$11.00	55.7
Stale Seed Bed	\$11.00	\$21.00	\$32.00	55.5
Fall Chisel/Spring Cultivate	-	\$21.00	\$21.00	56.7
				LSD (5%) = 3.1
				CV% = 2.43

- a) The burndown cost includes glyphosate, AMS, and \$6.00 application charge
- b) Tillage included cost for \$12 chisel plow and \$9 for secondary tillage.

There was no significant difference between the tillage systems used in this study. With the yields and cost of tillage used in this study it would be most economical to no-till soybeans. The benefit amounts to \$10.00 and 21.00 per acre over fall chisel/spring cultivate and stale seed bed respectively.

Multiyear studies should be completed to increase the reliability of this work and enable dependable recommendations relative to tillage systems.

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