



Mackenzie Applied Research Association

P.O. Box 646, Fort Vermilion, Alberta T0H 1N0.

Tel: 780-927-3776, Fax: 780-927-4747;

Email: manager@mackenzieresearch.ca www.mackenzieresearch.ca

Agronomic value of canola seed quality in northern Peace region

Introduction: The Peace River region of Alberta offers most challenging conditions for canola stand establishment in Western Canada. Only 20 to 40% of *B. rapa* (polish canola) and 25 to 30% of *B. napus* (Argentine canola) seeds can be expected to produce plants in the Peace region compared to 40 to 60% in most areas of western Canada (Canola Growers Manual). Low organic matter soils of the Peace region are prone to crusting and short growing season forces producers to seed canola in cold soils. Therefore, this area offers ideal conditions for assessing the effects of differences in seed quality on the establishment and yield of canola under field conditions.

Objectives: To evaluate the effects of seed production practices on canola seed performance in northern Peace region of Alberta.

Materials and Methods: Seed lots of canola (cv. LG3455) were obtained from the Scott Research Farm, Saskatchewan. These were produced in 2004 from seed sown at three dates (May 6, May 20, and June 3) and harvested (swathed – SW / straight cut - SC) at 5 moisture levels (SW60%, SW20%, SW10%, SW10%, and SC10%).

In 2005, the seed lots were direct seeded in barley stubble, using a factorial randomized complete block design at the Fort Vermilion Experimental Farm, Alberta. Canola seedling emergence at 14 and 21 days after seeding (Das), fresh seedling weights at 14, 21, and 28 Das, and seed yield of canola were measured. Fresh weight of seedlings was determined from 10 canola plants per plot. Data were analyzed using the Agriculture Research Manager (ARM) statistical software.

Results and Discussion: No insect, disease, weed, and lodging problems were observed. The data showed was no interaction between the seeding date and swathing time of canola seed. Seeding date in 2004 had a significant effect on canola seedling emergence in 2005 at 14 Das but not at 21 Das (Table 1). It did not have a significant effect on fresh seedling weight at 14, 21 and 28 Das or the seed yield of canola in 2005. In general, however, there was a trend for late seeding in 2004 to reduce the emergence and fresh seedling weight at all observation times in 2005.

Harvest time moisture level had a significant effect on canola seedling emergence at 14 and 21 Das (Table 2); with the SC10% treatment having the highest plant emergence. It also had a significant effect on fresh seedling weight at 14 and 21 Das but not at 28 Das. The seed derived from SW60% treatment resulted in the lowest fresh seedling weight at all evaluation timings. The effect of swathing time on seed yield was significant at 0.6% probability. The SW60% treatment had the lowest yield, which was significantly lower than the SW20% and SW10%2 treatments.

Results showed that both seeding date and swathing time in 2004 had some effects on canola seed performance in 2005. Compared to earlier seeding dates in 2004, the seed lot from the June 3 seeding date in 2004 generally resulted in lower seedling establishment, fresh seedling weight, and seed yield of canola in 2005. Also, seed lots that were harvested with 20% or less seed moisture content resulted in higher seedling establishment and seed yield compared to the seed lot swathed at 60% moisture content.

Conclusion: The results obtained in this study confirm previous research results from different locations in the province of Saskatchewan. To produce high vigour canola seed, the seed growers should aim to plant canola early and harvest canola at 20% or lower seed moisture level.

Acknowledgements: Funding by the Canola Agronomic Research Program (CARP). Original report written by J. Salvador Lopez and Kelly Zeleny.

Summary by Kabal S. Gill, Res. Ext. Coordinator, with funds from Extension project of ARECA. For more information, please contact MARA.

Table 1. Emergence, fresh seedling weight and seed yield of canola in 2005, from the seed lots produced with different seeding dates in 2004.

Seeding date (2004)	Plants/m ²		Fresh seedling weight (g)/10 plants			Yield bu/ac
	14Das*	21Das	14Das	21Das	28Das	
May 6	113	113	0.55	2.46	23.2	62.3
May 20	91	120	0.52	2.32	21.8	63.2
June 03	80	106	0.49	2.24	19.5	63.8
<i>LSD</i> _{0.05}	16.6	<i>NSD</i> **	<i>NSD</i>	<i>NSD</i>	<i>NSD</i>	<i>NSD</i>

* Das refer to days after seeding. ** NSD refers to not significant differences.

Table 2. Emergence, fresh seedling weight and seed yield of canola in 2005, from the seed lots harvested at different seed moisture levels in 2004.

Harvest stage	Plants/m ²		Fresh weight (g)/10 plants			Yield bu/ac
	14Das*	21Das	14Das	21Das	28Das	
SW60%	74	77	0.43	1.73	17.2	60.1
SW20%	89	117	0.52	2.43	23.0	65.4
SW10%1	96	123	0.52	2.46	21.0	62.6
SW10%2	103	119	0.59	2.36	25.0	65.9
SC10%	111	131	0.55	2.70	21.3	62.3
<i>LSD</i> _{0.05}	19	28	0.08	0.52	8.08	2.96

* Das refer to days after seeding.