

Unit C: Poultry Management

Lesson 4: Poultry Waste Management

Terms

- Aerobic
- Anaerobic
- Composting
- Dehydration
- Digester
- Incineration
- Nitrates

I. After proper feeding and health are taken care of, a poultry producer then needs to worry about the waste produced by the birds.

A. Poultry wastes can affect your health, water quality, and the water quality and health of others if it is not handled properly.

1. Bacteria in animal wastes can contaminate drinking water and may cause potentially serious illnesses.
2. High levels of **nitrites**, a form of nitrogen that develops naturally in animal wastes, in drinking water may particularly harm unborn or young infants and young livestock.
3. Nutrients in animal wastes that enter streams also may lower oxygen levels and kill fish and other wildlife.
4. Odors from animal operations may cause problems with neighbors and create a negative public perception of agriculture.

B. Proper animal waste management reduces these concerns.

1. Animal wastes also are an important source of plant nutrients for crop production.
2. Other aspects of poultry production, such as how the carcasses are disposed of also may contaminate water by introducing bacteria or nitrates.

C. To protect water quality, your animal waste management system should be properly designed, built, and maintained.

1. At a minimum, your animal waste lagoon, animal waste storage area, or animal waste land application area should be at least 30 meters from a private well or other water source, and preferably farther away if possible.

2. You should also apply animal wastes to growing crops or pastures when possible and according to approved application rates.
3. Animal waste land applications also should be 0.3 kilometers or farther from other residences.
4. Cover any animal wastes transported on public roads to avoid possible pollution.

II. Choosing a proper waste management system will depend upon many factors such as size of operation, type and number of birds and even climate. There is not a “perfect” system for waste management. Ultimately the decision must be made on the cost to the producer.

A. Anaerobic and aerobic processing of poultry waste can be done in two ways, lagoons and digesters.

B. Anaerobic means bacteria consume manure in the absence of oxygen.

1. Lagoons are the first method.

- a. The poultry waste is placed in a large pond or “lagoon”.
- b. Bacterial activity then reduces the solids and liquefies it.
- c. This method causes lots of unpleasant odors and is suitable for remote areas.
- d. If lagoons are to be used, proximity to water sources need to be closely monitored.
- e. Once the waste is reduced it can be pumped onto crop land.
- f. Lagoons decrease the amount of nitrogen in the waste, which makes it less favorable for crop land.



2. Aerobic lagoons are prepared and cared for in the same way except aerobic processes are done in the presence of oxygen.

a. Oxygen is introduced by pumping air into the lagoon.

b. This method reduces unpleasant odors.



3. Digesters

- a. A **digester** is a large circular tank which is airtight and hold the fermenting slurry.
- b. The digester is equipped with mixing and heating devices to keep the manure at 35° C.
- c. This is most commonly used to produce biogas that can be used to power generators or create heat for both domestic and farm applications.



C.Composting

1.Composting is a method by which aerobic bacteria degrade organic matter to produce a humus-like material high in nutrients.

2. Under favorable conditions, manure can be composted in about ten days.
 - a. Favorable conditions include those which support the growth and reproduction of the bacteria, generally 60° C and moisture between 50 and 60%.
 - b. With this method, bedding wastes can also be mixed in.
 - c. The decomposition process is aided if the materials are placed in a large drum and rotated a few times a day.
 - d. Because of the high heat created in the composting process, the end product is sterile and is a very valuable fertilizer and soil conditioner that can be used to improve garden soils.



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D. Dehydration

1. **Dehydration** takes the longest amount of time to complete because it removes all or most of the water naturally present in the manure.
2. Poultry manure is very wet but contains higher amounts of dry matter content than any other manure.
3. Dehydration can be done in many ways.

- a. The manure can be dried directly in the housing unit if floors are used which allow for below ground waste storage.
 - i. Fans then circulate air and help the manure lose moisture.
- b. Another option is to mechanically dry the manure with a drier.
 - i. This can be costly as it requires some type of heating source to help remove the moisture.
- c. Manure can also be dried naturally by simply placing it outside in a thin layer.
 - i. There are many disadvantages to this such as high loss of nitrogen and nutrients, drying is slow and the end product will take longer to produce, weather can impact the drying process as an arid or semi-arid climate are needed.



E. Incineration

- 1. Incineration** is the burning of poultry manure.
2. This method is very ineffective and wasteful.
 - a. Burning the manure releases nearly all of the beneficial nutrients into the atmosphere causing air pollution and bad odors.

- III. Animal manures have been used as fertilizers for many centuries, but poultry manure has been recognized as the most beneficial.
 - A. Poultry manures are very high in nitrogen and can be effectively used as a soil amendment to increase organic matter.
 - B. Fertilizer is generally prepared first in some way, as discussed in Objective 2.

- C. Determining how much manure to use depends on the nitrogen content of the manure and the type of plant being fertilized and its nitrogen needs.
- D. Nutrient content of the manure will depend on the species of bird, what it is being fed and how it is managed and stored.
- E. Land that has been fertilized with poultry manure should not be used to raise other poultry for at least 4 years to reduce the chance of diseases spreading to other flocks.

Review/Summary

- 1. Why is it important to manage poultry waste?**
- 2. What is the appropriate waste management system for a poultry operation?**
- 3. What should be taken into account when poultry waste is used as fertilizer?**