

Landowner _____



DEALING WITH ANIMAL MORTALITY LOSSES

Livestock mortality is a normal part of all animal feeding operations. Composting is an efficient and effective on farm method of disposing of animal carcasses when managed correctly.

BEFORE DISPOSAL BEGINS

Proper disposal of carcasses is important to prevent livestock disease transmission and to protect air and water quality. The Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) requires licensed confined animal feeding operations (CAFO's) and registered poultry feeding operations to have plans for handling losses of normal mortality and catastrophic losses.

COMPOSTING

Composting to dispose of dead farm animals is a unique application of the composting processes. The purpose is not so much to produce a quality compost product as it is to decompose the animal carcass in an environmentally sound manner that prevents resource problems and reduces the carcass to an organic material that may be safely applied to the land for disposal.

Composting is a controlled biological decomposition process that converts organic matter into stable, humus like product. The carcass (nitrogen source) is buried in a bulking agent (carbon source), such as wood shavings, allowing for the proper carbon to nitrogen ratio (C:N) required by microorganisms to successfully decompose the carcass while absorbing excess moisture and filtering odor. When proper composting methods are followed dead animals are

disposed of in a manner that does not create odor, fly, or scavenger problems. High temperatures are created during the decomposition process which destroys pathogenic bacteria.

COMPOSTING FACILITIES

A proper composting facility is an essential component to managing dead animals. More information on composting facilities is available at your local NRCS or Conservation District office.

WHAT YOU WANT TO DO

Proper loading of carcasses and a correct composting recipe is critical to successful composting. Specific recipes are derived on site for specific farm operations to yield the most efficacious compost mix. Being consistent in how the recipe is managed is the key to achieving the effective results in your operation.

- Always load the bulking agent (carbon source) first, followed by loading the carcasses then the addition of more bulking agent. The optimum carbon to nitrogen ratio is around 30:1 or 30 parts of carbon to 1 part nitrogen.
- Provide and maintain moisture content of 40 to 60 percent. If the compost material is too dry, composting will be very slow. If the compost material is too wet, water fills the pores in the compost pile leading to a lack of oxygen in the compost pile. A lack of oxygen can lead to slow decomposition, odors and insufficient heat needed to inactivate pathogenic organisms.
- Oxygen is very important to the composting process. The amount of oxygen available to microorganisms in a compost pile is largely

dependent on the particle size of the carbon source. A fine textured carbon source such as saw dust will compact easily and have insufficient pore space between the particles to trap oxygen. Coarse textured carbon source, such as course hay or straw, can provide too much pore space between the particles which can allow heat, moisture and odors to escape from the compost pile.

- Monitor the temperature. Temperature is always the indicator that helps to determine if the correct formula is being achieved. It is best to monitor temperature using a 36" or 48" compost thermometer thrust into the pile's core.
- Mortality compost piles should undergo two heat cycles, the first phase after building the pile, and a second phase that occurs after turning the pile.
- When the temperature of the pile decreases to near ambient temperature, the pile should be turned. Use a tractor bucket to pick up material and either dump it back on the pile or move it into a secondary bin. Allow the material to fall from the bucket onto the new pile. This aerates the pile and mixes the contents. Use additional carbon source material to ensure enough covering layer is put on the turned pile. This will insulate the pile and trap any odors generated. Moisture can be added if the pile is too dry or the pile can be allowed to dry if it is too wet

After turning, the pile will heat again. This is important in pathogen reduction. As in the original pile, not all parts may have reached high temperatures for a sufficient length of time. Redistributing pile contents via turning increases the probability that all portions of the compost will heat sufficiently.

Monitor the temperature of the pile as it heats.

The specific requirements for minimum temperature and length of time vary depending on the end use of the finished compost material. More information on composting temperature is available at your local NRCS or Conservation District office.

- Compost should remain in the second pile or storage facility until the compost has reached a stable temperature and all heating cycles have ceased.
- After the compost has reached a stable temperature and all heating cycles have ceased

the compost material can be moved to a covered storage area where it should be stored prior to its final destination or use.

- About one-half of the material from a mortality compost pile can be reused in a new pile and mixed with additional carbon source material. This reduces the amount of carbon source that needs to be on hand and also provides a source of bacteria for the new pile. The remaining composted material is a nutrient-rich medium that can be applied to pasture and other agricultural land. Mortality compost should be included in a total farm nutrient management plan and spread accordingly.
- It is not recommended to use mortality compost on vegetables or areas where food is produced for direct human consumption.
- Land application of finished compost shall be in accordance with conservation practice standard 590, Nutrient Management.

WHAT YOU DON'T WANT TO DO

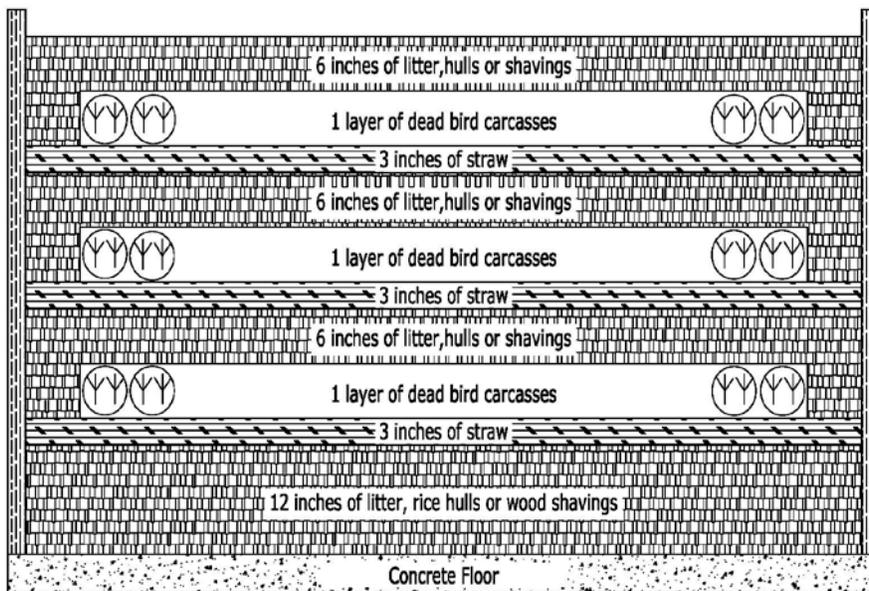
- Do not add too much water. Water content should be at 40-60%. Too much water stops the decomposition process, leading to odor and fly problems.
- Do not let the compost dry out too much! Too little water will slow the decomposition process.
- Do not allow the temperature to fall below 100°F. Lower temperature is an indication of a lack of carbon source or not enough moisture.
- Do not allow the temperature to exceed 150°F. Higher temperatures can result in composting microorganisms being destroyed.

RESOURCES

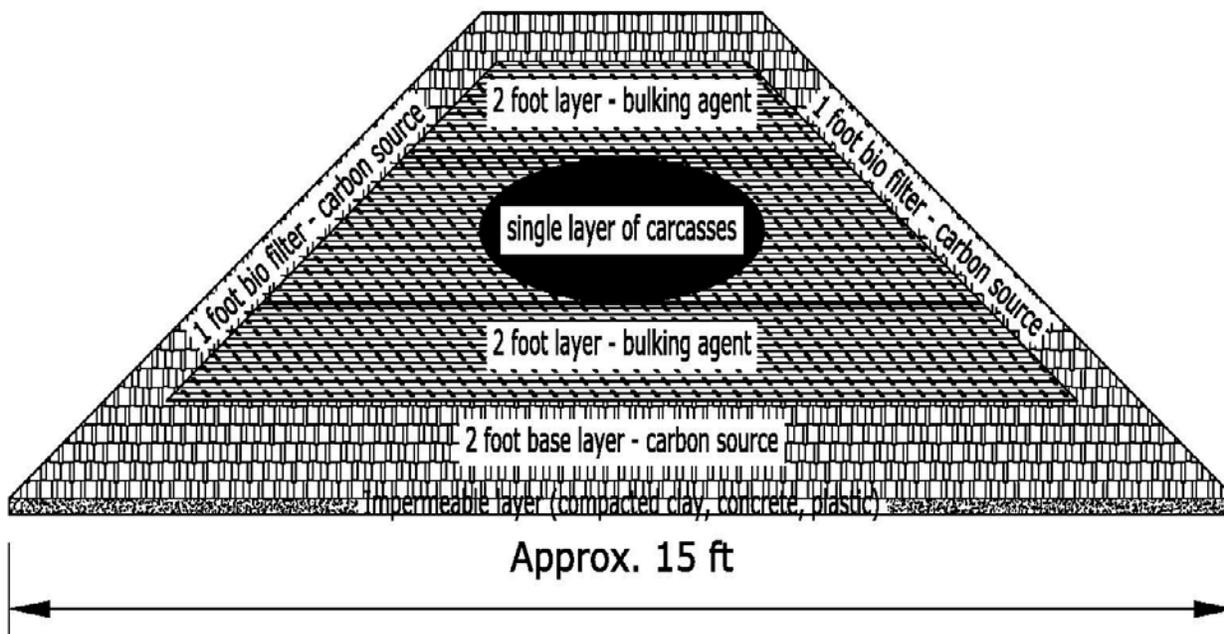
Payne, J. 2009. Proper Disposal of Routine and Catastrophic Livestock and Poultry Mortality. BAE-1748. Oklahoma State University Cooperative Extension Service.

USDA, NRCS. 1992. National Engineering Handbook, Part 651, Agricultural Waste Management Field Handbook. Washington, D.C.

USDA, NRCS. 2010. National Engineering Handbook, Part 637, Chapter 2, Composting, Washington, D.C



Cross sectional view of typical compost bin for poultry mortality



Cross sectional view of typical windrow for composting medium to large carcasses

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250 or call 1-800-245-6340 (voice) or (202)720-1127 (TDD). USDA is an equal employment opportunity employer.