

Field tips for successful composting

Summary, most important points

1. Select a great **location**, following all laws. Consider out of public site, separation from well and surface water and neighbor's home, not in your way, easy accessible for equipment in all types of weather. Call DNR to obtain the proper variance for transporting or remote composting the mortality livestock.
2. **Eliminate Leachate**: add least two feet of dry, absorbent composting material for a base under the carcasses (Example: dry, ground corn stalks or fresh wood chips, note a combination of large and small particles is best for allowing air flow while absorbing leachate). Size of particles should range from .125 inch to 2 inch
3. **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.
4. **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 has some water shedding potential.
5. **Manage**: Check temperature, it should get hot relatively quickly, should be over 115 F within about 5 days and run from 130 to 160 F. Pile will drop as carcasses start to deteriorate, reshape the pile for rain runoff if settled in the middle. Pile is ready for turning/mixing when temp 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 C:N close simply cover the carcass with an equal depth of composting material.
- Must be hot to keep the wild animals out of the pile, do it right the first time. A cold pile will be invaded by predators and once that happens, the predator will remember for a very long time where your pile is.
- 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 (without air bacteria, anaerobic, produce a smell that is extremely foul) conditions destroying the aerobic process.
- There will be bones remnants left, but they will be very brittle and can be crushed to pieces with little effort.

- Best to lay the carcasses in one level. For multiple layers have at least 12" of composting material between layers. See figure 1 below.
- If it is possible to extend the period between carcasses, then it is possible to reuse a pile. Multiple piles are beneficial, can use hot material from one pile 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 12 inches.

Background:

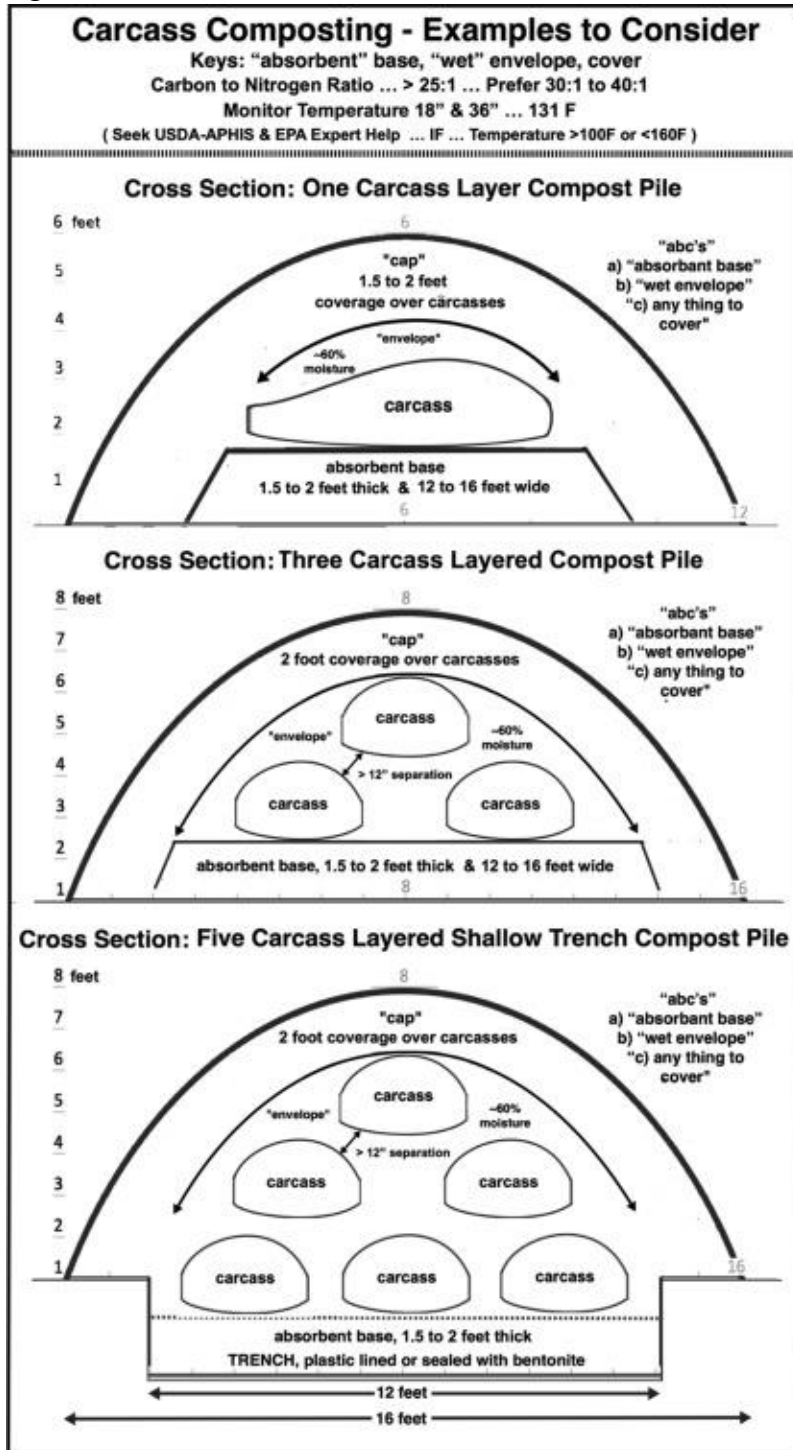
During the composting process decomposition requires nitrogen, carbon, oxygen, and moisture for optimal tissue breakdown. Mortality composting is different than regular composting unless you grind the carcass. Whole carcasses contact the carbon source only at the surface of the carcass until it breaks down. You will know when that happens because the pile size shrinks at that point.

A dead animal odor from an active compost pile is zero, temperatures are warm enough to cook meat (that happens when temps are over 115 F). The compost material or leachate may have some odor, but no odor from the carcass. It is important to remember that bio-filters work well to reduce odor. So have some extra bio-filter material (corn stalks, hay, wood chips, etc.) 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 no action, at 60 F very little action, at 70F ten times more, 80F another 10 time more (or 100 times more heat than 60F). Solve this problem by using hot (actively composting) carbon material to cover the carcass. Composting manure, or a composting ground tree branch pile are a couple examples of hot carbon material.

There is a lot of moisture in pigs, 80% for baby pigs, but still 53% water in market hogs. About 20 gallons of water per market pig. It is important to absorb this water, best done by building a good base. Two things for the base, first dry and absorbent, second aerobic (lets air in from below). Never add water, air circulation is necessary for odor control, excessive moisture can change to bacteria composition resulting in an odorous problem. Keeping oxygen using (called aerobic) bacteria alive is the goal.

Figure 1.



(Shearer et. al., 2018)

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