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Composting Small Ruminants in Tennessee

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Producers of small ruminants have long been plagued with the issue of how to dispose of dead production animals, as well as afterbirth and stillborn animals. Traditionally, small ruminant producers in Tennessee have limited land areas that they use for this livestock enterprise. Many times, the available land is already in use for pastures and other production parts of the enterprise. Often, this land is totally unsuited for other enterprises. To protect the health of both ruminant herds and farm personnel; avoid air, soil and water contamination; and avoid problems with both agricultural and non-agricultural neighbors, the producer must use both biologically and environmentally safe methods of dead animal disposal.

In many cases, composting is the only viable avenue that these producers have to dispose of dead animals. Composting is a planned and managed process that promotes aerobic degradation of organic matter. The action of Thermophilic aerobic bacteria converts nitrogen-rich (dead animals) and carboniferous (straw, sawdust, etc.) materials into humic acids, bacterial biomass and organic residue. During the 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.

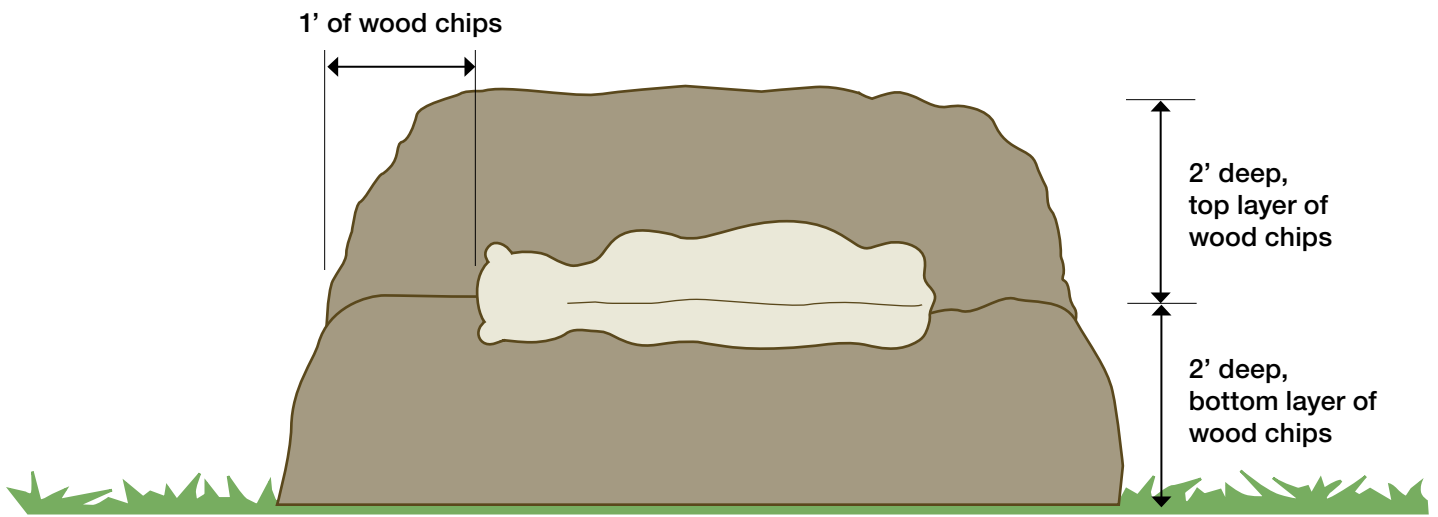
In composting, the material mix is very important. A proper balance of carbon and nitrogen is required to have a clean, efficient composting unit. When the balance is correct, along with adequate levels of air and water, the composting process results in nearly complete disposal of dead ruminants with little odor and run-off.

Producers need to understand that wool will not compost. Recently, I dug into a compost pile that was more than 20 years old and found wool that had been buried for more than 10 years that was still intact. It did show some water damage, but the composting had not destroyed the wool. Hair, on the other hand, seems to compost well.

Producers can use straw, decomposing hay, spoiled silage or even manure to compost small ruminants, but sawdust or wood chips seem to be best. A combination of waste forages as a base with sawdust or wood chips as the cover material seems to have served well in other areas of composting.

A simple system that has worked in similar operations consists of a bin with a concrete bottom and wood sides. The boards on the sides should have 1/2- to 3/4-inch gaps between the boards to insure proper airflow. Bins should be located close to a water source, but not in direct contact with the herd or flock. Having a water source close will allow additional moisture to be added as needed to insure that the 50-60 percent moisture level is maintained during the composting process.

Some producers have found that a roof or cover is advantageous when composting during periods of excessive rainfall. While it is not necessary to have such a bin, a container of some type is helpful to control the amount of carbon-based materials used in the composting. A single bin of 8 to 10 square feet should be adequate for a flock or herd of 25 to 30 head. This is extremely important because of the limited amount of sawdust available in most areas. Producers can contact tree-trimming services and ask to have chips from their chipper unloaded. This



will provide a ready source of carbon for composting, but will require the producer to have a place to store the chips. The chips do not have to be stored under shelter, but need to be in an area that is accessible in all types of weather.

For a composter to work at its best, the carbon-to-nitrogen ratio should be 30:1 (30 parts carbon to 1 part nitrogen). The carbon source is very important in allowing air penetration and holding moisture in the pile. While wood chips tend to dry out more quickly than sawdust, chips are much better in allowing needed oxygen flow into the compost area. To encourage bacterial growth and rapid composting, the mixture must be 50-60 percent moisture. If a handful feels moist, but no water can be squeezed from it, the mixture is probably okay. Another positive for the wood chips is that they tend to absorb odor and retain good “structure” for long periods of time. This means that they allow air to naturally pass into and filter out of the covered carcass.

In static pile composting, the following steps need to be carried out. First, spread a layer of 2 feet of carbon. If not using a bin, this layer should be on a slight slope that is downhill from property lines, water sources or sink holes. Next, the material to be composted should be placed squarely on the center of the base material with all sides and extremities at least

1 foot away from the edge. (Closer proximately to sides of a bin is acceptable. If composting is done without a bin, the full 1 foot from the side is recommended). The third step should be covering the carcass with the carbon source at least 2 feet deep. Research has shown that a 120-pound carcass will require about 12 cubic feet of sawdust or wood chips. It is important to remember that the cover material should be mounded to prevent rain from collecting on the pile. Producers may want to purchase a 3-foot composting thermometer to use in monitoring the pile. These are very handy to make sure that the pile is heating up properly. When the temperature remains above 130 degrees F for three consecutive days, disease-causing pathogens within the pile will be destroyed. In most cases, vermin will not disturb the composting pile, but it may be necessary, if using the bin method, to place a barrier across the front of the bin.

In most cases of active composting, the carcass will be transformed into a substance that can be used as a fertilizer. Turning the pile occasionally will speed up the degradation, but is not required if the compost pile has been constructed correctly. Once the bin or compost pile has been started, the process works well and is low in cost, has little odor, does not promote the growth of flies or other annoying insects and is environmentally friendly.

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