Static Pile Composting of Wild Birds, Game Birds and Backyard Poultry to Prevent the Spread of Avian Influenza (H5N1)

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Gary A. Flory[1], Virginia Department of Environmental Quality, gaflory@deq.virginia.gov
Eric S. Bendfeldt[2], Virginia Cooperative Extension, ebendfel@vt.edu
Robert W. Peer[3], Virginia Department of Environmental Quality, rwpeer@deq.virginia.gov

- Summary of Method
- Advantages
- Disadvantages
- Compost Sites
- General Design Goals
- Compost Pile Construction
- Pile Maintenance
- Turning the Pile
- List of References
- Contact Information

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SUMMARY OF THE METHOD

Composting is the natural degradation of organic sources (such as poultry carcasses) by microorganisms. Windrow composting has been used in the United States to dispose of entire commercial poultry flocks infected with Avian Influenza (AI). Static pile composting—a method for composting smaller volumes of material—has been used successfully in the United States and elsewhere as a method for disposing of partial flock losses and routine daily mortality from commercial poultry operations. This method can also be used to dispose of carcasses of wild birds, game birds and non-commercial poultry.

Bacterial activity within a well-constructed compost pile generates temperatures within the pile ranging from 130ºF (54ºC) to 150ºF (66ºC) and maintains these temperatures for several weeks. Research has shown that the Avian Influenza (AI) virus can be inactivated at 140ºF (60ºC) in 10 minutes or 133ºF (56ºC) in 90 minutes (Lu et al. 2003). Static pile composting reaches temperatures and maintains holding times necessary to inactivate the AI virus with generous margins of error.

ADVANTAGES

- Relative low cost: Similar to on-farm burial.
- Biosecure option: No infected carcasses are removed from the site.
- Produces an end product that may be used as a soil amendment.
- Environmentally sound.

DISADVANTAGES

- Carbon material may need to be brought in from off site.
- Additional water may be needed.
- Access to the piles needs to be controlled until the virus has been deactivated.

COMPOST SITES

- Compost piles should be located outside the floodplain, in areas not prone to surface water intrusion, and with a minimum of 2 feet of separation from the seasonal high water table.

GENERAL DESIGN GOALS

- Moisture Content
  - Pile moisture content should be between 45% and 55%.
  - Moisture can be estimated a week after pile construction by squeezing a handful of compost. Material should hold together in a ball without dripping water.
  - If the carbon material is extremely dry, the birds should be misted or lightly sprayed during the construction process.
- Temperature
  - Compost piles should reach temperatures of 130ºF (54ºC) to 150ºF (66ºC). A long stem thermometer or wireless/wired temperature probe can be used to monitor the core temperature of the pile.

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COMPOST PILE CONSTRUCTION

- Construction should begin with a 12 inch (30 cm) base layer of carbon absorbent material such as poultry litter, sawdust, wood chips, or other appropriate materials.
- A single layer of bird carcasses is placed on the base.
- 8 inches (20 cm) of carbon is added to the carcasses.
- Add alternating layers of poultry carcasses and carbon until all the carcasses are added or pile height reaches 6 feet (1.8 m).
- Cap the pile with 8 to 10 inches (20 to 25 cm) of carbon. A generous cover is critical for reducing the odors that attract scavengers. Scavengers can transport carcasses before the composting process has inactivated the AI virus. It is recommended that the complete compost pile be covered with compost fleece or breathable cover to further reduce the potential for attracting scavengers. The entire pile can also be surrounded by woven-wire fence. Alternatively, the pile may be constructed inside a barn or other structure for better scavenger control.

PILE MAINTENANCE

- The compost pile should be inspected regularly to ensure that scavengers have not compromised the integrity of the cover. Repairs should be made as necessary.

TURNING THE PILE

- After 3 weeks of microbial degradation of the carcasses and thermal kill of the virus, the pile should be turned. Turning, by working or moving the pile, provides oxygen to the bacteria within the pile and generates a second heat cycle. If moisture within the pile has dropped below 50%, water may be added at this time.
- The composting process should be allowed to continue for an additional 3 to 5 weeks. After the second heat, all that should remain of the carcasses is bones and a few feathers. Contents may be land applied as a soil amendment.

LIST OF REFERENCES

Lu H., Castro A.E., Pennick K., Liu J., Yang Q., Dunn P., Weinstock D., and D. Henzler. 2003. Survival of Avian Influenza virus H7N2 in SPF Chickens and Their Environments. Avian Diseases 47:1015-1021

ADDITIONAL CONTACT INFORMATION

[1] Agricultural and Water Quality Assessment Manager, Virginia Department of Environmental Quality, Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801 Phone: (540) 574-7840 Fax: (540) 574-7844 Email: gaflory@deq.virginia.gov

[2] Area Specialist, Community Viability, Virginia Cooperative Extension, 2322 Blue Stone Hills Drive, Suite 140, Harrisonburg, Virginia 22801 Phone: (540) 432-6029 Fax: (540) 432-6251 Email: ebendfel@vt.edu

[3] Agricultural Program Coordinator, Virginia Department of Environmental Quality, Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801 Phone: (540) 574-7866 Fax: (540) 574-7844 Email: rwpeer@deq.virginia.gov