

Grain Bag Storage of Canola

In recent years grain bags (“silobags”) have been increasingly used by western Canada producers as a late-season storage option for canola. Grain bags offer two key advantages over traditional grain bin storage: first, bags are portable, so they increase efficiencies with less grain hauling; and second, bags can temporarily store high moisture grain, such as canola (with proper management to keep grain in good condition).



Canola seed in grain bags (Photo source: Tom Boyle)

Many producers are employing bag storage for high moisture canola, as there is a perception that bag storage is superior to that of bin storage. Reducing spoilage is one of the main reasons as bag storage is airtight and spoilage cannot occur in the absence of oxygen. Bags may be a welcome storage solution in late October when growers are trying to finish canola harvest; and it can solve the problem of where to store high moisture canola in the short term. However, at some point in time high moisture canola stored in bags will require conditioning or drying in order to be sold or stored long term.

It is very important to monitor grain bags throughout the storage period. Grain temperature should be monitored at least twice per week until temperatures stabilize or decrease to safe levels. Ideal temperature for stored canola is below 15 degrees C and 8% moisture. It is also critically important to monitor the grain bags for tears as birds and other animals such as deer can puncture holes in the bag allowing air to get inside and ultimately lead to crop spoilage.

UNIVERSITY OF MANITOBA STUDY: First-year results of a recent study showed that bags can be an effective tool in managing high moisture canola, but are not necessarily a long term storage solution. The University of Manitoba, in collaboration with Agriculture and Agri-Food Canada, examined the effect of various moisture contents of canola seed stored in grain bags over approximately a year-long period. The moisture contents examined in the study were 8, 10, and 14% respectively. The bags were sampled on a bi-weekly basis; moisture, temperature and seed quality were assessed at various positions in the bag (top, middle, and bottom).

Preliminary results showed that in all treatments the moisture content of the canola located at the top of the bags was higher than the other areas of the bag due to moisture migra-



Use of temperature probe (Photo source: Tom Boyle)

tion inside the bag. The temperature of canola seeds near the bottom of the bags was higher than other parts of the bag, and canola seeds near the top of bags were close to the ambient air temperature. The researchers also found that canola seeds can be stored at less than 10% moisture content in grain bags for 10 months without significant quality deterioration (assuming storage begins in October). Higher moisture canola seed (higher than 14% moisture content) can only be stored for a short period of time (less than few months) without any quality deterioration. Further testing is required to assess the quality changes of earlier harvested (mid to late August) canola stored in bags.

FACTORS AFFECTING STORAGE QUALITY: There are many factors that affect the quality of canola in storage, including seed maturity and condition, seed moisture and temperature, length of storage, moulds, insects and mites, dockage, cultivar type, climate, and the storage and handling methods used. Cool, wet environmental conditions are not favorable at harvest time and in these types of situations many producers will harvest canola with higher moisture contents. In this situation the producer must decide what type of storage to use.

Placing high moisture canola in a bag or bin can result in spoilage if not monitored and managed properly. In high-moisture situations, seed conditioning is required to prevent spoilage and keep the canola in good condition. Conditioning involves moving air through the grain mass to prevent spoilage that results from moisture migration and seed respiration. Canola harvested above 8 to 9% moisture must be conditioned, especially if grain temperatures are above 25° C. The objective for long-term successful storage is to cool the seed below 15° C and lower moisture content to 8%. “Aeration and/or ‘turning’ canola can be an effective way to prevent spoilage, but if moisture levels are above 10% to 12%, growers need to consider heated air drying. Currently, there is no way to condition high moisture canola that is stored in a bag. Therefore it must be removed and conditioned in a bin.

References

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