AGRI-FACTS
Practical Information for Alberta's Agriculture Industry

April 2004 Agdex 452/29-1

Bin Composting of Daily Broiler Mortality

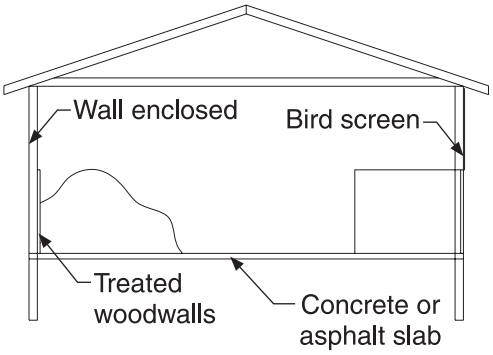
Composting poultry mortalities has been proven to be a viable disposal option. Most of these composting system designs are based on daily flock mortalities and usually involve covered bin facilities. The following is the current recommended procedure for bin composting daily broiler mortalities.

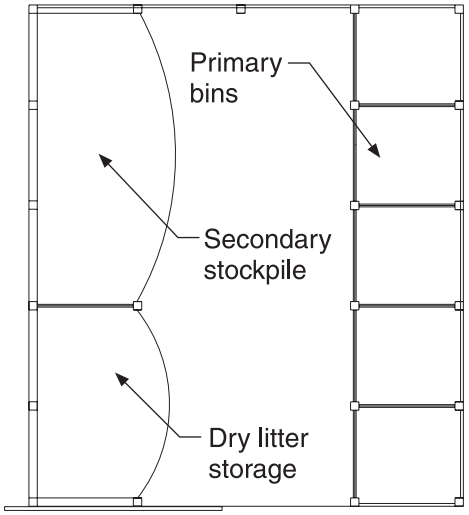
1. Choose a building site with good drainage. A concrete or asphalt floor is recommended. An existing shed may be adequate (see the *Livestock Diseases Act, Destruction and Disposal of Dead Animal Regulation* for location requirements).

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

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

   - Broilers:
     weekly mortality approximately .007 kg (avg. wt.)
   - Roasters:
     weekly mortality approximately .013 kg (avg. wt.)
   - Typical bin size:
     30 to 60 cm wider than front-end loader; 1.2 to 1.5 m front to back; 1.2 to 1.5 m high.
2. Spread a 25 to 30 cm deep base of shavings, sawdust, or straw in the bottom of the bin.
3. Place a single layer of dead birds on the base of shavings, making sure they are at least 23 cm from the outside edges, and that they are about 4 to 5 cm from each other.





Primary composting bins with secondary stockpile and central work area

Typical bin facility

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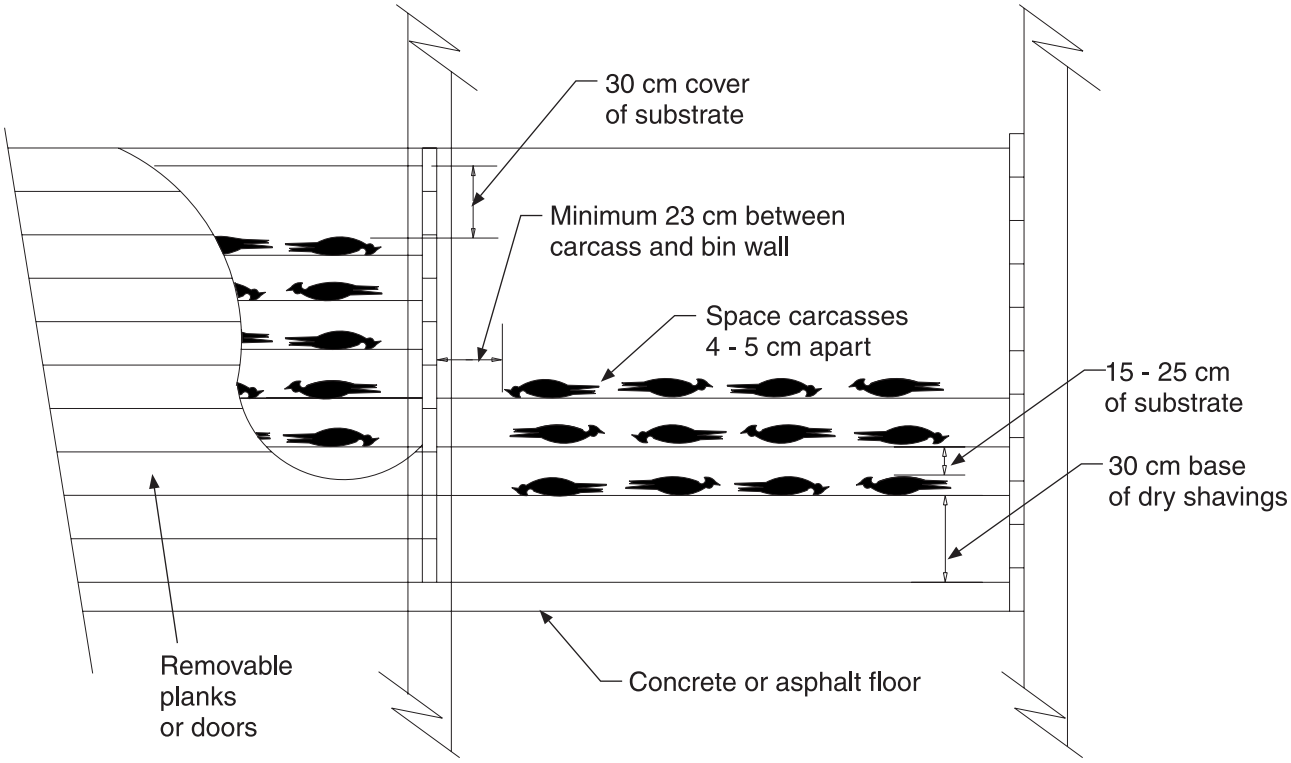
4. Cover this layer of birds with 10 to 15 cm of a substrate of about 1.5 parts (by volume) of poultry manure and 1 part shavings or sawdust (1:1 if using straw). The substrate moisture should be about 50 per cent (free moisture on a glove after squeezing a sample of the substrate, or use a commercial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



Typical bin filling technique

Troubleshooting guide – composting poultry		
Problem	**Cause**	**Possible solution**
Temperature too cold		
	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.
Failure to decompose		
	1. Low carbon	1. Mix in carbon source, e.g., straw, shavings, etc.
	2. Mortalities layered too closely	2. Adjust bin ensuring 10 to 15 cm (4 - 6 in) of substrate between layers.
	3. Mortalities placed too close together	3. Adjust mortalities ensuring they do not touch each other.
	4. Mortalities placed too close to the side of the bin	4. Adjust bin, ensuring mortalities are placed at least 23 cm (9 in) from the edge of the bin.
	5. Lack of oxygen	5. Turn bin to add oxygen.
Odour		
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 29 cm (9 in) from the edge of the bin.
	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.
Flies		
	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."
Animals/Vermin		
	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 *Poultry Mortality Composting*, Agdex 450/29-1

Available from Alberta Agriculture Publications Office (Phone 1-800-292-5697) or from Ag-Info Centre (Phone 1-866-882-7677)

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