



South Dakota

Animal Industry Board

Animal Composting



Today dead animal removal provides a challenge for some livestock operations. A solution to this may be on-farm composting. Composting utilizes old feedstuff and manure to create the proper environment for microorganisms to speed up the natural decomposition process.

MAJOR FACTORS IN SUCCESSFUL COMPOSTING

Water/Moisture
Co-Composting Material (Carbon : Nitrogen Ratio)
Oxygen
Temperature



Water/Moisture

Moisture content is critical. It should remain between 40-60%. Levels below 40% will slow the decomposition process, while levels above 60% will result in small pore spaces that allow air to move into the compost and fill with water.

Co-Composting (Amendment) Material (C:N)

A proper Carbon:Nitrogen ratio is important to achieve optimum growth of microorganisms. The optimal C:N ratio is 25:1. This will keep odor to a minimum and allow the best microbial growth. Certain materials can be used to reduce the attractiveness of the carcass to insects and rodents, increase movement of oxygen throughout the compost pile, and to absorb excess liquid produced by the decomposing carcass.

Common Amendments (C:N) Ratios:

Sawdust	450:1	Wheat Straw	125:1
Corn Cobs	100:1	Oat Straw	60:1
Corn Silage	40:1	Grass Hay	30:1
Cattle manure	20:1	Poultry Litter	12:1

c Rule of Thumb is 2cu yd amendment (55:1 – C:N ratio) per 1000 pounds of carcass

Temperature

The ideal temperature a compost pile must reach for 2-3 days is 130-140F with an acceptable range of 110-150F. Temperature can be monitored with thermometers that have three to five ft long temperature probes.





Oxygen

Airflow into and through the pile is also important. A compost pile should have 35-45% porosity (open spaces). Optimum porosity can be reached by balancing particle size, water content, and pile size.

BIOSECURITY & ENVIRONMENTAL CONCERNS WITH COMPOSTING

Biosecurity Issues

Composting will NOT destroy all disease-causing organisms. Temperatures from 120 –150 F will significantly reduce disease-causing microorganisms and viable weed seeds. Temperatures above 131 F for 72 hours will destroy most common pathogens because of the heat and toxicity caused by products of decomposition and microbial antagonism.


Environmental Issues

Be sure to do your research before beginning a composting project. Keep in mind proper composting is a management commitment. You may want to start small and allow for growth. It is an art to conduct composting properly. Approval by DENR may be required for waste management.

Other Factors to Consider:

- Incorporate dead animals into composting process within 24 hrs.
- Composting should be done outside of wetlands or the 100-yr. flood plain and at least 100ft from private wells, 200ft from public wells, 50ft from property lines, 500 ft. from inhabited residences and 200ft. from stream, lakes and ponds
- Carcasses should not be removed from the composting area, except as a finished compost material and land spread
- Storage of finished compost shall be limited to 18 months. Apply to fields at appropriate rates and prevent runoff to surface water
- Composting is for the normal and natural mortality. Any increase in mortality should be reported to the local vet and the Animal Industry Board before adding to the compost pile.
- Records to be kept-start date of each pile
 - date each compost pile is turned
 - final disposition of finished compost
 - person responsible for the system
 - temperature monitoring





If you are interested in starting a composting project, you must have a proposal approved by the Animal Industry Board.

ITEMS TO BE INCLUDED IN COMPOSTING PROPOSAL

- ◇ Responsible Party for entire project
- ◇ Site Preparation
- ◇ Concerns – weather, soil type, ground water
- ◇ Type of carcasses
- ◇ Legal Description of Location, schematic of site
- ◇ Disposition of finished compost
- ◇ Estimated Quantity
- ◇ Type of Composting Materials
- ◇ Plan for ‘Turning the pile’
- ◇ Plan for Monitoring Temperature, thermometer calibration
 - A long-probe thermometer is required
- ◇ Plan for Moisture Testing and Monitoring
- ◇ Plan for Monitoring and Inspection for complete decomposition of materials prior to distribution of compost
- ◇ Frequency of activities
- ◇ Seasonal or Year Round
- ◇ Distance from natural surface water, wells, roads, property lines
- ◇ Records for review upon request

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