



CHAPTER

5.0

Post-Harvest Crop Storage

This chapter describes beneficial management practices to properly store grain, hay and silage to protect the environment and to maintain crop quality.

Grain, hay and silage need to be properly stored to protect the environment and to maintain crop quality. Leak-proof covers are essential for grain and silage and are preferred for hay. Storage should not be in a location where water runs or ponds. Storage structures need to be secure and stable. It is advisable to consult an engineer on the location, design and construction of large storage structures.



For information on the design of crop storage facilities, go to the Canada Plan Service publications on Grain, Forage and Feed Structures (<http://www.cps.gov.on.ca/english/gs7000/grain.htm>).

5.1 Grain and Hay Storage

5.1.1 Grain Storage

- ▶ Use water-proof and rodent-proof storage to prevent rotting and/or fecal contamination of the grain. Check the storage area regularly for holes or cracks and seal them.
- ▶ After use, clean out the leftover material from bins, and bury the material or take it to a landfill. Check for signs of insects and rodents in the bins.



For more information, see *Management of Cereal Grain in Storage* (AAFRD) and *Storage of Canola* (AAFRD).

5.1.2 Hay Storage

- ▶ Cover bales with tarps to reduce spoilage, nutrient leaching and dry matter losses.
- ▶ Store bales on well drained areas.
- ▶ To protect hay stored outdoors from deer and elk, use electric fencing or provide alternative food sources for the animals (see box).
- ▶ To reduce fire hazard, store hay away from buildings, shelterbelts and power lines.



- ➔ Cover bales, with tarps to reduce spoilage, nutrient leaching and dry matter losses.

Courtesy of AgTech Centre – AAFRD

Minimizing Damage by Deer and Elk to Stored Feed

- ▶ Stack and wrap round bales at least two tiers high and keep edges as straight as possible to prevent deer and elk from climbing the stacks.
- ▶ Use appropriate fencing to protect stored feed from deer and elk.
- ▶ Clean up spilled grain, loose hay and other feed.
- ▶ Do not allow wildlife to linger and lose their fear of humans because they will attract others.
- ▶ Keep wildlife away from yards. Scarecrows wearing clothes with human scent and radios may be enough to keep them away if they have not become conditioned to humans or dependent on the food source.
- ▶ Contact your local Alberta Fish and Wildlife office for information on stack protection, scaring devices, repellents, fencing and other prevention programs.

Source: North American Waterfowl Management Plan, Alberta Prairie Care. 2001. Wildlife Damage Compensation and Prevention. Publication No. NWMP_007.



For more information, see *Using Electric Fences to Protect Stored Hay from Elk and Deer* (AAFRD) and *Wildlife Damage Compensation and Prevention* from the North American Waterfowl Management Plan.

5.2 Silaging

Silaging produces a palatable, nutritional feed supply. Silage can be harvested in almost all weather conditions. It offers a way to salvage hail-damaged, frozen and weedy crops, and can also be used as an environmentally friendly form of weed control. Fields intended for silage can be planted to a variety of crops, increasing the diversity of plant life.

5.2.1 Silage Seepage

Silage must be handled and stored properly to prevent seepage. Silage seepage contains high concentrations of nutrients and acid that can increase the levels of ammonia, nitrate and iron in the water. Seepage can enter water bodies by runoff or percolation through the soil.

When selecting a storage location, investigate soil, topography and water table status to determine the environmental risk to nearby water. The storage facility should be well away from watercourses and flood plains, and more than 100 m (330 ft) from a water source. It should also be placed where the natural drainage is away from nearest surface water body.

Make sure all parts of your storage, including the lining, are in good condition. Concrete floors and walls should have no cracks. Silage covers can be designed to remove rainfall away from silage so water cannot seep into or under the silage.

Silage moisture should be lower than 65% to minimize seepage. Prevent any seepage from reaching water sources. It is best to have a professionally designed and well-maintained seepage **collection system**. Prepare a plan to deal with the collected seepage on an annual basis; the seepage can be applied to your crop land.



➔ Silaging produces a palatable, nutritional feed supply.

Courtesy of AAFRD, AgTech Centre – AAFRD

5.2.2 Silage Gases and Odours

Silaging produces greenhouse gases – carbon dioxide and sometimes oxides of nitrogen. Silage odour may be offensive to some people. Locate silaging facilities downwind from nearby residences.



For more information on silage storage, see *Storage of High Moisture Barley* (AAFRD), *Silage Manual* (AAFRD), and *Alberta Forage Manual* (AAFRD).

5.3 Information Sources

5.3.1 Contacts

All Alberta Government offices may be reached toll-free by dialing 310-0000.

- ▶ Alberta Agriculture, Food and Rural Development: Ag-Info Call Centre, phone: 1-866-882-7677; website: <http://www.agric.gov.ab.ca>
- ▶ Your district office of Prairie Farm Rehabilitation Administration (PFRA) of Agriculture and Agri-Food Canada; PFRA website: www.agr.gc.ca/pfra
- ▶ Alberta Environment: phone: 1-780-944-0313; website: <http://www3.gov.ab.ca/env/>

5.3.2 References

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Mills, J.T. 1996. **Storage of Canola**. Alberta Agriculture, Food and Rural Development and Agriculture and Agri-Food Canada. [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/crop1301](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/crop1301) [accessed December 2003].

North American Waterfowl Management Plan, Alberta Prairie Care. 2001. **Wildlife Damage Compensation and Prevention**. North American Waterfowl Management Plan, Publication No. NWMP_007.