

Cereal Seeding Evaluations

(Perth SCIA Major Project Grant)

Purpose:

Cereal seeding is often challenged by adverse weather conditions, yet early seeding is critical to maximize yield potential. Speed of seeding often becomes the limiting factor in these situations. One limitation to quick seeding is that most drills are relatively narrow (10'-20') and must be operated at low speeds (5-7 mph) to ensure proper seeding depth. A novel piece of equipment has been developed by Salford Farm Equipment that could significantly increase seeding speed. The Salford RTS air seeder uses the Salford RTS (residue tillage specialist) and air cart technology to seed in a no-till field at faster speeds than a traditional drill (8-12 mph). This increased speed, along with the potential for significantly wider equipment (30'-40') could be a way to speed up cereal seeding. However, seed placement accuracy with this unit is significantly decreased. How this decreased seeding accuracy impacts emergence, winter survival, heading date uniformity, yield, etc., is not known. This project assessed the impact of less accurate seeding to more traditional seeding methods.

Methods:

This project compared the Salford RTS seeder to a standard John Deere drill. Three locations of winter wheat were established in the fall of 2007, and followed to harvest in the summer of 2008. Plots were replicated twice at two of the locations, and three times at one location. Yield, test weight, protein, winter survival, uniformity, and stand establishment were assessed.

Treatments evaluated:

- 1) 7.5" John Deere drill
- 2) Salford RTS air seeder
- 3) Wing plow + RTS + drill

Figure 1. Air Seeder Used in Project



Results and Summary:

Table 1 shows yield results of three locations comparing the John Deere drill to the Salford seeding system. On average, there was yield penalty to the poorer seed placement in winter wheat of 5% (93.5 bu/ac vs 88.8 bu/ac). All three sites were planted mid to late season, and thus may not have been as prone to frost heave. This may favour the relatively shallow seeding depth of the RTS unit (data not shown).

Large acreage growers may consider this yield penalty of less significance than timely planting where yield loss averages 1 bu/ac/day for each day of delayed planting. However, for growers aiming at highest possible yields, this seeding method does appear to be at a disadvantage. One of the benefits of the Salford system, as with any

twin tank air cart, is the capability to place dry fertilizer right with the seed. This has been shown to increase yields by 5-7 bu/ac in no-till winter wheat systems.

Previous work with spring cereals has shown no yield penalty to the Salford system. Seeding depth of spring cereals is less critical as winter survival is not a concern. For large acreage spring cereal growers this system deserves consideration.

Table 1 also shows no benefit to tillage with winter wheat. This is consistent with data summarized in the Tillage Database (Janovicek and Stewart, in progress). This adds further support to the fact that no-till wheat has become the “conventional” means of planting wheat in the province for many years now and continues to be the preferred seeding method for most growers.

Table 1: Wheat Yield Response (bu/ac) to Various Seeding/Tillage Methods

	Location 1	Location 2	Location 3
No-till John Deere Drill	85.5	96.4	98.6
RTS Salford Air Seeder	83.4	91.9	91.2
Wing plow + RTS + Drill	85.9		95.0
Cultivator + Drill			97.5
To the Max + Drill	83.4		
RTS + Drill	84.8		

Next Steps:

This study was conducted with funding from a one year OSCIA major grant and will not be conducted again in 2009.

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