

Rendering—A Disposal Method for Dead Birds

Carcass disposal at the poultry farm is an important environmental issue. Some of the standard methods, such as burial and incineration, no longer meet the needs of operators. Prompted by recent water and air quality regulations, the poultry industry in Alabama is giving carcass disposal top priority by supporting efforts to promote and adopt alternative disposal methods. One environmentally sound alternative for the disposal of dead birds is conventional rendering. With today's technology it is possible to reclaim or recycle almost 100 percent of all inedible raw poultry material.

Rendering is a heating process that extracts usable ingredients, such as protein meals and fats. Rendering has been used for many years to convert the inedible results from the slaughtering process into meat meal, bone meal, and feather meal—all of which are highly valued as animal feed ingredients. Today, rendering plants supply 85 percent of all fats and oils used in the United States and export 35 percent of the fats and oils used worldwide. The rendering plant is a vital link between the poultry grower and industries which use fats and oils.

When properly handled, poultry mortalities that occur on the farm can also be recycled through the rendering process. As some of the roadblocks are removed through advanced technology and better understanding, rendering is becoming a more widely accepted practice for on-farm poultry mortality management. One concern is the spread of avian disease when dead birds are moved from farm to rendering plant. Proper equipment and techniques can minimize this problem.

The primary concern is proper maintenance of carcasses between death and delivery for processing. Poultry mortalities that are destined for a rendering plant must be held in a leak-proof, fly-proof container. Unless carcasses can be held in a way that retards decomposition, fresh mortalities should be sent to a rendering facility within 24 hours of death.

Freezing

Some producers are experimenting with freezing as a way to hold dead birds on the farm until they can be rendered. Custom-designed freezers

preserve dead birds until they can be delivered to the rendering plant. These freezers are usually freestanding with self-contained refrigeration units designed to operate at temperatures between 10° and 20°F and accommodate 600 to 1,000 pounds of dead birds. Inside the freezer are specially designed boxes that hold the carcasses. The freezer unit never leaves the farm; only the container holding the dead birds is transported to the rendering plant or removed to be emptied into a collection vehicle. To minimize contamination these storage boxes are tightly sealed to prohibit the effects of weather and to prevent leakage.

Loading and unloading is easily accomplished through various door arrangements. Birds are added in a single layer to ensure that all the carcasses freeze properly. Stacking or overloading prevents complete freezing of carcasses and should be avoided. Beyond placing carcasses in the freezer as they are collected daily, there is little labor involved. Processing can take place at the end of each growing cycle or as needed.

Freezer units work off energy efficient circuit boxes with an operating cost of about \$1.50 per day. So far, the cost of freezing as a collection method is related to the cost of energy; its potential for generating income is not yet known. Ideally, freezer units will have no environmental or health impacts and will operate for 10 years.

Transfer of pathogens or harmful microorganisms between farms may be a problem with this method of collection. However, freezing is useful as a way to reduce or eliminate pollution and improve conditions on the farm. Additional research will more fully explore this management option and any problems with transfer of pathogens between farms.

Fermentation

Fermentation may also become a more widespread method for holding poultry carcasses for up to 3 months until their valuable nutrient components can be recovered by rendering. Fermentation is a biologically secure and environmentally safe procedure.

Fermentation mixes dead birds (which have been ground into 1-inch particles) with a fer-

mentable carbohydrate source, such as sugar, whey, ground corn, or molasses. Fermentation reduces the pH level so that pathogenic microorganisms are inactivated and the organic materials are preserved.

Fermentation for the long-term storage of poultry carcasses prior to rendering has proven effective in field trials conducted by Auburn University in cooperation with the Alabama Poultry Industry. The methods employed have produced an environmentally and biologically safe material that can easily be converted into a usable, highly valued feed ingredient.

Fermentation preserves tissue so that it can be safely transported to a rendering plant for recovery of nutrients and recycled into usable foodstuffs or animal feed. The acidic pH (4.0 to 5.0) makes the fermented mixture essentially pathogen free.

Acid Preservation

Another way to preserve dead birds for future rendering is acidification. This technique has been a widespread practice in preserving foodstuff for years. The procedure is similar to the fermentation process except that propionic, phosphoric, or sulfuric acid is added to carcasses. Sulfuric acid may be preferred because it retards spoilage and is relatively low in cost.

To be prepared for storage, carcasses may be punctured with a blunt metal rod instead of being placed in a grinder. They must be stored in airtight, plastic containers to protect the mixture as well as the environment. Carcasses are separated from the acid solution without the accumulation of sludge in the holding container.

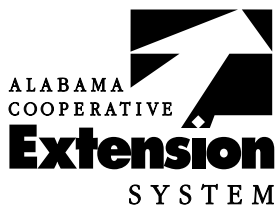
Transportation cost to haul the acidified product to the rendering plant is often only 10 percent of that for moving frozen mortalities. Even more important, however, is the fact that these processes eliminate the potential for transmitting pathogenic microorganisms into the rendered products or environment. Accurate costs of fermentation and preservation are still limited because most of the work has been through research. However, estimated costs range from three to four cents per pound of dead birds.

Advantages Of Rendering

As a management technique, preparing carcasses for rendering has many advantages over other disposal methods. Perhaps the greatest benefit is the eventual removal of all mortalities from the farm. New techniques that maximize safety and minimize the expense of delivering poultry mortalities to rendering plants are being used by producers and buyers of poultry products. Removal of carcasses from the farm eliminates environmental pollution related to other methods of disposal. As concerns for nutrient losses, water quality, and recycling for profit increase, the choice to render dead birds will become more advantageous.

A valid concern with storage for rendering is the possibility of disease being carried between poultry farms and rendering plant by vehicles and containers used to convey dead birds. Appropriate management and handling techniques can address this concern. Poultry producers can contact renderers in their area to determine the holding and transportation methods that have been successfully used.

As Alabama's poultry industry expands, the occurrence of mortalities will increase. Growers should determine the method of disposal most compatible with their management ability, environmental conditions, and financial situation. An effective way to resolve environmental concerns and at the same time end up with a valuable by-product is through rendering.



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