A four-year, multiple location study was initiated in Saskatchewan in 2011 to provide information on the overall risk of environmental yield loss in straight-combined canola, and to quantify genetic differences in Brassica napus seed losses due to pod drop and pod shattering. The project results indicate that all of the hybrids evaluated could be straight-combined successfully provided that harvest was completed in a reasonably timely manner. Most importantly, growers should strive to complete harvest as soon as possible after the crop is fit to combine to reduce the overall risk of yield loss.

Across Saskatchewan, there is growing interest in straight-combining canola and mounting evidence that, on average, similar seed yields and losses can be expected to occur with straight-combining and the predominantly recommended practice of swathing. Previous research has largely overlooked genetic variability in resistance to shattering, tending to focus on other important canola harvest management issues with straight-combining.

In 2011, researchers initiated a four-year multiple location study at Indian Head, Scott, Swift Current and Melfort (Saskatchewan) to provide an improved, broader understanding of the frequency and magnitude of environmental seed losses that can occur under field conditions when B. napus hybrids are left to mature while standing. Field trials were conducted from 2011-14 with the objective of quantifying relative resistance to yield loss due to pod shatter and pod drop amongst a wide range of straight-combined B. napus hybrids. Researchers also wanted to provide information on the overall risk of environmental yield loss in straight-combined canola, particularly in cases where harvest was delayed.

Over the 4-year period, a total of 15 canola hybrids were evaluated, with updated canola hybrids added during the project. A seeding rate of 115 viable seeds/m² was used for all plots, which were direct seeded into standing cereal stubble. In all cases, the plots were large enough to accommodate two separate harvest passes at two distinct dates.
The first harvest date (T1) was targeted for at, or slightly before, the optimal harvest stage (seed dried to 10-12% moisture content with 2% or less green seed) while the second harvest date (T2) was targeted for 3-4 weeks later. Yield losses were estimated using two separate methods; either by comparing the change in yields between optimal and delayed harvest dates and by using seed trays inserted beneath the crop canopy throughout the entire harvest period.

Source: C. Holzapfel.

Overall, the study showed that environmental conditions had a large effect on the magnitude of yield losses and were generally of greater importance than hybrid differences within any given site. When harvest was completed early, environmental yield losses were below 5% at 93% of the 13 sites. Losses generally increased when harvest was delayed by 3-4 weeks; however, total losses were still $\leq 5\%$ (averaged across hybrids) at 53% of the sites and 10% or lower at 77% of the 13 site-years. These results suggest that environmental yield losses with straight-combined canola are unlikely to exceed 10%, even with minor delays in harvest.

Source: C. Holzapfel.
Although there were some varietal differences detected in resistance to pod drop and pod shatter, these differences were generally smaller than those observed either between harvest dates or across site-years and not always consistent across the sites where differences were detected. As well hybrid varieties were updated partway through the study, making direct varietal comparisons of limited value. Newer shatter tolerant hybrids such as L140P showed excellent potential for further reducing the risks of yield loss with straight-combining; however, factors such as overall yield potential, maturity and herbicide system continue to be important when choosing a canola hybrid, regardless of harvest method.

The final project results indicate that all of the hybrids evaluated could be straight-combined successfully provided that harvest was completed in a reasonably timely manner. Environmental conditions and timeliness of harvest had the greatest effect on overall yield losses, and completing harvest early kept yield losses to less than 5% at the majority of the sites. While choosing a variety with reduced potential for pod shatter/drop can contribute to successful straight-combining of canola, growers should still strive to complete harvest as soon as possible after the crop is fit to combine to reduce the overall risk of yield loss.