

## **Evaluation Of The Impact Of Row Unit Down Pressure Control On Corn Growth And Yield**

### **(Interim Report)**

#### **Purpose:**

Aftermarket planter modifications to control row unit down pressure have been well promoted into the Ontario marketplace, and are advertised for their ability to improve planter function, and final yields. The basic principles behind the modifications have merit, but the relative yield impacts of the different modifications, and their ability to respond above and beyond what is currently available in the marketplace is unknown, and has generally not been well investigated beyond anecdotal evidence. As a result, it is difficult to predict the returns these modifications can provide, making it difficult to make recommendations of when or where the use of these modifications may be most warranted.

#### **Methods:**

Three trials were conducted in Ontario in 2012, and were located at Maryhill, Ancaster, and Highgate. All three locations were conventionally tilled and planted with a 6-row John Deere 7200 Conservation planter equipped with Precision Planting 20/20 AirForce down pressure control system equipped with both down-pressure and up-pressure modifying airbags. Soil test P and K tested ranged from medium (MR) to rare (RR) probabilities of profitable responses. A total of seven treatments were installed at each site, and included three auto down pressure settings and four manual down pressure settings (Table 1). Trials were conducted as a randomized complete block design, with three to four reps at each location, all within existing corn fields to negate potential 'edge' effects. Fields ranged from flat (Highgate) to undulating topography (Ancaster). All yield data was collected as whole plot weights by combine and weigh wagon.

#### **Results:**

Significant differences in yield were only observed at the Maryhill and Ancaster sites (Table 1). At Maryhill, the "Auto Medium" setting was significantly lower than the "Auto Heavy" and "Manual 125 lb" settings, which were the highest yielding treatments. At Ancaster, "Manual 0 lb" and "Manual 375 lb" were significantly lower yielding than the "Auto Light", "Auto Medium" and "Manual 125 lb" settings. No significant differences in yield were observed at the Highgate location. At locations where yields between some treatments were significantly different, the only treatment which was consistently significantly different was the "Manual 125 lb" setting which was among the highest yielding at both the Maryhill and Ancaster sites.

**Table 1. Yields of seven Precision Planting 20/20 AirForce down pressure treatments at three sites in Ontario, 2012**

Treatment	Maryhill		Ancaster		Highgate	
	----- yield (bu/ac) <sup>†</sup> -----					
Auto Light	181	ab	204	a	251	nsd
Auto Medium	178	b	204	a	246	
Auto Heavy	187	a	196	ab	247	
Manual 0 lb	183	ab	193	b	248	
Manual 125 lb	185	a	201	a	243	
Manual 250 lb	182	ab	198	ab	246	
Manual 375 lb	184	ab	190	b	247	

† Means comparisons are valid within site only, means followed by the same letter are not significantly different at the 5% level

**Summary:**

Overall, down pressure treatments did not appear to have a significant impact on yields in 2012, but it was interesting to note that no (0 lb.) down pressure and very high (375 lb.) down pressure at the Ancaster site did result in significantly lower yields. Given the dry weather during the spring, soil conditions at planting time were generally very good at all sites regardless of variation in topography etc., thus it may be difficult to generalize the conclusions based on these sites and this single growing season.

**Next Steps:**

This was the first year of a two year project. It will be conducted in a similar manner in 2013, with a greater emphasis on attempting to plant under variable soil moisture conditions where this technology may be most warranted.

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