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Carcass Disposal of Feral Hogs in the Field

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Overabundant populations of feral hogs (*Sus scrofa*), also called feral swine, wild boar, wild pig, etc., damage crops and pastures, pollute waterways, destroy property and compete with native wildlife for limited resources. Feral hogs are a vector for diseases affecting livestock, pets and people. The Arkansas State Legislature has deemed feral hogs a public nuisance.

As of this publication, it is legal in Arkansas for any number of feral hogs to be trapped and/or shot on private property, day or night, by the landowner or anyone with the landowner's permission. (For additional information, see Laws and Regulations Governing Feral Hogs in Arkansas, FSA9106.) When feral hog carcasses are collected, several options for their disposal should be considered, including:

(1) processing for human consumption,
(2) letting carcasses decompose naturally in the field, and
(3) placing strategically for above-ground organic composting.

Human Consumption

Feral hogs can carry diseases that are harmful to people, including swine brucellosis, which can cause fever, chills, sweating, headache, low appetite, fatigue and joint or muscle pain in humans after coming into contact with infected animals. In rare cases, when left untreated, swine brucellosis may cause death. The U.S. Centers for Disease Control and Prevention recommends that individuals who come into contact with feral hogs follow safety precautions.

Brucellosis can be contracted from feral hogs and other game animals through field dressing, butchering, handling or preparing raw meat for cooking and eating meat that is not thoroughly cooked. It is recommended that raw meat not be fed to dogs, as infected dogs can pass the disease to people.

Safety precautions include:

- Wear eye protection and rubber or latex gloves when handling carcasses.
- Avoid direct (bare skin) contact with fluid or organs.
- Avoid direct (bare skin) contact with hunting dogs that may have come into contact with hunted animals.
- Burn or bury disposable gloves and parts of the carcass that will not be eaten.
- Wash hands as soon as possible with soap and warm water for 20 seconds or more. Dry hands with a clean cloth.
- Clean all tools with a disinfectant, such as diluted bleach.
- Clean surfaces with hot, soapy water before and after butchering or handling raw meat.
- Thoroughly cook meat to an internal temperature of at least 160 degrees Fahrenheit. Thorough cooking is necessary because freezing, smoking, drying and pickling do not kill the bacteria that cause brucellosis.
- Chill raw and cooked meat immediately to prevent further bacterial growth.

For additional information, see the U.S. Centers for Disease Control and Prevention website, www.cdc.gov.

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Natural Decomposition

Most feral hogs avoid humans and therefore inhabit remote or isolated areas where accessing carcasses can be physically challenging. The Arkansas Game and Fish Commission recommends leaving carcasses undisturbed on remote lands, which allows scavengers to benefit from the additional food source. Be sure to drag carcasses away from water sources or rainwater runoff to prevent contamination of waterways. The Livestock and Poultry Commission normally requires farm operators to dispose of livestock using certain environmentally sound methods (e.g., "Organic Burial Composting of Cattle Mortality," FSA1044), but a waiver is applied to this rule for disposal of feral hogs in the field.

Mississippi State University conducted a feral hog carcass study near Starkville to assess the impacts of massive mortality on the landscape. Agencies donated 6,000 pounds of dead pigs which were placed on an experimental station during July 2016. Results found that unfenced carcasses decomposed faster than fenced carcasses. Researchers attributed the rapid reduction to vultures (*Cathartes aura* and/or *Coragyps atratus*). Within five days in the heat of July, all feral hog carcasses were decomposed. Researchers continue studying effects of this constructed massive mortality event, which changed the soil chemistry of the disposal area. They also noted that after decomposition, armadillos (*Dasypus novemcinctus*) tore up the ground in search of soil invertebrates which had fed upon the carcasses.

Above-ground Organic Composting

In some situations, composting may be favored over natural decomposition when odors, unwanted scavengers, or the potential for disease transmission is of concern. Attracting predators to decomposing carcasses could expose livestock operations to an increased risk of on-farm mortalities. For example, decomposing carcasses may attract black vultures (*Coragyps atratus*), which are known to attack newborn calves and cows.

Above-ground organic composting is accepted and approved as an environmentally sound method of carcass disposal. In concept, it is simply the above-ground burial of carcasses in a sufficient amount of an organic carbon source (such as sawdust, hay, or dead leaves) to ensure decomposition takes place in a manner that is acceptable from an environmental and animal health perspective.

Table 1. Range of Conditions for Rapid Composting[A]

CONDITION	REASONABLE RANGE[A]	PREFERRED RANGE
Carbon to nitrogen (C:N) ratio	20:1 – 40:1	25:1 – 30:1
Moisture content	40 – 65%[B]	50 – 60%
Oxygen concentrations	Greater than 5%	Much greater than 5%
Particle size (diameter in inches)	1/8 – 1/2	Varies[B]
pH	5.5 – 9.0	6.5 – 8.0
Temperature (˚F)	110 – 150	130 – 140

[A]*These recommendations are for traditional rapid composting. Conditions outside these ranges can also yield successful results.*
[B]*Depends on the specific materials, pile size and/or weather conditions.*

Adapted from *On-Farm Composting Handbook*, NRAES-54. 1992. Northeast regional Agricultural Engineering Service. Ithaca, NY.

Composting is the biological decomposition of organic materials under aerobic, or oxygen rich, conditions. To achieve rapid decomposition, specific conditions are required. When these conditions are met, the microbial populations will increase rapidly, resulting in elevated temperatures in the composting mix. These conditions are often thought of in terms of the compost "recipe." The primary consideration in determining the proper recipe is the carbon to nitrogen (C:N) ratio and the moisture content. These and other factors that are used to define an ideal "recipe" are listed in Table 1.

One of the critical elements of the disposal of animal carcasses is disease control. Composting exposes disease-causing organisms to heat, the toxicity of decomposition products and microbial antagonism. Of these, heat is probably the most effective in destroying disease-causing organisms. It is generally considered that temperatures of 122-140 degrees Fahrenheit will kill most viruses. These temperatures are also effective in killing the bacteria that cause anthrax and tuberculosis. It should be noted that while these temperatures kill the anthrax bacteria, they will not kill anthrax spores. In fact, the sporulated form of several types of bacteria can survive these temperatures. For this reason, while elevated temperatures are generally effective, composting sites should be isolated from dwellings or farming operations. Proper management will help ensure elevated temperatures and prevent the access of disease vectors such as flies and scavengers to the carcass.

In the traditional method of determining the ratios of the compost ingredients, it is assumed that the ingredients are thoroughly and uniformly mixed. However, when composting feral hog carcasses, it is not practical to grind the carcass to achieve a uniform mixture. As a result, for larger carcasses such as a mature boar, there are pockets of low C:N ingredients (the carcass) buried in a larger volume of higher C:N ingredients (the carbon source material). The moisture content within the compost

pile is also not uniformly distributed and tends to be highest within and around the carcass.

As a result of the previously mentioned conditions, there are likely to be pockets of anaerobic, or oxygen limited, decomposition in and immediately around the carcass. There may also be a tendency for water from the carcass to saturate the carbon material next to the carcass, resulting in moisture migration within the compost mixture. This means additional carbon material, above the requirements for an ideal recipe, needs to be placed under, to the side of and on top of the carcass. The extra carbon material serves as a sponge to absorb excess water from the carcass. It also serves as a biological filter to treat odors and objectionable gases prior to their being released to the air.

Considering these factors, the composting of feral hogs should be thought of as above-ground burial of animal carcasses in an organic material. The basic concept is to bury the carcass in sufficient carbon material to provide the minimum C:N ratio needed for decomposition, absorb excess moisture from the carcass, and filter odors. In practice, organic composting is simply placing the carcass in the center of a pile of carbon bedding material, covering the carcass with carbon-based material, and leaving it for an extended period of time.

Examples of carbon sources for organic composting include:

- Dead or decaying leaves
- Sawdust
- Waste hay (without manure)
- Waste silage (without manure)
- Rice hulls

Of the various carbon sources available, green sawdust tends to perform the best in terms of rapid decomposition. Waste hay and waste silage also work, but at a significantly reduced rate.

After building the compost pile, management would likely be limited to adding carbon material, if needed, to maintain a cover over the carcass. After decomposition, the composted material is suitable for land application as a soil amendment or reuse as a portion of the carbon material for the next mortality.

Steps for preparing and managing an above-ground organic compost for feral hog carcasses are:

- Select the location of the compost pile. Care should be taken to ensure that the pile will be on dry high ground that is not in the path of runoff water after rains. Ideally, the site should not be visible, or conspicuous, to neighbors and the public.
- Using your available source of carbon (such as sawdust or hay or dead leaves), make a 24-inch thick pad that is large enough so that when the carcass is placed, there will be at least 24 inches from the carcass to the edge of the pad. Note that regulations based on water quality concerns prevent the carbon material from containing manure, as with sawdust or hay collected from a horse stall.
- Add water to the pad as needed to ensure the pad has a moisture content of about 50 percent. When adding water to the pad, it is best to only wet the surface of the pad after it is formed. The correct moisture is reached when the pad surface is moist to the touch but you can't squeeze any water out of a handful.
- Place the carcass on the center of the pad.
- To prevent predation, install a fence barrier. One inexpensive method is to set a t-post at each corner. Then wrap a 48-inch high (or higher) welded net wire around the four posts and secure to the posts. The post will hold the wire in place until the enclosure is filled. The fence will reduce the amount of carbon material needed to cover the carcass and reduce the chances of pets and wild animals digging into the pile. It will also reduce the land area required to compost. Other types of fencing such as stock panels will also work. Another approach would be to use waste round rolls of hay as the retaining wall. If this is done, the hay should not be fed to animals.
- Cover the carcass with at least 24 inches of carbon material. Note that if a fence is not used, 24 inches of cover over the center of the carcass will likely result in less than 24 inches of cover part way down the slope on the side of the triangular pile. Therefore, more than 24 inches will be required at the top. Due to a concern about water leaching from the pile into ground and surface water, the pile should be shaped so that it tends to shed water. It should not have depressions on the surface that trap and pond water. It is also important that the carcass is surrounded by the full 24 inches of carbon material.
- If sawdust or other light material is used, it is prone to blow and slide off the pile; therefore, a layer of waste silage, dead leaves, sticks or branches, or other carbon material which is less likely to be blown off by the wind, can be applied over the sawdust to help hold it in place.
- Optionally, use fence or other wire to cover the top of the compost pile as added protection. If done correctly, animals will not scavenge an open-topped odorless, invisible carbon pile with a decomposing carcass. However, a cover fence is added insurance and may help prevent light carbon material from blowing off the decaying carcass.
- Maintain the carbon cover. It is likely that there will be shifting and settling of the cover material as the carcass decomposes. It is normal for large carcasses to initially bloat, swell and then rupture during decomposition. In this process, the cover material often shifts and the thickness is reduced, increasing the potential for odor. In some states when used in farming operations, it is recommended that the carcass be cut open to prevent this from occurring. Another option is to prevent the swelling process

by using a sharp object to puncture the body cavity, especially the belly, to allow gases to escape. However, an acceptable alternative is to simply add more carbon cover if needed.
- Prevent odor issues. With sufficient carbon material as a cover, odors will be similar to background levels. If excessive odors do occur, add cover material and make sure the carcass is completely covered.

Summary

Several options are available for disposal of feral hog carcasses in the field. If feral hogs are consumed, the U.S. Centers for Disease Control and Prevention recommends following safe practices when butchering and preparing fresh meat from feral hogs. In isolated areas where transporting carcasses or composting supplies is challenging, letting carcasses decompose naturally in the field may be the best solution. In circumstances where carcasses are near dwellings or farming operations where issues with odor, scavengers, and disease transmission are of concern, above-ground organic composting surrounded by a fence barrier may be the best choice for disposal.

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