

## XVII PUSHING TRIAL

**Objective:** To evaluate the potential of the "Yield Shield" canola pusher for improving the success of straight combining of *B. napus* canola.

**Background:** Past research at Canola Production Centres has indicated that shattering losses from straight combining *B. napus* canola generally outweigh any benefits as compared to swathing. However, results have varied from losses as large as 50 % to significant increases in yield. The trials where straight combining has been most successful indicate that lodged crops make the best candidates for straight combining. Ag Shield, a manufacturing company in Benito, Manitoba, has designed a header that can be used to simulate lodging by pushing the crop over. This trial will help assess whether this new technology actually reduces the risks associated with straight combining.

**Methodology:** Treatments included the following:

- A) Swath at 30 to 40 % seed colour change
- B) Straight combine without pushing
- C) Pushed high (8"), with the lodging (about 20 % seed colour change) then straight combine
- D) Pushed low (3"), against the lodging (about 20 % seed colour change) then straight combine

**Observation:** This trial was seeded on May 15 into good moisture. The original plan for this trial was to push early (15 days prior to swathing) and late (5 days prior to swathing). However, with pusher scheduling problems and hot weather hastening seed colour change, modifications to the treatments were required. High winds and heavy rains in late July had left the canopy leaning heavily in one direction. So a high push with the lodging and a low push against the lodging were substituted for the early and late pushing date. A John Deere 4450 was used to operate the pusher. Even though the pushing process required driving backwards, it was a rather simple procedure for the few plots that were pushed. Pushing was done on August 4, swathing was done on August 7 and all plots were combined on August 29. Hail and high winds after pushing caused a significant amount of shattering in the pushed and straight cut plots.

At harvest, the pushed treatments were much harder to combine due to their closeness to the ground. The possibility of picking up rocks was a concern. The low pushed treatment was cut at about a 2" height, the high pushed treatment was cut at about a 4" height and the straight combine treatment was cut at about a 10" height. Some yield was lost in the pushed treatments where the tractor had driven over the edges of the pushed area, making it impossible to get to with the combine. A 20 ft John Deere flex-head with a pick-up reel was used for the pushed and straight combine treatments.

**Results:**

<b>PUSHING TRIAL Thief River Falls, MN</b>						
<b>Treatment</b>	<b>Yield (%)</b>	<b>Yield (lb/ac)</b>	<b>Yield (bu/ac)</b>	<b>Oil (%)</b>	<b>Seed size (gms/1000)</b>	<b>Contribution Margin (\$/ac)</b>
Swath	100	1559	31.2	43.4	3.4	19.02
Straight Combine	81	1255	25.1	42.7	4.3	(7.15)
Push Low	75	1173	23.5	42.9	3.6	(15.08)
Push High	70	1094	21.9	42.9	3.8	(22.07)
LSD		105.9	2.12	0.81	0.99	
CV%		6.4	6.4	1.5	20.2	

Note: Brackets in Contribution Margin reflect a negative value.

**Discussion:**

Swathing yielded significantly higher than the other treatments. Losses from the straight combining and pushing treatments were from the hail and wind damage that occurred prior to combining. Canola in the swath was more protected from damage than the standing canola. Even though the crop was leaning heavily prior to swathing, as it dried down it became more erect and tended to shell out in the straight combining treatment. The pushed plots also straightened up during the maturation process. This may have been a result of pushing them too late. Oil content and seed size were not significantly different among treatments. The swathed treatment had the highest contribution margin. Contribution margins reflect the differences in yield and fuel, lube and repair costs of each of the treatments. The expense of custom pushing was not taken into account here, or the economic losses would have been greater.