Juncea versus napus

Evaluation of Adaptability and Ecological Performance of *Brassica juncea* Canola in Diverse Growing Environments

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The two *B. napus* cultivars in this five-site trial were quicker to mature and yielded more than the *B. juncea* cultivars. Therefore, *B. napus* may be better than *B. juncea* for short growing season areas.

Yantai Gan with Agriculture and Agri-Food Canada (AAFC) led the three-year study to determine the yield capacity of *Brassica juncea* canola in comparison with *B. napus* canola in various sites. The study also examined the suitability and feasibility of straight-combining *B. juncea* canola and *B. napus* canola by quantifying seed and pod losses during plant maturity.

Field trials were conducted over 11 site-years in Western Canada at Melfort, SK, Indian Head, SK, Scott, SK, Swift Current, SK and Lethbridge, AB (Table 1). Seven *Brassica* varieties were compared at each location, including: *B. juncea* hybrid (201045J10), three *B. juncea* varieties (8571, 8570 and a genetic line), a Roundup Ready *B. napus* canola (46P50), a Liberty Link *B. napus* canola (5440), and *B. juncea* condiment mustard (Cutlass). All plots were straight combined and seed yields measured.

Oriental mustard required the shortest growing period to reach maturity. The two *B. napus* cultivars took longer to reach maturity than oriental mustard, but they were quicker to mature than the *B. juncea* cultivars.

B. juncea had the lowest amount of shattered seed among the oilseed species, with no significant differences in seed shattering among all four *B. juncea* cultivars. However, this was not enough to overcome the higher yield potential of *B. napus* canola when straight combining. Overall, hybrid *B. napus* canola was still the best yielding crop at most sites and in most years, even in the drier areas of the average- and low-yielding sites.

These are the sites with a p-value (presented in the very right column) smaller than 0.05, which means the differences in seed yield among the seven varieties were significant statistically. Yield values followed by different letters within a row mean significant difference between the varieties in seed yield. ●

Table 1. Seed yield (kg/ha) of different types of canola evaluated at different site-years

Site-years	Hybrid juncea	Juncea 1	Juncea 2	Juncea 3	LL napus	RR napus	Oriental mustard	P value
Indian Head 2011	1479c	1530bc	1479c	/	2039a	1770abc	1812ab	0.002
Indian Head 2012	746c	1054abc	/	881bc	1328a	822bc	1254ab	0.025
Lethbridge 2011	3159ab	3344a	/	/	3397a	2846b	3429a	0.007
Melfort 2010	1329bc	1345bc	1172c	/	1802ab	1953a	1583abc	0.029
Melfort 2011	1615b	1568b	1515b	/	2855a	2562a	2721a	<0.0001
Melfort 2012	1647ab	1306b	/	1549ab	2059a	2043a	1973a	0.028
Scott 2010	1820c	2097bc	1752c	/	2888a	2532ab	1820c	0.0001
Scott 2011	2232b	2424ab	1177c	/	2618a	2372ab	2379ab	<0.0001
Swift Current 2010	952c	1199b	1031bc	/	1824a	1842a	1190b	<0.0001
Swift Current 2011	1300e	1743c	1307e	/	2195a	1937b	1537d	<0.0001
Swift Current 2012	1201ab	1105bc	/	1313a	1320a	1022c	1303a	0.0001