



Operation & Maintenance Plan Animal Mortality Composting Facility (Code 316)

Landowner/Operator:

Date:

NRCS Service Center:

Conservation District:

Practice Location:

Tract/Field ID:

(Lat/Long or UTM Coord, or Sec/TS/R)

Expected Lifespan

The minimum expected lifespan of this practice is at least 15 years.

A properly operated and maintained **Animal Mortality Composting Facility** is an asset to your property. The purpose of this practice is to provide temporary storage and treatment of animal carcasses due to routine on-farm mortalities. The life of the practice can be assured and usually extended by developing and carrying out a good operation and maintenance program.

Composting is a biological process that needs monitoring and management throughout the composting period to insure proper treatment and disposal of animal carcasses. The composting windrows will need to be constantly monitored for temperature, odors, moisture, and oxygen, as appropriate. With exception of some of the larger bones, most of the carcasses will decompose within six months, if the facility is constantly monitored and operated.

Safety

1. When accessible to children or livestock, the facility should be gated or fenced. All fences and gates shall be inspected for damage at least twice a year. Damaged fences and gates shall be repaired and/or replaced as soon as possible. Gates shall be kept closed at all times.
2. When turning windrows or otherwise operating equipment within the confines of the facility, the operator must be aware of other people working and obstacles and hazards that could be hurt or damaged.
3. Unless finished product is tested and approved, the product shall not be:
 - a. Applied to areas with high human or pet traffic.
 - b. Marketed for public use.
4. Biosecurity
 - a. Animal mortality compost facility shall only be used for composting "on-farm" mortalities. Do not accept or import mortalities from other operations.
 - b. Consult a local veterinarian and the Vermont Agency of Agriculture for the proper treatment and/or disposal of animals that died as a result of a prion disease or animals which have been chemically euthanized.

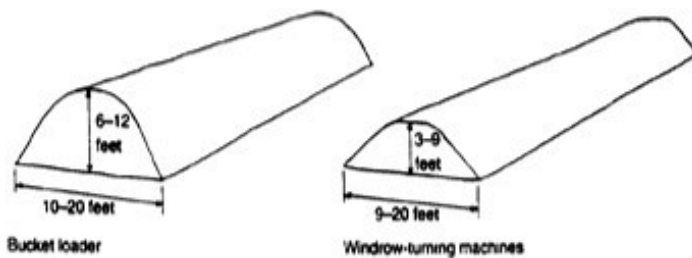
Operation

1. Effective Composting:
 - a. Compost in "windrows". Windrows should be no wider than 10-12 feet. Windrows should be oriented so runoff can drain freely away to be treated or collected and utilized as part of a Comprehensive Nutrient Management Plan.
 - b. Keep compost well aerated to maintain nitrogen loss by denitrification. Keep pH at neutral or slightly lower to avoid nitrogen loss by ammonification. High amounts of available carbon will aid in nitrogen immobilization. Include compost nutrients in nutrient management plans. Prevent loss of nutrients and pollutants to surface and ground water.

- a. Organic material shall be readily available and should be porous and not too wet. To reduce offensive odors increase the amount of carbon in the mix. A carbon to nitrogen ratio of 30:1 in the initial mix should have minimal odors. Minimize nitrogen loss by selecting carbonaceous material (wood chips, sawdust, etc.) that, when blended with the nitrogenous material (manure, etc.) provides the proper carbon nitrogen ratio and porous texture for aeration. Aeration is important as it also reduces odors. A chemical neutralizing agent or other additive agents should be used if structural components do not provide adequate odor reduction. Organic material can be wood chips, spoiled silage, composted manure, etc. Organic absorbent material shall also be available such as sawdust or cured compost.
- b. Dead animals should be placed in the compost mix as quickly as practical or kept in a dry, non-freezing environment until added to the compost mix. Adding frozen material to the composting mix will lengthen the amount of time needed for the composting process to occur and will require added management to ensure proper composting to occur.
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2. Building Windrows:

- a. Orient windrows to prevent ponding or runoff.
- b. First lay down a 12" layer of porous material, i.e. wood chips. Be careful not to compact material with equipment which will inhibit the flow of air into the pile.



- c. Place the carcass on top of the porous layer.
- d. Lance the rumen with a large knife. To accelerate the composting process, you may also lacerate the large muscles, legs, neck, torso, etc.
- e. Cover the carcass with carbon source (organic) material which is porous and not too wet. Cover the carcass with at least 24 inches of carbon material.

3. Monitoring

- a. Temperature – Monitor temperature on a weekly basis. Ideal temperature of the compost should be around 140°F.
- b. Moisture – Monitor the moisture content of the windrow. Maintain moisture at around 40-65 % (wet basis). On occasion, water may need to be added to optimize the composting process.
- c. Collapse - If the windrow shrinks or collapses, add more carbon material to keep the carcass covered and minimize odor. Maintain at least 24" of carbon material on all sides.
- d. Vectors – add more carbon material to the windrows if there is evidence of scavengers invading the compost pile. Scavengers should be discouraged at all times.

4. Turning

- a. Do not turn the pile for the first 4-6 months. If done properly, the soft tissue should break down in approximately one month; however, the larger bones take much longer to break down.
- b. After 4-6 months, turn the pile with a front end loader. Turning will help to aerate the pile and promote temperature increase which in turn will help to break down the larger bones.
- c. After 12 months, remove compost and land apply. Larger bones may still be present and may need to be physically removed from the compost before compost is hauled to field.
- d. Introduce bones back into the “new” pile for further composting.

5. Keeping Records:

- a. For each new windrow track date such as location, number/type of animals, date of deaths, pile construction and type/amount of material added.
- b. Check windrows on a weekly basis and note such data as temperature, vectors, leaching, moisture, odor and maintenance needs.

6. Troubleshooting:

- a. If the pile does not heat up:
 - i. The pile is not getting enough airflow through it:
 - Attempt to aerate the pile.
 - ii. The pile is either too wet or too dry, moisture content should be 50-60%, and should feel like a damp sponge;
 - If too dry, add water or liquid manure.
 - If too wet, cover or protect the pile from rain and snow.
 - iii. The pile is too small to maintain heat.
 - Add more carbon material to the pile.
 - Add fresh warm manure and re-cover the pile.
 - iv. Scavengers and insects are invading the pile:
 - Add more carbon material to the pile to reduce odor.
 - Prevent standing water.
 - Add fresh warm manure and recover the pile.
 - v. Leachate is running off the site:

Maintenance

1. Add gravel to the pad as the surface is worn away from normal everyday use of the facility.
2. Fences, gates, and/or warning signs, if installed, shall be kept in good repair.
3. Repair any vandalism, vehicular or animal damage as soon as possible. Inspect and maintain runoff control practices.

Operation, Maintenance and Inspection Costs

1. It is estimated that the annual time to routinely inspect, make minor repairs and operate your Animal Mortality Compost Facility will be:
 - a. Inspection = 1 hour/month
 - b. Minor Repairs = 1 hour/month
 - c. Loading Facility (transport carcass from the barn to the compost pad and placing carbon material around the carcass) = 2 Hour/Carcass

- d. Unloading Facility (loading compost into manure spreader, hauling to field and land applying compost) = 0.25 Hour/Carcass.
 - e. Repairs shall include but are not limited to any time to replace and/or repair; rocks, gravel, reseeding, etc.
 - f. During the lifespan, it is expected that additional stone and/or gravel will be required to routinely build up and maintain the wear surface of the compost pad.
 - g. Major repairs to damage caused by major storm event will be extra.
2. Most maintenance, such as mowing, replacing displaced gravel, etc., can be accomplished using common farm machinery. Occasional damage caused by major storm events may require heavy construction equipment to make repairs.

Specific Requirements for Your Practice

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

Specific Site Requirements