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Disposing of Dead Goats

In a typical meat goat operation, 10% of the kids born live die before weaning. A death loss of 5% in the breeding herd is considered normal.

For a 25-doe farm, producing 1.8 kids per female per year, these percentages translate into the following annual mortality estimates: five pre-weaning goats and one doe. Using average weights of 30 pounds for a pre-weaning goat and 125 pounds for a doe, the amount of mortality produced by the typical 25-doe operation is approximately 275 pounds per year. Still-born kids, mummified fetuses and afterbirth add to these estimates.

In order to protect the health of herds and farm personnel, avoid air, soil and water contamination, and avoid problems with both agricultural and non-agricultural neighbors, biologically and environmentally safe methods of dead animal disposal must be employed on meat goat operations.

A sound herd health program dictates that goats dying from unknown causes be transported to a diagnostic laboratory for autopsy. This in turn places the burden of carcass disposal on the state.

Producers are charged a fee, however, for an autopsy and subsequent carcass disposal by incineration. It is obvious that some dead goats must be disposed of by the farmer. Current options for disposal of carcasses

include burial, incineration, and composting.

Disposal by burial

Burial is the most common and perhaps least expensive method of dead animal disposal. A pit is dug, into which carcasses are placed. Deep burial (i.e. 4-8 feet) is generally recommended. The practice of covering dead animals with lime retards decomposition and is not recommended. Dead goats should never be buried in areas where leaching can occur.

Problems with burial as a method of dead animal disposal include odor from and the accessibility of scavengers to "dead pits" that are not properly covered. There is also the possibility of significant ground and surface water contamination, for which producers may be held liable. Finally, goats do not die only when the ground is soft. Burying dead goats in frozen earth may be difficult.

Disposal by incineration

Incinerators completely eliminate carcasses and destroy pathogens. The capacity of many incinerators is limited, so this method of disposal works best for goats weighing less than 50 pounds.

In general, incinerators are expensive to buy and to operate. For example, purchase price of an incinerator with 600-pound capacity has been estimated at \$2,500 and annual operating costs (i.e. fuel, maintenance, etc.) may approach \$1,000. Certain types of incinerators may generate air pollution and objectionable odors.



Bin for composting animal mortality

Disposal by composting

The action of thermophilic, aerobic bacteria converts nitrogen rich (e.g. dead animals) and carboniferous (e.g. straw, sawdust, etc.) Materials into humic acids, bacterial biomass and organic residue (compost). During the composting process, heat, carbon dioxide and water are generated as by-products. The resulting product is free from harmful pathogens, is nutrient-rich and can be used as fertilizer. The poultry and swine industries have adopted composting as the method of choice for ridding farms of dead animals.

In a typical system, carcasses are placed in a bin containing sawdust, creating an ideal environment for the growth of the aforementioned bacteria. The optimal carbon to nitrogen ratio for bacteria is approximately 30:1. Bacterial action rapidly heat compost piles to temperatures as high as 70°C and within several weeks carcasses are reduced, leaving only brittle bones which are easily crumbled. "Turning" the compost pile by moving it to a new bin (i.e. secondary bin) after two weeks helps maintain high temperatures and promote even further decomposition.

Composting system for a 25-doe operation

A bin was situated over a concrete floor and was constructed of pressure-treated lumber. The three sided bin was 3 feet tall, 5 feet wide and 5 feet deep. Four, 4 x 4 posts and several 1 x 6 boards were used. (When sizing composters, it is typical to provide 100 ft³ of sawdust per 100 pounds of carcasses to be composted). The unit was covered with an inexpensive tarp. Total cost (excluding labor) for construction of this composter was less than \$200.

Sawdust is layered on the floor to a depth of 12-15 inches. A goat is placed on its back in the layer of sawdust. The thoracic and

abdominal cavities are opened with a knife and deep incisions are made in the muscles. Intestines are cut and organs dissected. The animal is then covered with a 12-15 inch layer of sawdust. A second goat can be placed and dissected as previously described. A final layer of sawdust is added and a minimum covering depth of 12-15 inches is ensured. Baby goats and afterbirth can be added to the composter by forming a V-shaped trough in the sawdust. The mortality or afterbirth is then covered with 12-15 inches of sawdust.

Sawdust is dampened with water as needed. The ideal moisture content in a composting pile employing sawdust is 50-60 percent. The moisture content of sawdust or a composting mixture can be judged somewhat by its appearance and feel. Sawdust that has a damp appearance and feel is probably near the proper moisture content for composting. Very dry sawdust may require the addition of 1 to 1.5 gallons of water per cubic foot of sawdust to obtain proper moisture content.

Under this system, mature goats have been completely decomposed in several weeks. Baby goats and afterbirth are almost completely decomposed within 24 hours after placement.

Active (as opposed to newly started) compost piles continue to function through the winter regardless of ambient temperature. Cold or frozen carcasses placed in newly started compost piles during cold weather may not begin composting immediately, but will start as the ambient temperature rises.

All composting units should be situated on well-drained soil and provide all-weather capability access roads and work areas. If properly managed, composting units are aesthetically "invisible" and there is little or no risk of air, soil or water contamination.

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