Large harvest bags (silo bags) are becoming popular for on-farm temporary storage of grains and oilseeds in western Canada. Researchers at the University of Manitoba conducted a three-year study to quantify the changes in seed quality of canola during bag storage under Canadian Prairie conditions. Overall, the results showed that there was no significant change in the grade and quality parameters of the canola seeds with 12% moisture content during 20 weeks of storage. However, after 28 weeks of storage, the canola seed was downgraded one level. Therefore, storing dry seeds for short duration is the best way of using harvest bags under Prairie conditions.

Researchers at the University of Manitoba conducted a three-year study starting in the fall of 2010 to quantify the changes in seed quality of canola during bag storage under Canadian Prairie conditions. Factors such as moisture content, germination, CO₂ and temperature were monitored and measurements collected at top, middle and bottom layers of the bulk. Seed free fatty acid value, germination and CO₂ measures were collected every two weeks, temperature was measured every 30 minutes.

In the first year of the study, canola at three different moisture contents (m.c.) of 8, 10, and 14% was loaded into grain bags in early October 2010 and unloaded approximately 10 months later in August 2011. A bag unloader or extractor was used to unload the 8 and 10% m.c. bags, and a front-end loader for the 14% bags because of the caking caused by moulds.

In the second year, three bags (each 21.3 metre length) were loaded with 12% m.c. canola seeds (approximately 67 tonnes of grade 1 canola seeds in each bag) in late September 2011, and unloaded at 5, 7 and 11 months (March 1, May 3 and September 8, 2012). In the 2012-13 experiment, canola seeds with 12% m.c. were loaded into three bags (each
21.3 metre length) on October 5, 2012. However, two silo bags were cut in a vandalism incident in November and were subsequently unloaded on November 8, 2012. The third bag was unloaded in early May 2013.

Overall, the results showed that there was no significant change in the grade and quality parameters of the canola seeds with 12% m.c. during 20 weeks of storage. However, after 28 weeks of storage, the canola seed was downgraded one level. Beyond 28 weeks of storage, there was a rapid reduction in germination and increase in CO₂ concentration, indicating the beginning of seed deterioration. Therefore, storing dry seeds for short duration is the best way of using harvest bags under prairie conditions.

Dry canola seeds (≤ 10% m.c., wet basis) could be stored for up to 6-8 months and 12% m.c. canola could be stored for up to 5 months without any significant change in quality or grade using harvest bags. Canola seeds above 12% m.c. should be stored only for 3-4 weeks in the harvest bags to avoid quality and quantity losses.

**Chart 1: Germination of canola seeds at different layers of silobags (2010-11 & 2011-12)**

Source: D.S. Jayas, U of Manitoba.

The research project continued in 2013 and 2014 and so far the results are confirming the original findings from the 2012 final results. Researchers expect to wrap up the project in the winter of 2014.