Large animal mortality composting

Alberta

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Table of Contents

Large Animal Mortality Composting 4

Mortality Disposal 4

Potential Environmental and Biosecurity Risks 5

Livestock Mortality Composting 5

Keys to Success 6

Nutrient Balance (C:N) 6

Moisture 6

Temperature 7

Carbon material selection 7

Build and Manage Compost Piles 8

Two Stage Process 10

Composter Design 10

Bin Composting 10

Sizing the Composter 12

Sizing the Windrow 14

Planning Considerations 15

Location/Access 15

Compost Uses 17

Troubleshooting 18

Reportable Diseases 19

Appendix A Design Worksheet 20

References 24

For More Information 25

Large Animal Mortality Composting

Mortality Disposal

Mortalities happen. Under Alberta's Disposal of Dead Animals Regulation of the *Animal Health Act*, the owner of a dead animal shall dispose of the animal within seven days of its death. Mortalities can be composted, incinerated, buried, rendered or naturally disposed. Today, animal agriculture is challenged to discover innovative ways to dispose of livestock mortalities. Composting of livestock mortalities is one option. There are two general approaches to livestock mortality composting: bin systems and windrow systems.

Disposal of Dead Animals Regulation

This regulation can be found on the open government portal at open.alberta.ca/publications by using the search publications box.

The environmental considerations for improper disposal include:

- Odour – decomposition of organic matter, particularly the anaerobic (lacking oxygen) breakdown of proteins by bacteria, will produce a foul odour.
- Scavengers – ravens, magpies, coyotes, etc. and insects can transmit disease and are a nuisance.
- Pathogens – disease-causing spores may still be viable.
- Excess Nutrients – concentrated source of nitrogen.
- Nuisance – visible carcasses and bones fuel social issues and can puncture tires.

Composting in a properly managed system will work to prevent livestock disease transmission, protect air and water quality and reduce the nuisance of carcasses and bones. Composting improperly in an unmanaged system can result in a large nuisance and risks social repercussions.

Costs related to composting mortalities include the time to manage the process, operating costs and equipment costs. Managing the process requires time to form the base for composting, to stockpile carbon materials, to add mortalities, to turn the windrow and the time to land apply the finished compost. Annual operating costs include fuel, labour, land costs for the site and the costs of the carbon materials. The equipment costs for composting include the use of a front end loader tractor or another means to build and turn the material.

Potential Environmental and Biosecurity Risks

POTENTIAL RISK

Lowest Risk

- Compost in a properly managed system or burn in an approved incinerator on the farm.
- Bury in appropriate soils or store frozen for spring burial or rendering plant pick-up (refer to Livestock Mortality Burial Techniques).
- Partially buried or carcass left outside for scavengers or to decay.

Highest Risk

Livestock Mortality Composting

Benefits of livestock mortality composting include:

- Inexpensive alternative for large animal disposal
- Can kill pathogens and reduce chance to spread disease
- Destroys the viability of weed seeds
- Environmentally safe and valuable soil carbon material
- Can be operated year round
- Utilizes equipment available on-farm
- Low odour generated
- Low labour and management requirements
- Publically acceptable
- “Green” option – recycles and promotes biosecurity
- Expands social acceptance

Composting is the biological breakdown of organic materials in an aerobic (presence of oxygen) environment. Livestock mortality composting requires a high-carbon material with moderate moisture levels and good porosity to surround the carcasses which have a high moisture content and nearly zero porosity. The carcasses and carbon materials are layered into the pile and no mixing is done until after the high-rate (primary) stage of composting has occurred. In and around the animal, the process is anaerobic but as gasses are produced and move away, they enter an

aerobic zone. Here the gasses are trapped in the surrounding material which supports bacteria to form a biological filter, or a biofilter. Composting livestock mortalities is best described as an "above-ground burial in a biofilter with pathogen kill by high temperature."

The carbon material around the carcass serves several key functions:

- Surrounds the carcasses making them less accessible and attractive to pests.
- Absorbs excess liquids released by decomposing carcasses.
- Provides structure and porosity which promotes air movement throughout the material.
- Provides an energy source for microbial growth.

Avoid turning the pile during the primary stage. After this time, the pile is moved to begin the secondary stage. Moving the pile introduces air and mixes the contents leading to uniformity in the finished compost. The secondary pile is then turned and placed in a pile for storage. Bones sometimes remain intact after completion of the storage process. They are generally quite brittle and pose no health risks or danger to equipment when land applied.

While composting is a natural process, it requires proper conditions to occur rapidly, minimize odour and prevent nuisance problems.

Keys to Success

Nutrient Balance (C:N)

The proper compost mix requires both carbon (C) and nitrogen (N) at the proper ratio near 30:1. This will result in a composting process that generates little odour yet offers an environment where microorganisms can flourish. Fresh carcasses have a low C:N of 14:1. Plant materials such as wood chips, sawdust, chopped corn stover, shredded paper or straw have a high C:N for on-farm mortality composting.

Moisture

Like all living things, microorganisms need water. To encourage their growth and rapid composting, water content of the mixture should be 50 – 60% wet basis. It is important to avoid excess water due to the potential for odour and excess liquids released by decomposing carcasses. When fresh large animal carcasses are used, there is usually no need to add extra moisture. If the carbon material is extremely dry (>85% dry matter) or the carcasses have dried out before composting, water may be needed.

Temperature

Temperature is a good indicator of the “health” of the compost process. A probe-type dial thermometer with a one-metre (39 in) stem is good for monitoring temperatures, Figure 1. Temperatures should be checked frequently throughout the pile. Normally, temperatures in the primary stage should rise to 55 – 65°C (131°F – 149°F) in one or two days and peak at 60 – 70°C (140°F –158°F) within seven to 10 days.

Temperatures above 55°C (131°F) over three days will kill parasites and fecal and plant pathogens within the pile. However, to maintain high temperatures, the pile must be adequately sized, 2.4 – 3.6 m (8 – 12 ft) wide at the base and 1.5 – 2.1 m (5 – 7 ft) tall. Microbial activity declines rapidly as compost temperature exceeds 71°C (160°F).

Figure 1. Temperature Measurement

Although experience indicates that temperatures above 75°C (167°F) are rare, a remote possibility exists that temperatures could rise to spontaneous combustion levels. If temperatures appear to be rising towards 75°C (167°F), the compost should be spread on the ground to cool.

Carbon material selection

Sawdust is an ideal carbon material for large animal mortality composting due to:

- Small particle size
- Open spaces (porosity)
- Bulk density ranging from 24 to 111 kg/m^3 (40 to 186 ft/yd^3)
- pH of 7.0 to 8.0
- Ease of handling
- Absorbency
- High carbon content

If sawdust is not available, other plant materials such as wood chips or straw can be used. Since these tend to be less absorptive and have poorer insulating properties than sawdust, their use requires more care during cold or wet weather.

Table 1. 8 key factors for composting success and acceptable ranges to aim for when composting

Major factors	Reasonable range	Preferred range
Nutrient balance, C:N	20:1 – 40:1	30:1 – 35:1
Moisture	45 – 65% wet basis	50 – 60% wet basis
Temperature	45 – 68°C (113 – 155°F)	54 – 66°C (130 – 150°F)
Particle size	0.8 – 1.2 cm (1/8 – 1/2 in)	Depends on material
Porosity	30 – 50%	35 – 45%
Bulk density	<640 kg/m^3 (1100 lbs/yd^3)	
pH	5.8 – 9.0	6.5 – 8.0
Oxygen concentration	>5%	>10%

Build and Manage Compost Piles

Large animal composting can be accomplished by layering in either a bin or a windrow. The material is layered the same for both systems. Begin by placing a 600 mm (24 in) layer of carbon material such as sawdust on the bottom, see Figures 2 and 3.

Carcasses are placed on top of the base layer at least 230 mm (9 in) away from the edge of the base and should be 600 mm (24 in) apart.

Carcasses should be 600 mm (24 in) apart

Too many carcasses in one spot leads to localized wet areas and poor composting.

After the carcasses are positioned, they are covered immediately with 600 mm (24 in) of carbon material. Layering of carcasses and carbon material continues until the pile is 1.2 – 1.8 m (4 – 6 ft) tall. Cover the pile with **600 mm (24 in)** of carbon materials.

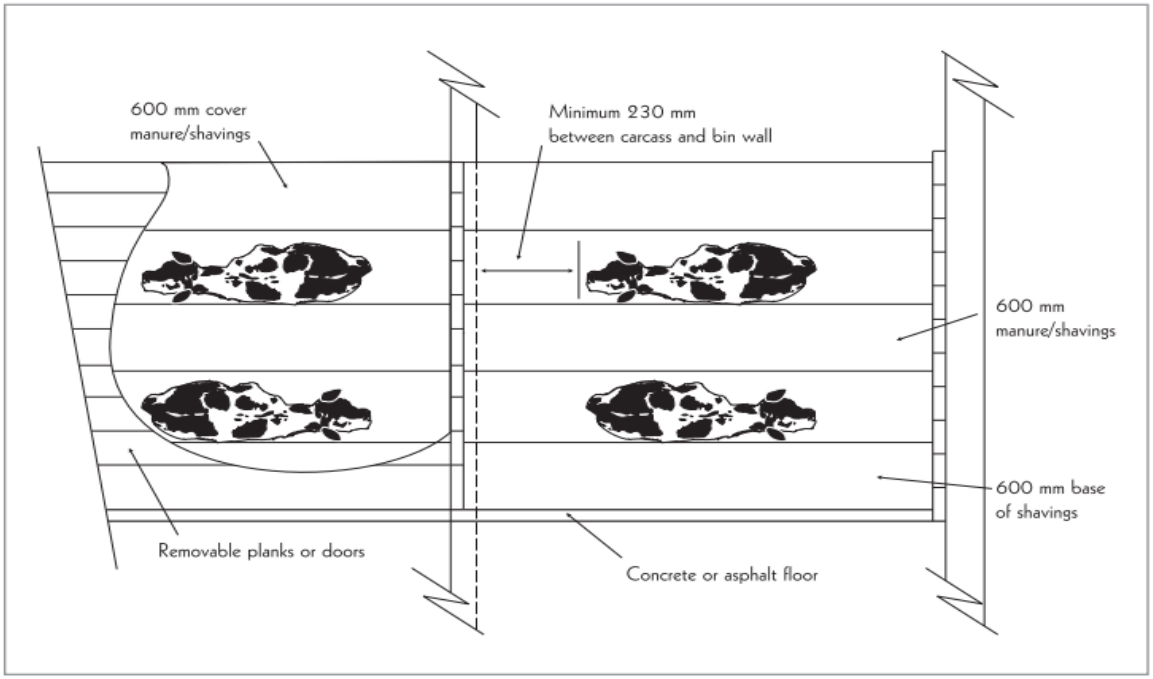

Figure 2. Composting bins built in layers

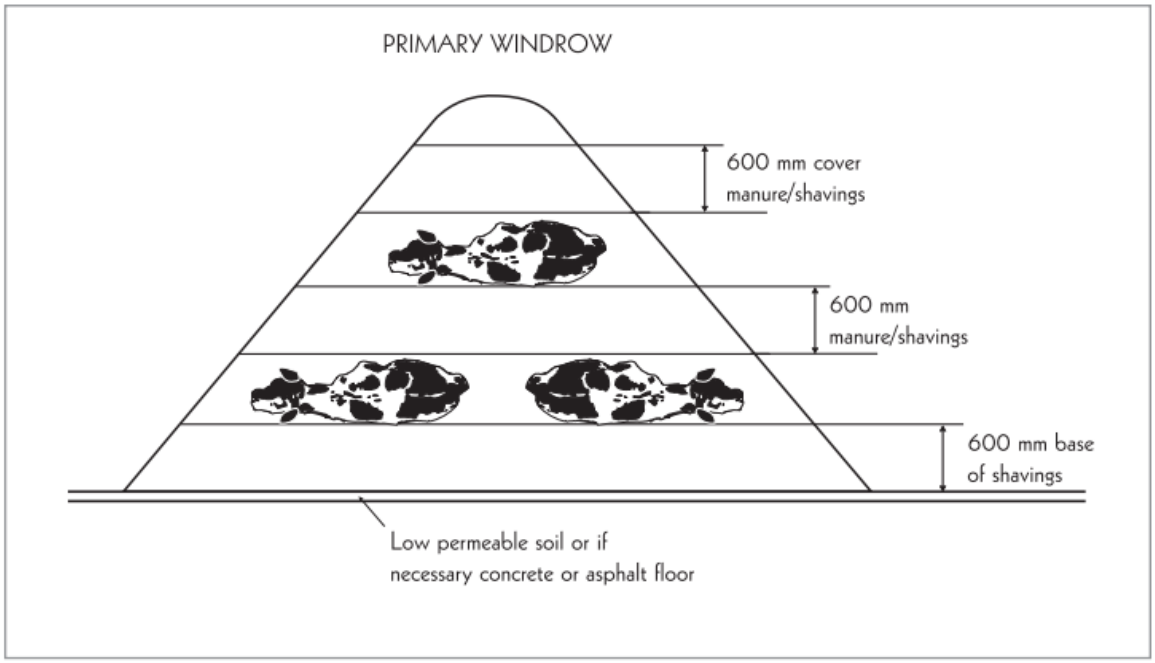

Figure 3. Composting windrows built in layers

Two Stage Process

After the initial piling of a windrow or completely filling a bin, the material will heat up quickly and then gradually start to cool. The cooling is a normal sign that organisms are starting to be deficient in one of the ingredients. This primary stage for large animal mortalities lasts approximately three months. It may be necessary to extend this period of time if an unusual number of large carcasses are composted or if ambient temperatures are low. Mix the pile to re-introduce oxygen and redistribute the composting material to encourage rapid decomposition causing the temperatures to rise again. This secondary stage lasts approximately another three months.

By the end of the second heating stage, carcasses are normally reduced to a few brittle bone fragments that are clean and free of tissues that cause odours and attract insects and scavengers. Large carcasses may need a third heating stage.

Failure to manage the system will result in odours that attracts flies, scavengers and other vermin to the site.

Composting is considered complete when there is:

- No soft animal tissue
- No bones or bone fragments larger than 15 cm (6 in) in any dimension
- No other animal matter larger than 2.5 cm (1 in) in any dimension
- No offensive odours

Composter Design

The compost structure is designed for daily losses and occasional periods of high loss. To do this, there are two basic designs: bin and windrow composting.

Bin Composting

Bin composting improves the aesthetics of mortality composting. As described previously, the primary stage lasts three months before moving to a second bin or to a windrow for the secondary stage. The layout of the composter should be flexible. This will accommodate existing features, restrictions, traffic patterns, equipment or other factors particular to a given operation. No specific layout is best in all cases.

The following points should be taken into consideration when designing a mortality bin composter:

1. Surface water should be diverted away or around the compost site to eliminate contamination.
2. Depth of compost bins should not exceed 1.8 m (6 ft). This will reduce compaction effects and the potential for spontaneous combustion.
3. If small carcasses will be placed inside the primary compost bins by hand, the front of the bin should be designed so that carcasses will not have to be lifted too high. This can be done with removable drop boards that slide into vertical channels or with doors that split horizontally.
4. The width of compost bins is usually selected to accommodate loading/unloading equipment. Tractor front-end loaders or skid-steers are typically used. Bin width should be at least 0.3 m (12 in) wider but preferably 0.6 – 1 m (2 – 3 ft) wider than the bucket. If wheels on the equipment are wider than the bucket, the bin should be widened accordingly.
5. The length of the compost bins are generally 3 – 4.5 m (10 – 15 ft) for large animals. A disadvantage of longer bins is they are more difficult to enter and exit.
6. Several smaller primary composting bins work more efficiently than a few large bins.
7. Even though calculations may indicate fewer, a minimum of two primary bins is required. This allows use of the second bin while the last additions to the first bin are composting.
8. Secondary composting volume may be provided in bins that are duplicates of primary bins or a large bin.
9. It may be desirable to add one or two extra primary composting bins. These bins can be used to store ingredients such as sawdust. If unusually high mortalities occur, the extra bins could be put into service. Experience has shown that some ingredient storage at the composter site greatly facilitates management of the process.

Extra space provides valuable flexibility for contingencies such as busy times of the year when bins cannot be emptied on time or occasional batches requiring additional time to decompose completely.

Temporary bins for mortality composting have been constructed using large bales as sidewalls with no roof. This type of construction is less expensive and provides the flexibility, such as the number of bins and their location that a permanent structure would

not. When the need arises, bale bins can also be used along with a permanent structure facility to provide additional composting capacity.

Sizing the Composter

The design, number and size of bins can be calculated once an estimate of the number and weight of mortalities has been determined. Average daily death losses are located in Table 2. These average values may have to be modified to reflect different housing alternatives and management systems. Appendix A contains these calculations.

Bins with 15 – 30 m^3 (530 – 1060 ft^3) of capacity are recommended for large animal carcasses. These bins have a floor area of approximately 10 – 20 m^2 (108 – 216 ft^2).

Extremely large bins that take a long time to fill are undesirable as they lead to unnecessarily long heating times since the first carcasses were placed. Total bin volume recommendations suggested are based on average daily death losses.

Bin systems constructed for composting large animals typically require 1.25 m^3/kg (20 ft^3/lb) of room for primary composting and the same for secondary composting. For example, a farm averaging 50 kg (110 lb) of loss each day would need approximately 62.5 m^3 (2200 ft^3) of primary capacity and the same amount for secondary bin space.

Appendix A illustrates the method for determining the number of primary bins needed for a large animal mortality composting system. Primary bins may be arranged in any configuration. Generally, it is more efficient to arrange the bins so that primary compost can be quickly and easily moved to the secondary composting area.

Figure 4, Layout A is a schematic of a composter with five primary bins and a large floor area for stockpiling the secondary compost. It also includes ingredient storage. This building can be enclosed on three sides (one end door) and the wall above the primary bins can be screened. These added features improve visual aesthetics, reduce odours and restrict bird access for better disease control.

Figure 4, Layout B is a schematic of a composter with two primary bins and one secondary bin. The bins are enclosed on three sides. The work apron provides easy accessibility to each of the bins.

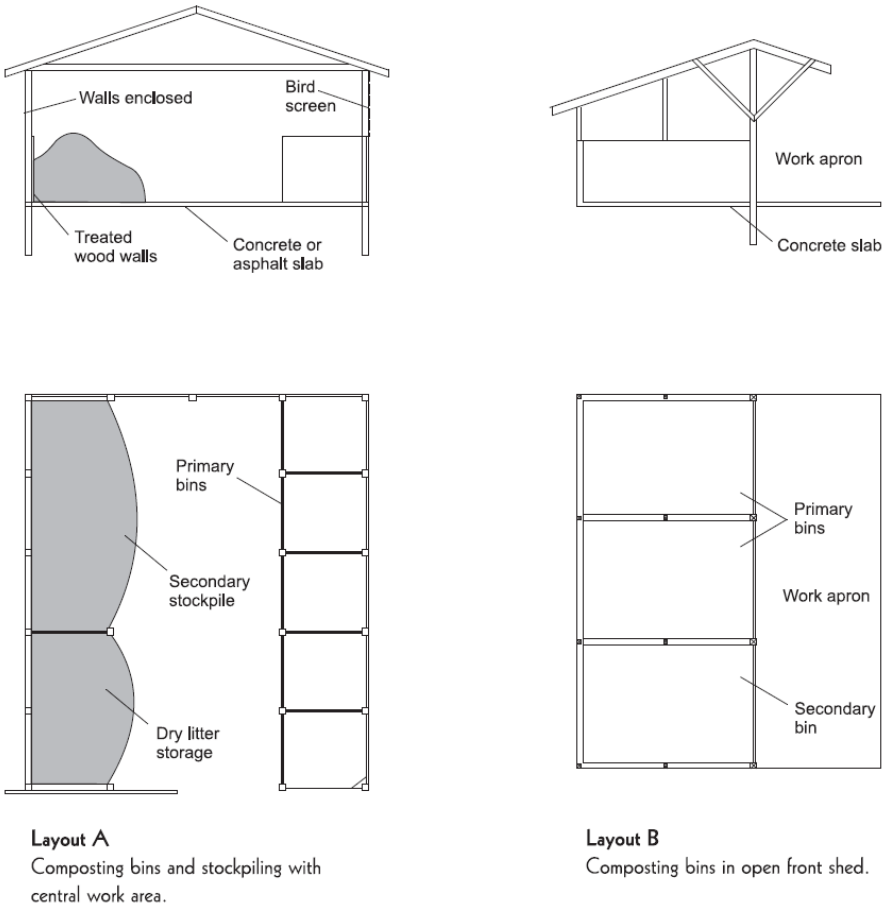

Figure 4. Two typical composting unit layouts

Windrow Composting

Windrow composting is a relatively simple and inexpensive way to manage loss scenarios due to disease, ventilation failures, or other unpredictable events which would require large facilities. As described previously, the primary stage lasts three months before mixing the windrow to begin the secondary stage. Windrows are generally not sheltered from the wind, rain and snow, which can affect the process. Because walls and roofs are not required in these designs, it is easier to load, unload and mix the materials. Piles are constructed on all-weather surfaces such as low permeable soils or concrete.

The length of the windrow is extended as mortalities occur.

The following points should be taken into consideration for site preparation and operation:

1. A composting pad with a 2% slope should be constructed on 0.5 m (1.6 ft) of clay with permeability less than 5 x 10^{-8} m/s (1.6 x 10^{-7} ft/s) or an alternative with equivalent protection such as concrete.
2. The site should have a run-on control system to prevent surface water flowing onto the composting area.
3. The site should have a run-off control system to protect surface water from contamination.
4. To mix the material, start at one end of the windrow and move the contents to form a new windrow.
5. If the material is dry, add water while turning.
6. Cover any exposed carcass tissue after the windrow has been turned.
7. Be sure the piles are mounded to shed rainfall.

Sizing the Windrow

The number of carcasses and the average weight needs to be known. Recommended windrow dimensions are 3.6 m (12 ft) wide at the base and no more than 2.1 m (7 ft) tall. To assist you in determining yearly losses, sawdust requirements, and windrow volume, refer to Appendix A.

When choosing a composting location, consult the local office of the Natural Resources Conservation Board (nrcb.ca):

(Dial 310-0000 for toll free access to field offices)

Morinville Office
Provincial Building
201, 10008-107 St.
Morinville, AB T8R 1L3

Phone: 780-939-1212
Fax: 780-939-3194

Red Deer Office
Provincial Building
303, 4920-51 St.
Red Deer AB T4N 6K8

Phone: 403-340-4204
Fax: 403-340-5599

Lethbridge Office
Agriculture Centre
100, 5401-1st Ave. S.
Lethbridge, AB T1J 4V6

Phone: 403-381-5166
Fax: 403-381-5806

Planning Considerations

Actual construction of a composter can take many different forms, all producing good results. Some features to consider are location, type of structure, construction materials and ingredient storage.

Location/Access

Location of a composter should follow the criteria in Section 11 of the Disposal of Dead Animals Regulation of the *Animal Health Act*:

- At least 100 m (328 ft) from wells or other domestic water intakes, streams, creeks, ponds, springs, rivers, irrigation canals, dugouts, or other water source and the high-water mark of any lake and at least 25 m (82 ft) from the edge of a coulee or embankment.
- At least 100 m (328 ft) from any residences.
- At least 100 m (328 ft) from the boundary of any land owned or leased by another person unless written consent to the pile being closer to the boundary.
- At least 300 m from any provincial highway.

The location should also take into account any impact it may have on the farm residence and neighbouring residences. While offensive odours are not usually generated in the composting process, the handling of deadstock may not be aesthetically pleasing. When locating a composter, consideration should be given to traffic patterns required for moving deadstock, the required ingredients and removing the finished compost from the composter. The composter site should be well-drained and provide all-weather access roads and work areas.

Foundation/Floor

Composting should have an impervious, weight-bearing foundation for all composting areas. This feature ensures all-weather operation, helps secure the composter against rodent access and generally minimizes the potential for contamination of the surrounding area. Consideration should also be given to providing a concrete floor in traffic areas and work alleys. Experience has shown that with the frequent loading and unloading activities associated with composting, dirt or even gravel areas tend to become rutted and potholed.

Construction Materials

Any portion of the compost structure such as poles and sidewalls that will be in contact with dirt or composting material should be constructed with pressure treated lumber or other rot-resistant materials.

Temporary bins can also be constructed with bales of low-quality hay or straw. This type of construction is less expensive and provides flexibility such as the number of bins and their location that a permanent structure would not.

Roof

A roof covering compost bins controls rainwater and the moisture content of the composting mass. Roofing the working area also facilitates all-weather activities. Additionally, any ingredient storage areas or bins should be roofed to preserve the ingredients at the desired moisture content. Roof heights must be adequate to ensure clearance for front-end loaders.

Ingredient Storage

Having sufficient amounts of ingredients such as sawdust present at the compost site greatly facilitates the day-to-day management of the process. In determining the amount of storage needed, consideration should be given to the frequency with which ingredient transfer and restocking can be managed. Storage requirements may vary considerably among different operations. Bins used for storage can double as primary composting bins during periods of high death loss or they may facilitate the expansion of the composter if the farm is increased. Ingredient storage does not have to be in bins.

Utilities

A water line with a freeze-proof hydrant at the compost facility will aid in adjusting the moisture content of the recipe (if needed) and further facilitate cleanup and wash down of personnel, equipment and the composting area. A minimum 20-amp electrical circuit will allow for the use of power tools, lights or other appliances that may be required at the compost facility.

Compost Uses

Well composted mortalities can be used as a soil conditioner and nutrient source for crops. The soil-amending and plant food properties of compost make it a valuable by-product of large animal production.

Users of compost are encouraged to obtain a nutrient analysis of the product prior to its use. It is recommended that mortality compost not be spread on active pastureland or home gardens. Poorly composted animal mortalities may contain bones and other mortality residue that may damage equipment and be unsightly when land applied.

Troubleshooting

Symptom	Problem	Recommendation
Pile fails to reach high temperatures	Pile is lacking oxygen because material is too dense or contains too much moisture	Rebuild pile with coarser material to allow for air to circulate
	Pile is too small	Increase size to at least 1.2 x 1.2 x 1.2 m (4 x 4 x 4 ft)
	Winter composting with not enough of an insulation layer	Provide an additional insulation layer of carbon material, 600 mm (2 ft)
	Pile is too dry	Add water
Temperature in pile begins to drop near end of primary stage	Pile is lacking oxygen	Turn pile to reintroduce air and mix the materials
	Pile is lacking moisture	Turn pile and check to ensure the moisture content is between 45 and 65%
Odour	Too wet	Add bulking material and turn
	Too low C:N	Evaluate bulking material and adjust as necessary
Flies	Inadequate cover	Ensure covered with 600 mm (2 ft) of carbon material
	Poor sanitation conditions	Provide an adequate base of carbon material to absorb all liquids from mortalities; provide run-on and run-off protection due to precipitation, by grading pad to a 1-2% slope
	Too wet	Add bulking material and turn pile
	Failure to reach proper temperature	Assess C:N
Scavenging animals	Inadequate cover	Maintain 600 mm (2 ft); avoid initial entry with fence or barrier; ensure pile is heating properly

Reportable Diseases

Caution

If an animal is known or suspected to have died from an infectious or reportable disease, the owner must report this to authorities. These animals and animals that are euthanized with drugs or chemical means are not eligible for natural disposal (scavenging) and may have disposal methods ordered by the Chief Provincial Veterinarian.

Reportable Diseases are those which require action to control or eradicate because they are a threat to animal or human health, food safety or the economy.

Notifiable Diseases are those which simply require monitoring for trade purposes or to understand their presence in Alberta. No action will be taken.

Anyone who knows or ought to know that any of these diseases are or may be present in an animal MUST report that fact to the Office of the Chief Provincial Veterinarian within 24 hours by calling 1-800-524-0051.

Infectious Diseases

When there is an outbreak of a disease that can be easily spread, the options for disposal become more limited. It is important to move the mortality as little as possible to prevent disease spread and ensure biosecurity of other operations and neighbouring farms.

Composting is the preferred method of disposal by the Canadian Food Inspection Agency (CFIA). In-barn biological heat treatment of carcasses, feed and litter inactivate the virus in the compost material so it can be safely removed from the barn without risk of spreading the virus to surrounding operations.

All suspected cases of a federally reportable disease under the *Health of Animals Act* must be reported to the CFIA. Contact your local CFIA office to speak with a representative.

Canadian Food Inspection Agency (CFIA) Offices

Grande Prairie	780-831-0335
Edmonton	780-395-6700
Red Deer	403-340-4204
Calgary	587-230-2468
Lethbridge	403-382-3121

Appendix A Design Worksheet

To assist you in determining yearly losses, sawdust requirements, number and size of bins and windrow volume, refer to the following worksheets. Use the example worksheets as a guide for filling out your own.

Large Animal Loss and Sawdust Calculations

Mortality Material to be Handled

(a) Full grown animal losses

_____ (# animals) * _____ lbs (Avg. Wt.) * _____ /100 (% loss) = _____ lbs loss/year

(b) newborn losses (including still borns)

_____ (animals born/year) * _____ lbs (Avg. Wt.) * _____ /100 (% loss) = _____ lbs loss/year

(c) Young losses

_____ (young animals/year) * _____ lbs (Avg. Wt.) * _____ /100 (% loss) = _____ lbs loss/year

(d) Finisher losses

_____ (animals finished /year) * _____ lbs (Avg. Wt.) * _____ /100 (% loss) = _____ lbs loss/year

Total Mortality = _____ lbs loss/year

Annual Sawdust Requirements

_____ (lbs loss/yr) * 0.0037 (conversion factor) = _____ cu yards/year

Up to 50% of the sawdust can be replaced by finished compost.

Conversion

_____ cu yds/yr (sawdust requirements) * 0.7645 (conversion factor) = _____ cu meters/year

EXAMPLE Large Animal Loss and Sawdust Calculations

Mortality Material to be Handled

(a) Full grown animal losses

100	*	590 lbs	*	3 /100	=	1770	lbs loss/year
# animals		Avg. Wt.		% loss			

(b) newborn losses (including still borns)

90	*	113 lbs	*	4.4 /100	=	447	lbs loss/year
animals born/year		Avg. Wt.		% loss			

(c) Young losses

	*		*		=		lbs loss/year
young animals/year		Avg. Wt.		% loss			

(d) Finisher losses

15	*	333 lbs	*	/100	=	599.4	lbs loss/year
animals finished /year		Avg. Wt.		% loss			

Total Mortality = 2816.9 lbs loss/year

Annual Sawdust Requirements

2816.9 lbs loss/yr.	*	0.0037	=	10.4	cu yards/year
total death loss		conversion factor			

Up to 50% of the sawdust can be replaced by finished compost.

Conversion

10.4 cu yards/year	*	0.7645	=	8.0	cu meters/year
sawdust requirements		conversion factor			

Bin Design and Selection for Large Animals

Average Daily Mortality

_____ lbs/yr (total mortality) / _____ 365 (days/yr) = _____ lbs loss/day

Bin Volumes

Primary Bin Volume = _____ (lbs loss/day) * _____ 20 (cu ft/lb of loss) = _____ cubic feet

Secondary Bin Volume = Primary Bin Volume = _____ cubic feet

Bin Wall Height

Bin Wall Height = _____ ft Recommended 5 ft

Floor Areas

Primary Bin Floor Area = _____ cu ft (primary bin volume) / _____ ft (bin wall height) _____ sq ft

Secondary Bin Floor Area = Primary Bin Floor Area = _____ sq ft

Select Bin Size

Typical Bin Dimensions: 10 ft x 10 ft | 10 ft x 12 ft | 12 ft x 12 ft | 10 ft x 14 ft | 12 ft x 14 ft | 10 ft x 16 ft | 12 ft x 16 ft

The bin area you choose should fall between 100 and 200 square feet.

Number of Primary Bins

# of primary bins = _____ sq ft (primary bin floor size) / _____ sq ft (bin size) = _____ bins

Number of Secondary Bins

# of secondary bins = # of primary bins = _____ bins

Be sure to round up to the next whole number.

Alternatively, 1 secondary bin can be used for every 2 primary bins if finished compost is utilized every 90 days (i.e. finished compost is not stored in bins).

Total Number of Bins

bins = _____ (# of primary bins) + _____ (# of secondary bins) + _____ (# of additional bins) = _____ bins

Additional bins can be used for storage of finished compost, sawdust, etc.

EXAMPLE Bin Design and Selection for Large Animals

Average Daily Mortality

2816.9 lbs loss/yr. (total mortality) / 365 (days/yr) = 7.7 lbs loss/day

Bin Volumes

Primary Bin Volume = 7.7 (lbs loss/day) * 20 (cu ft/lb of loss) = 154 cubic feet

Secondary Bin Volume = Primary Bin Volume = 154 cubic feet

Bin Wall Height

Bin Wall Height = 5 ft Recommended 5 ft

Floor Areas

Primary Bin Floor Area = 154 cu ft (primary bin volume) / 5 ft (bin wall height) 31 sq ft

Secondary Bin Floor Area = Primary Bin Floor Area = 31 sq ft

Select Bin Size

Typical Bin Dimensions: 10 ft x 10 ft | 10 ft x 12 ft | 12 ft x 12 ft | (10 ft x 14 ft) | 12 ft x 14 ft | 10 ft x 16 ft | 12 ft x 16 ft

The bin area you choose should fall between 100 and 200 square feet.

Number of Primary Bins

# of primary bins = 154 sq ft (primary bin floor size) / 140 sq ft (bin size) = ~~1.1~~ 2 bins

Number of Secondary Bins

# of secondary bins = # of primary bins = 2 bins

Be sure to round up to the next whole number.

Alternatively, 1 secondary bin can be used for every 2 primary bins if finished compost is utilized every 90 days (i.e. finished compost is not stored in bins).

Total Number of Bins

bins = 2 (# of primary bins) + 2 (# of secondary bins) + 2 (# of additional bins) = 6 bins

Additional bins can be used for storage of finished compost, sawdust, etc.

Windrow and Pad Sizing

Windrow Height

Windrow Height = _____ ft

A tall windrow generally makes better use of the pad area and carbon material. (5 to 7 feet works best)

Producers using this design will load the carcasses while continually extending the length of the compost windrow.

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For More Information

Alberta Agriculture and Forestry

Reportable Diseases

Office of the Chief Provincial Veterinarian
Phone: 780-427-3448 or toll-free by first dialing 310-0000 (in Alberta)
alberta.ca/office-of-the-chief-provincial-veterinarian

Alberta's Notifiable and Reportable Diseases Website
alberta.ca/reportable-and-notifiable-diseases

Livestock Mortality Management

Inspection and Investigation Section
Phone: 403-755-1474 or toll free by first dialing 310-0000 (in Alberta)

Livestock Mortality Management Website
alberta.ca/livestock-mortality-management

Other Inquiries

Ag-Info Centre
Toll-free: 310-FARM (3276)
Phone: 403-742-7901 (outside Alberta)
Email: aginfocentre@gov.ab.ca

Canadian Food Inspection Agency

inspection.canada.ca/animal-health

Toll-free: 1-800-442-2342
Contact CFIA online

Natural Resources Conservation Board

nrcb.ca
Dial 310-0000 for toll free
Email: info@nrcb.ca