

## Rendering

Use of rendering services recycles the nutrients contained in dead animals, most often as an ingredient in animal food, especially for pets. The primary disadvantage of rendering is that the dead animals must be preserved or promptly transported to a rendering plant. This disadvantage has been intensified in recent years by a reduction in the number of facilities that provide rendering services. The outbreak of “mad cow disease” in the United Kingdom (U.K.) in 1986 has led to restrictions on how rendered products may be used in the United States. More properly described as Bovine Spongiform Encephalopathy (BSE), it is a degenerative brain disease that ultimately results in animal death. BSE is a member of the transmissible spongiform encephalopathy (TSE) group of diseases and is manifested as behavioral, gait, and postural changes, usually beginning with apprehension, anxiety, and fear. A TSE commonly known as scrapie has significantly affected the U.S. sheep industry. In the United States, cases of scrapie also have been reported in goats. Similar diseases, for example, the Creutzfeldt-Jakob disease, have surfaced in humans. These diseases have also been reported in mink, cats, deer, and elk. To date, no cases of BSE have been diagnosed in the United States. The process used by U.S. renders helps prevent a U.K.-type of epidemic. To further reduce the potential of BSE introduction into U.S. domestic herds, the Food and Drug Administration has rules that prohibits the use of ruminant byproducts in the production of feed for ruminants.

If the dead animals are not preserved, they must be transported to a rendering facility within 72 hours, minimizing decomposition. For rendering to be feasible, therefore, a rendering plant providing frequent pickup must be in close proximity. Proper bio-security measures must be utilized to minimize the spread of disease from farm to farm by rendering plant vehicles and personnel. These measures include transporting dead animals within 24 hours of their death and designating an area outside the perimeter of the facility for pickup by rendering personnel. The designated area to store dead animals must maximize sanitation and discourage scavengers.

An alternative to on-farm storage is cooperative dropoff locations where a number of producers can leave dead animals. This approach eliminates many of the problems associated with on-farm storage and the need for rendering personnel to come onto the farm. It is also advantageous to the render because the mortality for pickup will be more convenient and the mortality amount more constant because the daily variation will be smoothed when averaged over several operations.

The need for frequent pickup for transport to a rendering plant or dropoff location can be minimized by preservation of dead animals to prevent decomposition. Preservation allows the dead animals to be stored on the farm until amounts are sufficient to warrant the cost of transport for rendering. Freezing and fermentation are the two general methods that can be used for preservation.

Freezing requires the obtaining and operating of appropriate refrigeration equipment that is sealed against weather and air leakage. In some parts of the country, large custom-built or ordinary freezer boxes are used to preserve dead animals until they can be picked up and delivered to the rendering plant. Custom-built boxes or units are usually free standing with self-contained refrigeration units designed to provide temperatures between 10 and 20°F. Freezing is an expensive method of managing mortality. It does not eliminate

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**Table 51-3. Mortality management by rendering.**

Advantages	Disadvantages
<ol style="list-style-type: none"> <li>1. Conserves nutrients contained in the dead animals</li> <li>2. Minimal capital investment unless preservation is used</li> <li>3. Low maintenance</li> </ol>	<ol style="list-style-type: none"> <li>1. Increases sanitary precautions to prevent disease transmission</li> <li>2. Storage of animals is required until pickup</li> <li>3. Fees charged for pickup</li> <li>4. Rendering service may not be available</li> </ol>

active pathogenic microorganisms. However, the transfer of pathogen or other harmful microorganisms between farms has not been a problem. Those who use the method find it useful as a way of reducing or eliminating potential pollution and improving conditions on the farm.

Fermentation involves grinding the dead animals into 1-inch or smaller particles while adding carbohydrates such as sugar, whey, molasses, or corn. Adding bacteria may also speed fermentation. Fermentation produces volatile fatty acids and causes a decline in pH to below 4.5, which preserves the nutrients in the dead animals. The decrease in pH during fermentation inhibits further decomposition and inactivates many pathogenic microorganisms.

In summary, the rendering mortality management method has the following advantages and disadvantages (Table 51-3).