

BEARSMART

Deadstock Composting and Bears



our challenge Bears exist throughout most of Alberta. Black bears are found across the province, with the exception of some agricultural lands in the south east corner of the province and grizzly bears are found primarily along the Rocky Mountains and in the Foothills of western Alberta. In recent years some areas of the province, particularly parts of southern Alberta, have been experiencing grizzly bear activity in areas further east of traditional home ranges.

A large portion of Alberta's bear populations overlap areas where people live, work and play. This has resulted in increasing human bear interactions on both public and private lands. Some interactions involve bears accessing unnatural food sources including garbage, fruit trees, bee yards, livestock, livestock feed and, in some cases, deadstock piles.

Attempts are often made to bury dead livestock to prevent access by bears and other scavengers. The reality is that bears are opportunistic feeders guided by a good nose and will likely discover deadstock piles at some point in time as livestock carcasses are a desirable food source for bears. If the location of the deadstock is close to outbuildings, ranch houses, or calving pens, issues of public safety, possible property damage, or future predation of livestock can be a concern.



Deadstock and grizzly bear

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There are a few mitigation measures that can be undertaken to reduce the chance of deadstock becoming a concern for landowners. Options such as pick up of deadstock by rendering companies or disposal in landfills may be available in some jurisdictions. If deadstock can be removed to an area that is not frequented by people, bears and other wildlife will consume the carcass without any public safety concern. Another option for safe disposal of carcasses onsite is composting.

What is Composting?

Composting is the aerobic (requires air) decomposition of organic material. During this process, microbes consume oxygen and carbon to break down organic materials like meat protein, fat and bones into a stable mixture called compost while releasing heat, water and carbon dioxide.

Location

In Alberta, a compost pile must be at least 100 metres from wells or other domestic water intakes, streams, creeks, springs and high-water marks of lakes and at least 25 metres from the edge of a coulee, major cut or embankment. Compost must also be at least 100 metres from any residences or any livestock facilities including pastures owned or leased by another person. The composting site should be on private or leased land of the livestock operation. Transportation of cattle mortalities off farm requires a licensed deadstock hauler. Ingredients required for compost (other than the deadstock) should be stored at the compost site and will be described later. All livestock should be restricted from access to the composting site.

Compost ingredients and construction

Compost is constructed in layers. The bottom layer should be rich in carbon (straw, sawdust, moldy hay...), as dry as possible and at least 45 cm deep, if composting cattle or other large mortalities. The mortalities are next placed in a layer over the base (Figure 1). Mortalities should not touch each other as air flow is important for optimal composting. Mortalities are then covered with a layer of manure, sawdust, manure-sawdust mix to a depth that completely conceals the presence of the carcass and is also sloped to avoid pooling rain or snow (Figure 2). A finished compost pile containing cattle or other larger carcasses should be the height of a very tall person. In Alberta, it is usually not necessary to build a roof over the compost to shield from rain or snow, but the layer covering the carcasses needs to pass a squeeze test before being used. If moisture can be squeezed from the material, it is too wet to use in compost. If the material does not gather into a loose ball when squeezed, it is too dry.

Compost monitoring and turning

Temperature of the compost should be monitored by using a long stem dial-type thermometer (Figure 3). If the compost pile is properly assembled, it should heat $>40^{\circ}\text{C}$ (104°F) within 2 days of construction. Once compost actively begins to heat, it will no longer be attractive to bears. Maximum temperature of compost is about 72°C (162°F), with temperatures $>55^{\circ}\text{C}$ (131°F) important for the destruction of pathogens. The better the compost layout and construction, the hotter and longer the heating of the compost.

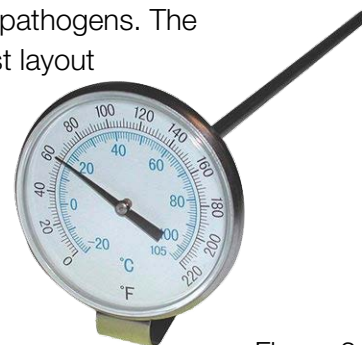


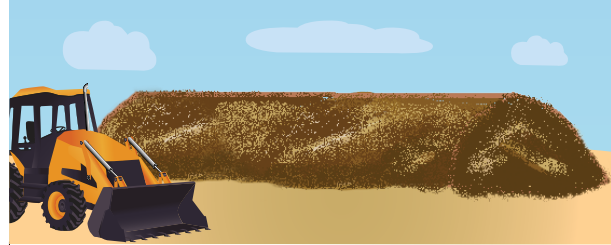
Figure 3

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Base layer at least 45 cm (18 in) deep.
Base layer should be rich in carbon. Straw or sawdust are good choices. Base layer should be as dry as possible to absorb excess liquids.

Figure 1



Finished height of windrow approximately 2 m (6.5 feet).
Cover layer should pass squeeze test. Manure, sawdust or manure/sawdust mix are good choices for cover layer.

Figure 2

After the compost cools to $<30^{\circ}\text{C}$ (86°F), it is ready to be turned, usually after 3 months of heating. To turn the compost, scoop the top of the compost pile into a loader bucket, lift the bucket to maximum extension and drop the material in the desired location for the new pile. The top of the initial compost then becomes the bottom of the secondary compost pile. Provided the compost has heated well for the first 3 months, little flesh and only a few bones should be present at the first turning. After turning, cover the turned pile with a fresh layer of manure or sawdust, to ensure no bits of flesh and bone are attractive to scavengers. Nine months (3 turns, every 3 months) is usually sufficient to fully compost mature cattle in Alberta.

Other considerations for deadstock composting

In areas frequented by bears the installation of electric fencing can safeguard a new compost structure. This is essential until the compost begins to actively heat. Properly designed and installed electric fence has proven to be effective at deterring bears from accessing food

attractants including deadstock / compost yards. Once bears learn they cannot access food from a particular area, they typically move on. The result is no food reward for the bear, no property damage or public safety concerns and no need to remove bears – a win for all concerned. Compost may also be constructed in specially-designed bins as an alternative to electric fencing, although related costs are higher.

Although most pathogens present in the mortalities are destroyed during composting, livestock suspected of reportable diseases such as anthrax or Bovine Spongiform Encephalopathy (BSE) should not be composted. Contact your veterinarian if unsure of the cause of the mortality.

Composting can provide year-round disposal of deadstock in Alberta, but to start a compost pile in the winter, a stockpile of warm manure is necessary. Manure should be as uniform as possible (no wet areas or chunks). Pre-processing manure through a manure spreader before stockpiling will increase manure uniformity, aeration, and compost

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success. Alternatively, a previous batch of compost may be turned, with part used as a "hot" cover layer for new compost.

Open compost yard sight lines - Ensure open sightlines are in place so that bears and people are alerted to each other's presence. This will help to reduce the chance of surprise encounters.

Carry and know how to use bear spray, especially when working with carcasses and building the compost. It is recommended that people working in bear country carry bear spray and to know how to use it properly. Bear spray is an effective tool to deter bears and other wildlife and is easy to use.

Additional Resources

Deadstock Pick up - Southern Alberta

<http://www.watertonbiosphere.com/projects/carnivores-communities/>

Living with Carnivores: Boneyards, Bears and Wolves

A short film that tells the story of a successful deadstock management program in western Montana's Blackfoot River valley.

<https://vimeo.com/131528982>

Sharing the Range

A short film that tells the story of how ranchers in southern Alberta are finding innovative ways to coexist with large carnivores.

www.sharingtherange.com

For compost trouble shooting or advice on mortality composting, call or contact your local AEP or Alberta Agriculture and Forestry office. For additional information on how to prevent interactions with bears or other wildlife, please visit Alberta BearSmart at <http://aep.alberta.ca/recreation-public-use/alberta-bear-smart/default.aspx>

