A Comparison of Direct Combining and Swathing Winter Canola Prior to Harvest

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Introduction

Most of the canola grown in the northern Great Plains and Canada is swathed prior to harvest because of the necessity for accelerated, uniform dry-down. With the warm and windy conditions of the southern Great Plains, swathing may not be necessary. However, swathing may reduce potential yield losses when conditions are right for excessive shattering, and many commercial producers are interested in knowing the ideal time for swathing under the region's climatic conditions.

Objectives

➢Evaluate the difference in canola seed yield between direct combining and swathing prior to harvest.

Material and Methods

➢Studies were conducted from 2007-2009 near Stillwater, OK; Manhattan and Hutchison, KS.

➢Experimental design was a Randomized Complete Block Design with 4 replications. Main effects included harvest method (direct combining and swathing prior to combing) and cultivar. Cultivars were selected that represented early, mid-early, mid-late, and late maturity.

➢Plots were 1.5 m in width and 9 m in length. Entire plots were swathed when seed color change reached ~60-65%. Plots were picked up with a small plot combine when moisture reached 10% (typically 5-7 days after swathing).

➢ Direct harvested plots were thrashed when seed moisture content was near 10% using a small plot combine.

➢Oil and protein were determined on Kansas samples in 2009.

Results

➢Yield was affected by harvest method in 3 out of 4 site years (Table 1). At Stillwater, swathing resulted in higher yields in both 2008 and 2009, while in Hutchison direct harvesting resulted in the highest yield. Yields in Stillwater were lower for direct harvesting due to severe shattering losses (20-40%) from wind.

➢Canola test weight was lower for swathing at Stillwater compared to direct harvesting. This may have been a result of extremely hot temperatures (>38°C) for 5 days following harvest. In Hutchison, test weight was increased with the swathing treatment.

Table 1. Average winter canola grain yields for swathed and direct harvested plots at Stillwater, OK in 2009.

	Stillwater 2008		Stillwater 2009		Hutchison		Manhattan	
Harvest Method	Test Weight	Yield	Test Weight	Yield	Test Weight	Yield	Test Weight	Yield
	lb bu^{-1}	kg ha^{-1}	lb bu^{-1}	kg ha^{-1}	lb bu^{-1}	kg ha^{-1}	lb bu^{-1}	kg ha^{-1}
Swath	38b†	1566 a	48	2417 a	48a†	1314b	46	2256
Direct	46a	949 b	48	1307 b	44b	1704 a	46	2284

† Within a column, numbers followed by different lowercase letters are significantly different at p≤0.05, by analysis of variance.

➢Yield response to harvest method is definitely dependent on the environment. Higher temperatures in the southern Great Plains can greatly accelerate dry down. This may lead to increased chances of shattering on windy days. Swathing prior to harvest helps manage some risk.

➢No interaction of harvest method and cultivar maturity was observed. Figure 1 shows the typical response to harvest method at Stillwater.

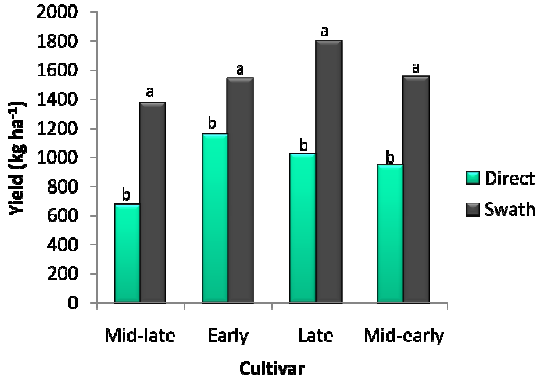

Figure 1. Winter canola seed yield in Stillwater for 2008.

➢No differences were detected in oil or protein content from Hutchison or Manhattan, KS in 2009 (Table 2).

Table 2. Protein and oil content from Hutchison and Manhattan, KS in 2009.

	Manhattan		Hutchison	
Harvest Method	Oil	Protein	Oil	Protein
	%			
Swath	38.8	25.4	38.9	23.5
Direct	38.7	26	39.4	23.1

Summary

➢Swathing or direct harvesting can be utilized effectively but swathing does eliminate some of the environmental risks associated with canola harvest on the southern Great Plains.

➢No differences were observed in oil content or protein between the two harvest methods.