

## Bin Composting of Daily Swine Mortality

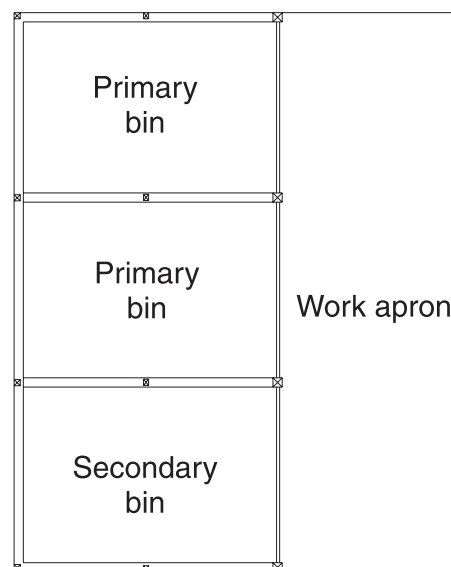
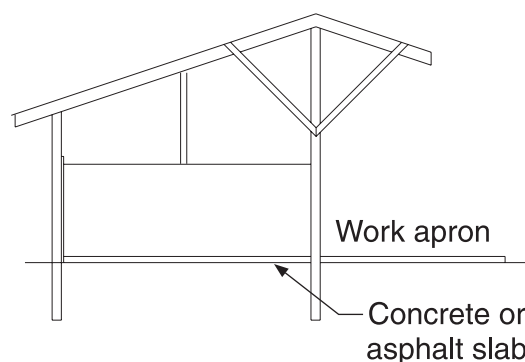
Composting swine mortalities has been proven to be a viable disposal option. Most of these composting system designs are based on daily mortalities and usually involve covered bin facilities. The following is the current recommended procedure for bin composting of daily swine mortality.

1. Choose a building site with good drainage. A concrete or asphalt floor is recommended. An existing shed may be adequate (see the *Livestock Diseases Act, Destruction and Disposal of Dead Animal Regulation* for location requirements).

### Formula for determining the number of primary bins (and equal number of secondary bins):

$$\text{No. of bins} = \frac{\text{weekly mortality (kg)} \times \text{no. of pigs} \times \text{weeks composting} \times 0.0125 \text{ m}^3/\text{kg}}{\text{size of bin (m}^3\text{)}}$$

- Sows/boars:  
weekly mortality approx. 0.211 kg (avg. wt.)
  - Pre-weaners:  
weekly mortality approx. 0.127 kg (avg. wt.)
  - Weaners:  
weekly mortality approx. 0.056 kg (avg. wt.)
  - Grower/finishers:  
weekly mortality approx. 0.185 kg (avg. wt.)
2. Spread a 30 cm deep base of shavings, sawdust, or straw in the bottom of the bin.
  3. Place a single layer of dead pigs on the shavings base, making sure they are at least 23 cm from the outside edges and that they are about 10 to 25 cm from each other (depending on carcass size).

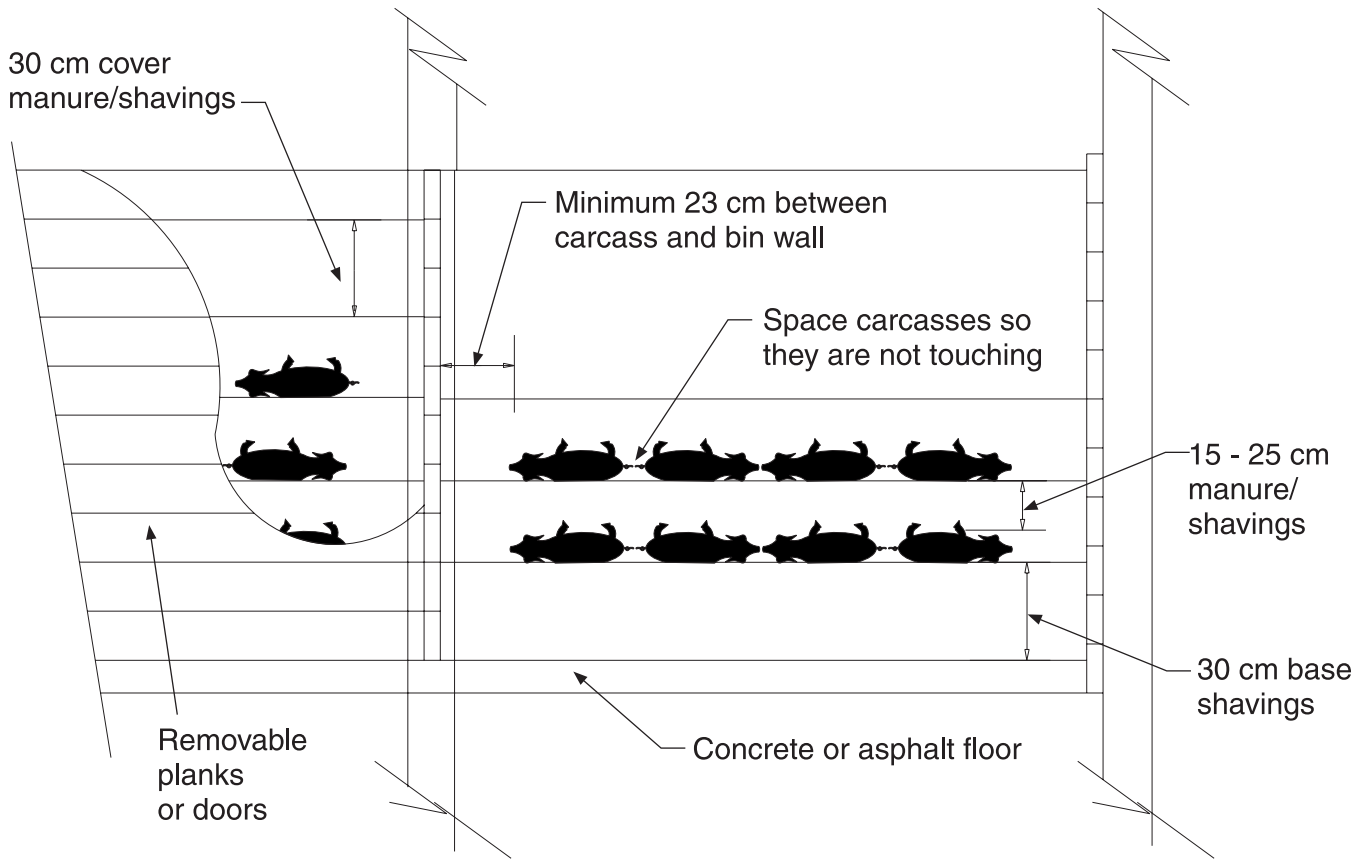


Composting bins in open front shed

*Typical bin facility*

4. Cover this layer of carcasses with 15 to 25 cm of a substrate of about 1.5 parts (by volume) of solid manure (swine or poultry) and 1 part shavings or sawdust (1:1 if using straw). The substrate moisture should be about 50 per cent (free moisture on a glove after squeezing a sample of the substrate or use a commercial hay moisture probe).
5. Repeat Steps 3 and 4 until the bin is full or until 2 to 3 weeks have passed since the first pig was placed.
6. Cover the last layer of carcasses with at least 30 cm of substrate to minimize odour and flies.
7. Leave the bin untouched for the primary composting stage (8 to 10 weeks). Bin temperatures should be monitored and they should reach over 50°C (preferably 55°C for 15 days). If compost temperatures fall below 35°C before 8 weeks, the bin should be turned.

8. Empty the primary bin into a secondary bin or pile with a front-end loader. Add water if the moisture content is below 50 per cent. Re-cover the pile with a layer of substrate, especially if body parts are visible. Leave the bin or pile for another 8 to 10 weeks for the secondary composting stage and monitor temperatures.
9. Pile should be ready to land apply after these primary and secondary treatments. If land application cannot occur immediately, or if body parts are evident, turn the material and allow to cure another 3 to 4 weeks.



*Typical bin filling technique*

## Troubleshooting guide – composting swine

Problem	Cause	Possible solution
<b>Temperature too cold</b>		
	1. Too wet	1a. Mix in substrate. 1b. Protect bin from weather or shape surface to shed water.
	2. Low C:N ratio	2. Mix in carbon source, e.g. straw, shavings, etc.
	3. Too porous	3. Mix in sawdust or another small-particle substrate.
	4. Insufficient substrate cover	4. Add substrate ensuring 30 cm (1 ft) of cover.
	5. Too dry	5. Add water to bin.
<b>Failure to decompose</b>		
	1. Low carbon	1. Mix in carbon source, e.g. straw, shavings, etc.
	2. Mortalities layered too closely	2. Adjust bin ensuring 25 - 30 cm (10 - 12 in) of substrate between layers.
	3. Mortalities placed too closely together	3. Adjust mortalities ensuring they do not touch each other.
	4. Mortalities placed too close to the side of the pile	4. Adjust bin, ensuring mortalities are placed at least 30 cm (12 in) from the edge of the pile.
	5. Lack of oxygen	5. Turn bin to add oxygen.
<b>Odour</b>		
A. Foul, high sulfur, organic acids	1. Too wet	1a. Mix in substrate. 1b. Protect bin from weather or shape surface to shed water.
	2. Not enough cover substrate	2. Add substrate ensuring 30 cm (1 ft) of cover.
	3. Air flow restricted	3a. Mix in a larger-particle substrate. 3b. Adjust bin ensuring mortalities are placed at least 30 cm (12 in) from the edge of the pile.
	4. Excessive crusting on surface	4. Break up crusting on the surface and avoid using substrate that is frozen or too wet.
B. Smell of decaying flesh	1. Not enough cover substrate	1. Add substrate ensuring 30 cm (1 ft) of cover.
	2. Too cold	2. Follow steps outlines above under "temperature too cold."
C. Ammonia	1. Low carbon	1. Mix in carbon source, e.g. straw, shavings, etc.
<b>Flies</b>		
	1. Not enough cover substrate	1. Add substrate ensuring 30 cm (1 ft) of cover.
	2. Poor sanitary conditions	2a. Remove leachate from around bin. 2b. Maintain a clean, debris-free area around compost site.
	3. Too cold	3. Follow steps outlines above under "temperature too cold."
<b>Animals/Vermin</b>		
	1. Inadequate protection	1a. Add substrate ensuring 30 cm (1 ft) of cover. 1b. Construct a fence around the site. 1c. Enclose bin structure.

For additional information, see *Swine Mortality Composting*, Agdex 440/29-1

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