Dead Bird Disposal
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Dr. Claudia S. Dunkley
Department of Poultry Science
University of Georgia

Types of Poultry Mortality

- There are two types of mortality:
  1. Daily mortality
  2. Catastrophic mortality

Daily Mortality

- Most common options are:
  1. Incinerator
  2. Rendering (no available plants)
  3. Composting
  4. Landfill
  5. Burial Pits (no longer available in South Georgia)

Incineration

- Biosecurity
- Preferably has a secondary burn chamber

Incineration

1. High temperature combustion
2. Requires minimal operational labor
3. Quickly destroys bacteria, viruses and other pathogenic agent
4. The ashes does not attract pests
5. Ashes can be easily dispersed

Disadvantages of Incinerating

1. Expensive to operate- 1-3 gallons /100lbs of mortality
2. Odor from gaseous and particulate emissions
3. Overloading- low combustion temperatures- air pollution
4. Release of phosphate salts and phosphoric acid
Composting

- Natural biological decomposition process;
- Takes place under aerobic (requiring oxygen)
- Thermophilic (high temperature) conditions

Limitations of Landfill

- Legality depends on the classification of the facility
- Permission is needed ahead of time- not always guaranteed
- Transportation and tipping fees applies
- Breaches of bio-security
- Small county or municipal landfills are not usually equipped to handle large volumes of livestock during an emergency

Carcass composting offers several benefits:

1. Reduced environmental pollution
2. Generation of a valuable end-product
3. Destruction of many pathogens
4. Free from unpleasant odors
5. Easy to handle
6. Can be stored for a long time
7. Relatively inexpensive

Landfill

- May be an option in some locations
- It is considered a method of burial

Catastrophic Mortality

- Natural acts;
  - Tornadoes
  - Flood
  - Thunder storms
  - Disease outbreak
  - Agro-terror attacks

Producers should have a plan in place in the event of mass mortality!

Catastrophic Mortality

- The cause of the mass mortality may determine the method of disposal.
- Methods available for mass disposal;
  1. Windrowing- a composting process
  2. Incinerating
     a) Pyre Burning
     b) Air-curtain Incineration
  3. Landfill
  4. Burial
Windrowing

- Proper siting is necessary to allow composting and to prevent nutrient run-off into surface waters.
- Can be done inside the poultry house/litter shed if repopulation time schedules allows.

Windrowing

- Cover open air piles with a water-repellent breathable covering such as a composting fleece.

Windrowing

- If an under roof site is not available, use a site that is well drained and out of the flood plain.
- Use a temporary ground liner to prevent leaching from the windrow.

2. Incineration

- Incineration techniques for catastrophic mortalities are:
  1. Pyre or Open Air Burning
  2. Air-curtain

Pyre or Open Air Burning

- Dates back to biblical times but is still used.
- Carcasses are burnt in open fields or on combustible heaps.
- Generates relatively benign waste (ash) that does not attract pests.

Foot and Mouth disease outbreak in the UK 2002.
Disadvantages of Pyre/Open Air Burning
1. Fire hazard especially in windy areas
2. Pollutes in the atmosphere
3. It is labor and fuel intensive
4. The most lengthy of all the incineration processes
5. Negative public perception;
   - Water contamination from fuel used
   - Dioxins and polychlorinated biphenyl can cause soil and food pollution concerns

Air Curtain Incineration
- Fitted with a fan and air manifold system
- Fan blows a high velocity air curtain over and into the combustion chamber

Air Curtain Incineration
- Uses elevated burn temperatures which improves and reduces;
  1. Retention and combustion of smoke
  2. Large particulates
  3. Odorous emissions
  4. 6X faster than open air

Air Curtain Incineration
- Burns at a rate of 1 ton/hr (small unit) to 10 ton/hr (larger unit)
- Mobile
- Environmentally sound
- Service available from companies that specialize in disaster clean-up and recovery

Limitations of Air-Curtain Incineration
- Fuel intensive process requiring both liquid fuel and wood
- Trained operators are required
- It can be a fire hazard

Air Curtain Incineration
- Two types;
  1. Large open topped refractory lined metal boxes
  2. Temporary trenches excavated in the ground

Virginia AI outbreak 2002
Landfill

- The quantity of carcass that can be disposed of is relatively large
- Used for carcass disposal in recent major disease outbreaks:
  - Virginia AI outbreak (1984 and 2002)
  - UK FMD outbreak (2001)
  - California END outbreak (2002)

Disadvantages of Landfills

1. Landfill operators decide whether or not to accept carcass material
2. Public perception of potential health risk usually a determining factor for the operator
3. Land-filling carcasses is a means of containment rather than elimination
4. Long-term management of the waste is needed

Composting 101

- A permit is required from the state vet prior to construction
- Submit the following:
  - Owners name and address
  - Exact location
  - Size and type of poultry operation
  - Construction plans
  - Any existing disposal permits

Disadvantages of Landfills

5. Potential spread of disease agent during transportation
6. Smaller county of municipal landfills may not be designed to handle large volumes of carcasses
7. Producers should contact land-fill operators well in advance about disposal needs!

Location

- Your compost facility should be located to meet environmental interest to:
  - Protect ground and surface water and reduce risk of disease spread
  - Prevent invasion of insects and scavenging animals
  - Maintain air quality
  - Maintain good neighbors relations

Cost Sharing

- The National Resource Conservation Service (NRCS) has standard designs and cost-share programs for composters of various sizes.
The concepts of composting

To provide the microbes with an environment which encourages their growth;

1. Balanced diet (a carbon source)
2. Oxygen
3. Water

Carbon Source
- Supplies the nutrients for the microbes
- Dead bird
- Poultry litter
- Sawdust
- Straw
- Shavings
- Paper
- Rice hulls
- Cotton gin trash
- Peanut Hull

Carbon Source
- 50% of original carbon source remains
- Carbon to nitrogen ratio (C:N) range; 25:1 to 40:1
  - Generates enough energy
  - Produces little odor during the process
  - The dead bird and litter also creates pores within the pile which allows oxygen to flow through

Oxygen
- Microbes involved in composting are aerobic (oxygen requiring) organisms
- Pile should be aerated when the temperature declines
- The oxygen content of the pile is mainly affected by the amount of aeration

Moisture
- Microbes thrive best in moist conditions
- Moisture levels in the compost should be 40-60%
- Too little water will prevent the microbes from reproducing to adequately high numbers
- Too much water can cause the compost to become soggy and anaerobic
- Excess moisture will result in;
  - A compost pile that does not heat up
  - Odors
  - Reduction in the oxygen content of the pile
  - Retardation of growth and activities of some of the microbes

Phases of the Composting Process
- The process takes place in two phases
  1. Primary phase marked by increased temperature and soft tissue decomposition and the softening of bones
  2. Secondary phase, the remaining materials (mainly bones) break down fully and the compost turn to a consistent dark brown to black soil or humus
Layering the Primary Bin

1. Place an initial layer of 8-12 inches of fresh litter on the concrete.
2. Add a thin layer of bulking material such as straw, peanut hulls or coarse shavings (optional).
3. Add a layer of bird carcasses in a single layer.

Layering the Primary Bin

6. Repeat steps 2-5 until it reaches a height of 5-6 feet.
7. The last layer will be a cap of 8-10 inches of litter. This will help to eliminate odors and prevent flies and scavengers from invading your compost pile.

The Primary Bin

- Temperature should rise to ~140°F within 5 days and remain there for at least 7-21 days.
- When the temperature falls below 130-120°F you will need to turn the pile for a second heating phase.
- You turn the pile by using a "Bob Cat" or other similar equipment to transfer the compost material to the secondary bin.

Secondary Phase

- Moisture is added to reheat the materials
- The temperature should again rise to ~149°F within days
- Last for ~3 weeks

The Primary Bin

- When you have completed one primary bin you can move on the next down the line. The size and number of the bins depends on the equipment that you will use and the size of the farm.

Secondary Phase

- The end of the secondary phase is marked by:
  - Internal temperature of 77-86°F
  - Reduction in bulk density of about 25%
  - Product color dark brown to black
  - Lack of unpleasant odor at turning
Keys to Success

- The Keys to a successful composting process can be obtained by maintaining and monitoring the following:
  - Temperature
  - Time
  - Porosity
  - Aeration

Limitations of Composting

- Requires proper management
- Temperature must be monitored

Dr. Claudia Dunkley
Poultry Science Department
cdunkley@uga.edu
www.poultry.uga.edu