



Field Tips for Successful Composting

Decomposition during the composting process requires nitrogen, carbon, oxygen, and moisture for optimal tissue breakdown. Mortality composting is different than regular composting unless you grind the carcass. Whole carcasses contact the carbon source only at the surface of the carcass until it breaks down, at which point the pile shrinks in size.

There is no dead animal odor from an active compost pile, and temperatures are warm enough to cook meat (which happens when temps are over 115°F). The compost material or leachate may have some odor, but there will be no odor from the carcass. It is important to remember that bio-filters work well to reduce odor. Have some extra bio-filter material (corn stalks, hay, wood chips) available to stop any odor by re-covering the pile if needed.

Getting the composting process started quickly is important. Bacteria must have conditions to grow and multiply. Temperature is a big factor. Bacteria will double in growth (creating the compost heat) depending on temperature. For example, at 50°F there will be no action, at 60°F very little action, at 70°F ten times more action, and at 80°F another 10 times more (or 100 times more heat than 60°F). Solve this problem by using hot (actively composting) carbon material to cover the carcass. Composting manure or a composting ground tree branch pile are two examples of hot carbon material.

Pigs are high in moisture, with baby pigs containing 80% moisture and still 53% moisture in market hogs. This equals about 20 gallons of water per market pig. It is important to absorb this water, which is best done by building a good base. The base should be dry and absorbent, while also being aerobic (lets air in from below). Never add water as air circulation is necessary for

odor control. Excessive moisture can change to bacteria composition resulting in an odorous problem. Keeping oxygen using bacteria, also known as aerobic bacteria, alive is the goal.

Most important considerations for successful composting

- **Select a great location, following all laws:** Consider an out of public site, separation from well and surface water, away from a neighbor's home, not in your way, and easily accessible for equipment in all types of weather. Contact the Iowa Department of Natural Resources (DNR) (www.iowadnr.gov/fieldoffice) to obtain the [proper variance for transporting or remote composting the mortality livestock](#).
- **Eliminate leachate:** At least two feet of dry, absorbent composting material should be used as a base under the carcasses. For example, use dry, ground corn stalks or fresh wood chips, and a combination of large and small particles is best for allowing air flow while absorbing leachate. Particle size should range from .125 inches to 2 inches.
- **Reduce odor:** Air-loving bacteria (called aerobic bacteria) will reduce odor, feeding air through the base is important and having a bio-filter cover over the carcasses is a second level of odor mitigation. Remember to have some extra bio-filter material available.
- **Get the process going quickly:** Once the quality base is done, the goal is to surround the carcass with active, hot material such as turkey litter or manure compost. This should be aerobic material (less than the base), but have some water shedding potential.

Think of the cover mainly for **shedding rain** but also allowing some permeability. Heat is captured and air is able to slowly percolate through. Sawdust or used compost (like hot turkey litter) mixed material for example.

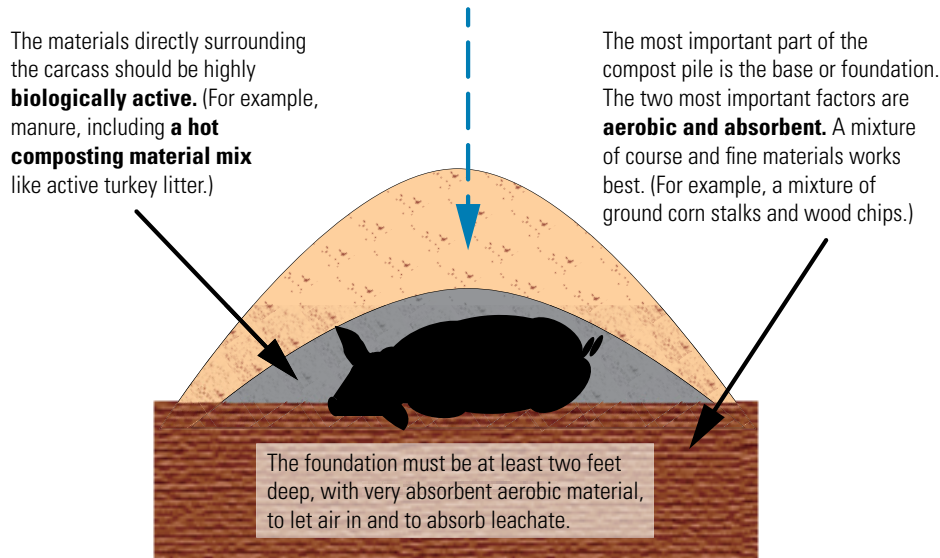


Figure 1. Cross section of composting pile for livestock carcass in one layer.

- **Manage:** Check the temperature as the material should get hot relatively quickly. Temperatures should be over 115°F within about five days and run from 130-160°F. The pile will drop as carcasses start to deteriorate, so reshape the pile for rain runoff if it settles in the middle. Pile is ready for turning or mixing when the temperature drops to 110°F to complete the process. This 18-inch steel thermometer may be used to manage the process.

OTHER CONSIDERATIONS:

- To get the carbon-to-nitrogen (C:N) ratio close, simply cover the carcass with an equal depth of composting material.
- A pile must be hot to keep the wild animals out, so do it right the first time. A cold pile will be invaded by predators and once that happens, the predator will remember the pile's location for a very long time.
- As the carcass decomposes, the legs tend to poke out of the pile and the pile will settle in the middle. When you see that recover the legs and re-mound the pile to prevent rain from running into the center of the pile and creating anaerobic condition (without air bacteria, which produces a smell that is extremely foul) that destroys the aerobic process.

- There will be bones remnants left, but they will be very brittle and can be crushed to pieces with little effort.
- It is best to lay the carcasses in one level. For multiple layers have at least 12 inches of composting material between layers (Figure 1).
- If it is possible to extend the period between carcasses, then it is possible to reuse a pile. Multiple piles are beneficial, as hot material from one pile can be used to cover the carcasses in the new pile. Sometimes a carcass can be "wiggled" in with a loader bucket into an existing hot pile. If you do this, make sure you re-cover with a bio-filter layer at least 1 to 2 inches.

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