

There is growing interest in straight-combining canola and, on average, similar seed yields and losses can be expected to occur with both straight-combining and swathing. Past research on canola harvest management issues has largely overlooked genetic variability in resistance to shattering, instead focusing on harvest method, equipment configuration, and timing of harvest operations or general crop management. Previous studies have made broader comparisons of oilseed crops and showed that yellow seeded *B. napus* and *B. juncea* have greater shattering resistance than black seeded *B. napus* varieties as a whole; they also reported wide variability in environmental seed losses amongst the twenty-two *B. napus* genotypes evaluated.

A study was initiated in 2011 with the specific objectives of: **1)** Evaluating the relative resistance to pod shatter / pod drop amongst modern *B. napus* hybrids to identify cultivars that may be well suited for straight-combining. **2)** Quantifying environmental seed loss contributions from pods breaking off at the pedicle and dropping (pod drop) versus pod shatter in *B. napus* canola.

## Methodology:

Field trials were conducted from 2011-14 at Indian Head, Scott, Swift Current and Melfort, SK. The treatments were 15 canola hybrids including: **1)** 5440, **2)** L130, **3)** L140P, **4)** L150, **5)** 45H29, **6)** 45H31, **7)** 45H32, **8)** 73-75, **9)** 73-45, **10)** 74-44BL, **11)** 6050, **12)** 6060, **13)** 9553, **14)** 46H75 and **15)** 5525 arranged in a modified RCBD with four replicates. The plots were straight-combined at (T1, i.e. at, slightly before or optimal harvest time) and (T2, i.e. 3-4 weeks later). All response data were analyzed by the Mixed procedure of SAS 9.3 with hybrid as fixed and replicate as random factors, respectively.

## Results:

Generally, both hybrid and hybrid x site interaction had significant effects on all the parameters measured. Days to maturity (DTM) was affected by hybrid at all sites ( $P < 0.001-0.024$ ) with a difference of 2-7 based on

site year and ranged between 90-100 DTM based on hybrids. Seed yield at both harvest times (T1 and T2) was significant in 7 out of 13 sites due to hybrids. At T1, across hybrids, yield ranged from 1265 kg ha<sup>-1</sup> to > 3700 kg ha<sup>-1</sup>. At T2, yields were between 806 kg ha<sup>-1</sup> to 806 kg ha<sup>-1</sup>, however, 3 site years had yields similar or higher than T1 yields. For 7/13 sites where the hybrid effect on percent yield difference was significant ( $P < 0.001-0.022$ ), mean overall losses ranged from essentially no yield reduction with delayed harvest to over a 25% reduction. Using trays inserted beneath the crop canopy, environmental seed losses due to pod drop and pod shatter were estimated at both harvest dates. While the extent of pod drop losses appears to be largely affected by environmental conditions, differences amongst hybrids also appear to be a factor. The results indicate that pod drop is an important mechanism for environmental seed losses and, in many cases, contributed as much or more to losses than pod shatter. The derived values ranged from 1.0-2.2 and the relative rankings from lowest to highest total losses using this system were: L140 < 45H32 < 5440 < L150 < L130 < 74-44BL < 9553 < 45H29 < 6050 < 73-75 = 46H75 < 45H31 < 5525 < 73-45 < 6060.

## Conclusion and Recommendation:

The results provide information on both the variation in environmental seed losses and on the broader risks of environmental yield losses associated with straight-combining canola. Environment had a large effect on the overall magnitude of yield losses than differences amongst hybrids. Reductions in seed yield with delayed harvest ranged from < 5 % at 38 % of the sites to as high as 60 % in the cases of Indian Head 2012. While choosing a variety with reduced potential for pod shatter may contribute to successful straight-combining of canola, growers should strive to complete harvest as soon after the crop is fit to combine. This research was jointly funded by SaskCanola and Manitoba Canola Growers Association for 2011-12 and exclusively by the in 2013-14. Download full report at: <http://www.westernappliedresearch.com/research/warc-annual-reports/2014/>