



LPES Small Farms Fact Sheet series

Managing Animal Deaths: Your Options

By Frank Humenik, North Carolina State University

Summary

Animals routinely die on a small farm. Selecting a method of disposing of them is an important decision because it affects animal and human health. Factors that should be considered include the number of dead animals, use or destruction of the nutrients contained in the dead animals, farm location, labor available, cost, and availability of alternative options. Planning and preparing for animal deaths, including deciding on the best method to use, developing the best setup, and ensuring that it meets local and state regulations, is very important.

Introduction

Proper management of animal deaths is important because animals routinely die from disease, injury, or other causes during the day-to-day operation of any small farm. When animals die, it is necessary to respond quickly to maintain sanitary conditions. It

is also important to follow state and local regulations.

Managing Animal Death

Animal death must be managed for at least three reasons:

- (1) Health
- (2) Environmental protection
- (3) Appearance



Health

Fast removal and careful handling of dead animals can prevent other animals from becoming sick and may prevent spread of disease to other farms.

Environmental protection

Both nutrients, or useful materials, and contaminants, or harmful materials that are released as the dead animals decay, can drain or flow to nearby water.

Appearance

The neighbors and visitors may find the sight of dead animals very disagreeable and form a negative impression of the small farm.

Management Methods

Possible ways for managing animal deaths include:

- Rendering
- Composting
- Incineration
- Gasification
- Sanitary landfills
- Burial
- Disposal pits

Of these seven possible methods, only rendering and composting recycle nutrients, or useful materials. Recycling nutrients is becoming a very important part of sustainable animal agriculture, or agricultural practices that use natural resources wisely. Although incineration, gasification, sanitary landfills, burial, and disposal pits may be acceptable from an environmental protection viewpoint, they are disposal methods and waste the nutrients. In the following paragraphs, each of these possible methods will be discussed.

Only rendering and composting recycle nutrients, or useful materials.

Rendering

Rendering usually recycles the nutrients contained in dead animals as an ingredient in animal food, especially for pets. The main disadvantage of rendering is that dead animals



must be preserved or promptly taken to a rendering plant.

Preserving dead animals to prevent them from decaying reduces the need to quickly take them to a rendering plant. Freezing is a method that can be used for preservation.

If dead animals are not preserved, they must be taken to a rendering plant within 72 hours by an approved rendering company. However, few companies still provide rendering services, and it is usually not legal to move dead animals to another site.

Few companies still provide rendering services.

Bio-security measures must be used to reduce the spread of disease from farm to farm. These measures include setting aside an area where renderers can pick up the dead animal and moving the animal to that area. The area should be at least 100 feet from any animal building or pasture.

Composting

Composting is an aerated process to break down biological matter into a soil-like product called compost. It is almost the same process as natural decay except that it speeds it up by mixing dead animals with other ingredients and air. (Figure 1)

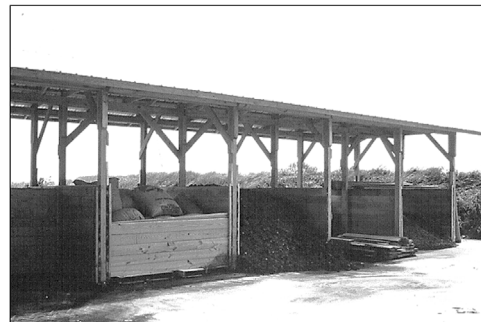


Figure 1. Composting building.

As the organisms begin on the most easily digested material in the compost mix, heat is produced. Heat is necessary and destroys the disease germs, fly lava, and weed seeds. The temperatures will continue to rise to between 130°F to 160°F. Once this temperature is reached, the organisms grow more slowly, creating compost in about 30 days. It would take about two



weeks for small animals and may take as long as 12 months for large animals such as dairy cows.

Most compost is spread on land. While the main value of spreading compost on land is to improve soil conditions and water-holding capacity, compost contains many nutrients that aid plant growth. However, dead animal compost should not be spread on the same field every year.

Compost contains many nutrients that aid plant growth.

Compost works well as a fertilizer because it releases nutrients slowly during the warm, moist soil conditions that encourage plant growth.

Incineration

Incinerating, or burning dead poultry and small animals at high temperatures, is a safe disposal method. The ashes from properly incinerated dead animals are harmless and do not attract mice, rats, or insects.

However, it may be slow, require fuel and expensive equipment, and cause neighbors to complain about air pollution and odors. Incineration often requires some type of air pollution permit and an annual report of pounds of dead animals burned.

Incineration often requires an annual report and an air pollution permit.

Incinerators should be in a convenient location downwind of animal housing, farm residents, and neighbors. In most situations, incinerators should be placed on a concrete slab so they last longer. Incinerator burners may need to be replaced every 5 to 7 years. (Figure 2)

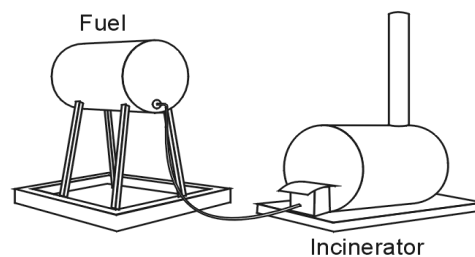


Figure 2. Incinerator setup.



Gasification

Gasification processes have been developed to change animal manure and animal deaths into an energy source and mineral ash.

In a gasifier unit, a burner is used to heat the combustion chamber to 800°Centigrade. Manure or dead animals are added to the combustion chamber. The gases from these wastes go from the combustion chamber to the gasifier chamber where they are burned to fuel the gasifier unit. Using a tilted floor in the gasification chamber, ashes remaining after gasification are dumped into an ash chamber. Ash is removed from the bottom of the chamber with an auger. The recovered ash is sterile, and its minerals such as phosphorous calcium and magnesium are highly bioavailable. On-farm testing shows that this process produces environmentally safe air emissions.

Testing shows that gasification produces safe air emissions.

Sanitary landfills

Sanitary landfills are burial sites built to get rid of solid waste. They are designed, built, and run to contain solid waste so it will not cause human health problems or harm the environment. Generally, most landfills are operated by a local government that decides what items can be placed in the landfill.

In some areas, dead animals can be placed in a sanitary landfill. If a landfill is near the farm, this may be one of the simpler methods of disposal. Because not all landfills will accept dead animals, however, arrangements should be made in advance with the landfill operator. Also, the Department of Agriculture or other appropriate agency can be contacted.

In some areas, dead animals can be placed in a sanitary landfill.



Burial

Burial involves digging a grave or pit, filling it with dead animals, and then covering it with soil. The soil covering the dead animals should be heaped because it will likely settle. In time, the dead animals will decay. In cold climates, burial is difficult when the ground is frozen.

Some states may allow burial only if a large number of animals die in a short time. Areas that have permeable soils, fractured bedrock, and a seasonal water table must be avoided. The burial site must be protected from scavengers like crows, foxes, and coyotes or rodents like mice and rats with 12 to 48 inches of soil, depending on the state. To determine the local regulations for animal burial, check with your Extension Service.

Some states may allow burial only if a large number of animals die in a short time.

Disposal pits

When disposal pits are used, dead animals are placed in a lined pit. They may take a long time to decay because little air is available. For this reason, nearby water in rivers and lakes may easily become contaminated. If allowed by law, disposal pits should be used only if soil conditions will protect the nearby water and if there is adequate separation distance from drinking water supplies.

Regulatory Compliance Issues

Laws relating to livestock and poultry deaths are different in each state. However, most states require a quick response to animal deaths. It is important to follow the laws in your state and locality.

Most states require a quick response to animal deaths.



Points to Remember

- Animal deaths must be handled properly for at least three important reasons: health, environmental protection and appearance.
- Rendering and composting recycle nutrients and useful materials.
- It is very important to ensure that all local and state regulations are met.

References

Fulhage, Charles, and Charles Ellis. Composting Dead Swine, Water Quality Initiative Publication WQ 351, University of Missouri-Columbia, 800-292-0969 or muextension.missouri.edu.

Stettler, Don. Livestock and Poultry Environmental Stewardship (LPES) Curriculum, Lesson 51, Mortality Management, MWPS, Iowa State University, 1-800-562-3618 or www.mwpsHQ.org.

Henry, Chris, Robert Wills, and Larry Bitney. NebGuide G01-1421-A, University of Nebraska-Lincoln Cooperative Extension, <http://ianrpubs.unl.edu/animals/g1421.htm> or 402-472-9713.

Henry, Chris and Bob Wills. Swine Mortality Composter Sizing Spreadsheet, <http://manure.unl.edu/composting.html>.



Table 1. Advantages and disadvantages of different methods of handling animal losses.

	Rendering	Composting	Incineration	Gasification	Sanitary Landfill	Burial	Disposal Pits
Advantages							
Prevents disease	X		X	X			
Uses nutrients	X						
Environmentally safe		X		X			
Low odor		X		X			
Low upkeep	X						
Easy to use				X	X		X
Low cost	X				X	X	
Disadvantages							
Wastes nutrients			X	X	X	X	X
Requires a lot of work		X					
High start-up cost		X	X	X			
May spread diseases	X					X	X
Not allowed in many areas					X		X
Transportation cost					X		
Dead animals must be stored	X					X	



Author

Frank Humenik, professor and coordinator of Animal Waste Management Programs, North Carolina State University, can be reached at 919-515-6767 or frank_humenik@ncsu.edu.

Project Manager

The author wishes to thank Diane Huntrods, the LPES Project Manager, at MWPS, Iowa State University, for editing this fact sheet and coordinating its completion.

Reviewers

The author wishes to thank Carol Galloway, EPA National Agriculture Assistance Center; Chris Henry, University of Nebraska; and Don Stettler, retired from retired the National Water and Climate Center, NRCS, for their review of this fact sheet.

For More Information

Educational Resources

<http://www.lpes.org/>—To view the Livestock and Poultry Environmental Stewardship (LPES) curriculum resources

<http://www.ree USDA.gov/1700/statepartners/usa.htm/>—To obtain state Cooperative Extension contacts

Environmental Regulations Resources



<http://www.epa.gov/npdes/afo/statecontacts/>—To obtain state environmental agency contact

Small Farm Resources

1-800-583-3071—USDA-CSREES Small Farm hotline

State-Specific Resources

The local contact for your land-grant university Cooperative Extension program is listed in the phone book under “Cooperative Extension” or “(county name) County Cooperative Extension.

 <p>The LPES Small Farms series was developed with support from USDA-CSREES, U.S. EPA’s Ag Center, and University of Nebraska Cooperative Extension at Lincoln, under Cooperative Agreement Number 2003-39490-14107.</p>	 <p>MWPS (MidWest Plan Service), headquartered at Iowa State University, is the primary distributor of LPES materials. To order, access their website at http://www.mwpsHQ.org and visit the catalog section.</p>
---	---