

Advancing No-till Soybean Production

(Interim Report)

Purpose:

This project was designed to evaluate the potential for minimal (shatter) tillage in no-till soybean fields. Over the past few years some growers have reported lower yields with no-till soybeans as compared to conventionally tilled fields. This problem is most often reported on heavier soil types and during extreme growing seasons. A low level of pre-tillage prior to planting may help to prepare a more fit seedbed and increase yields while preserving the environmental and economic benefits of a no-till system. A light amount of tillage, no more than 7.5 cm (3 inches) deep may improve the seedbed by aerating, drying and warming the soil as well as managing previous crop residue. A traditional disc or cultivator is not adequate for this operation since this equipment cannot effectively handle the significant residue of a no-till system. A newly designed tillage tool called the RTS (Residue Tillage Specialist) was used in this project to evaluate the potential of shatter tillage.

Another aspect of this study was to assess the value of coulters on a seed drill for soybeans. John Deere drills are not equipped with standard coulters. Some producers have reported increased yields when attaching a coulters cart to their no-till John Deere drill. Coulters were operated in the seed row at the time of planting to assess plant stand and yield differences. The depth at which coulters should be operated at the time of seeding to maximize yields was also examined.

Methods:

A shatter harrow Salford RTS (Residue Tillage Specialist) was operated a few days prior to planting to prepare a lightly worked seedbed for no-till soybean planting. The RTS unit was run 1-3 days prior to planting. The RTS is equipped with 1¾ inch wavy coulters at 7 inch spacing with tine and rolling harrows. Please see Figure #1. The coulters were operated at a depth of approximately 7.5 cm (3 inches).

Figure #1. RTS (Residue Tillage Specialist)



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Other treatments in the experiment involved equipping a no-till 1560 John Deere with a Yetter couler cart. One $\frac{3}{4}$ inch wavy couler was set to run in front of each seed row. Please see figure #2. These coulters were tested at two operating depths. (1.5 inches and 3.5 inches).

Figure #2. Yetter Couler Cart assembled onto a 1560 John Deere No-till Drill.



Treatments included:

- 1) No-till 1560 drill (no coulters)
- 2) Shatter harrow operated 1-3 days before planting (Salford RTS)
- 3) No-till 1560 drill utilizing in-row tillage ($\frac{3}{4}$ inch coulters) set at planting depth (4 cm, 1.5 inches)
- 4) No-till 1560 drill utilizing in-row tillage ($\frac{3}{4}$ inch coulters) set deeper than planting depth (9 cm, 3.5 inches)

Fourteen trials were conducted in 2003 in the following counties: Middlesex, Lambton, Huron, Perth, and Wellington.

Results and Summary:

This was the first of a three year study (2003, 2004, 2005). Results and conclusions will be reported after the second and third years of the study.

Next Steps:

This study will be conducted for two more years.

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