Management and Disposal of Waste: A State Cooperative Perspective

2018 EPA International Decontamination Research and Development Conference

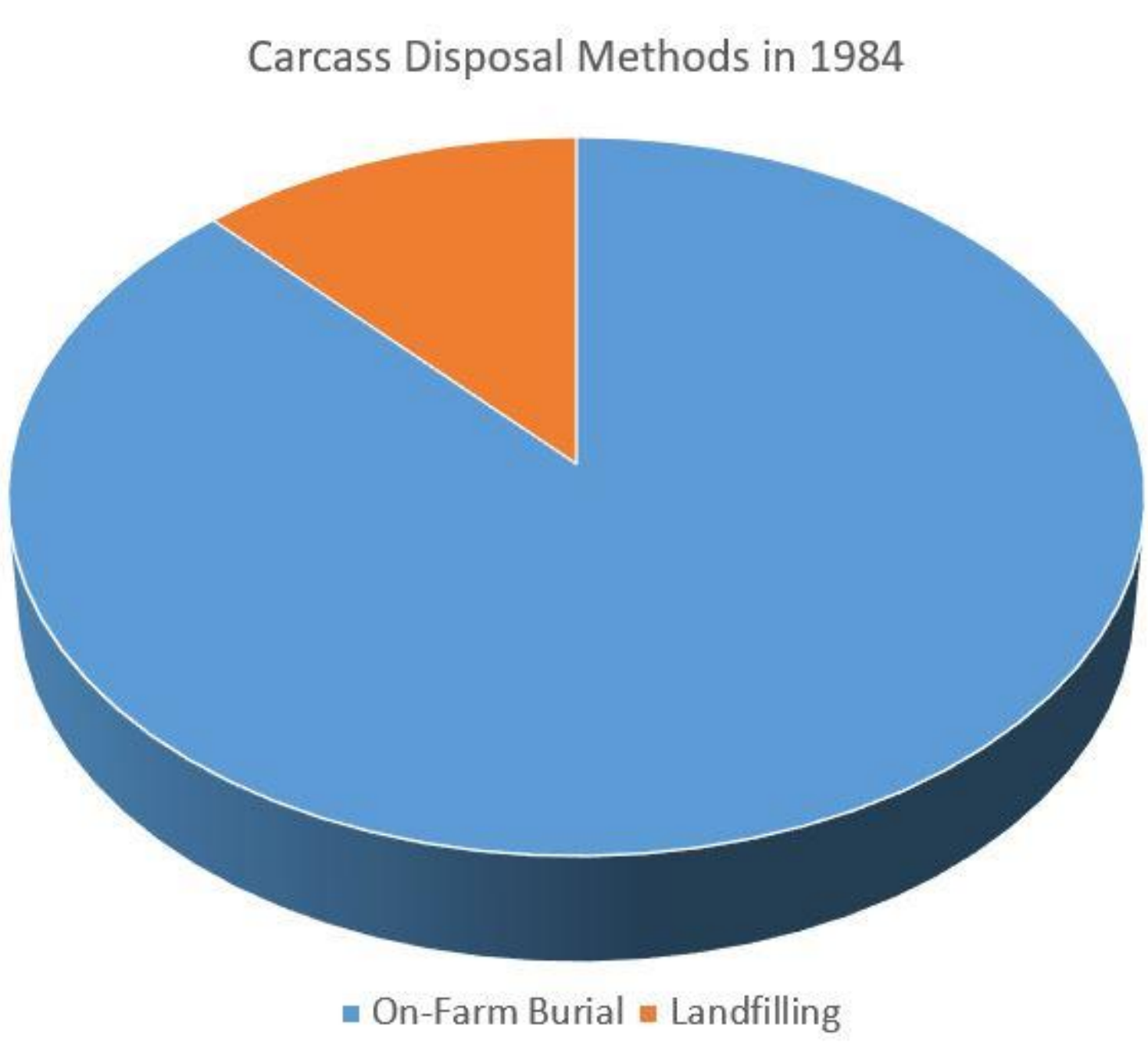
May 8-10, 2018

Research Triangle Park, North Carolina

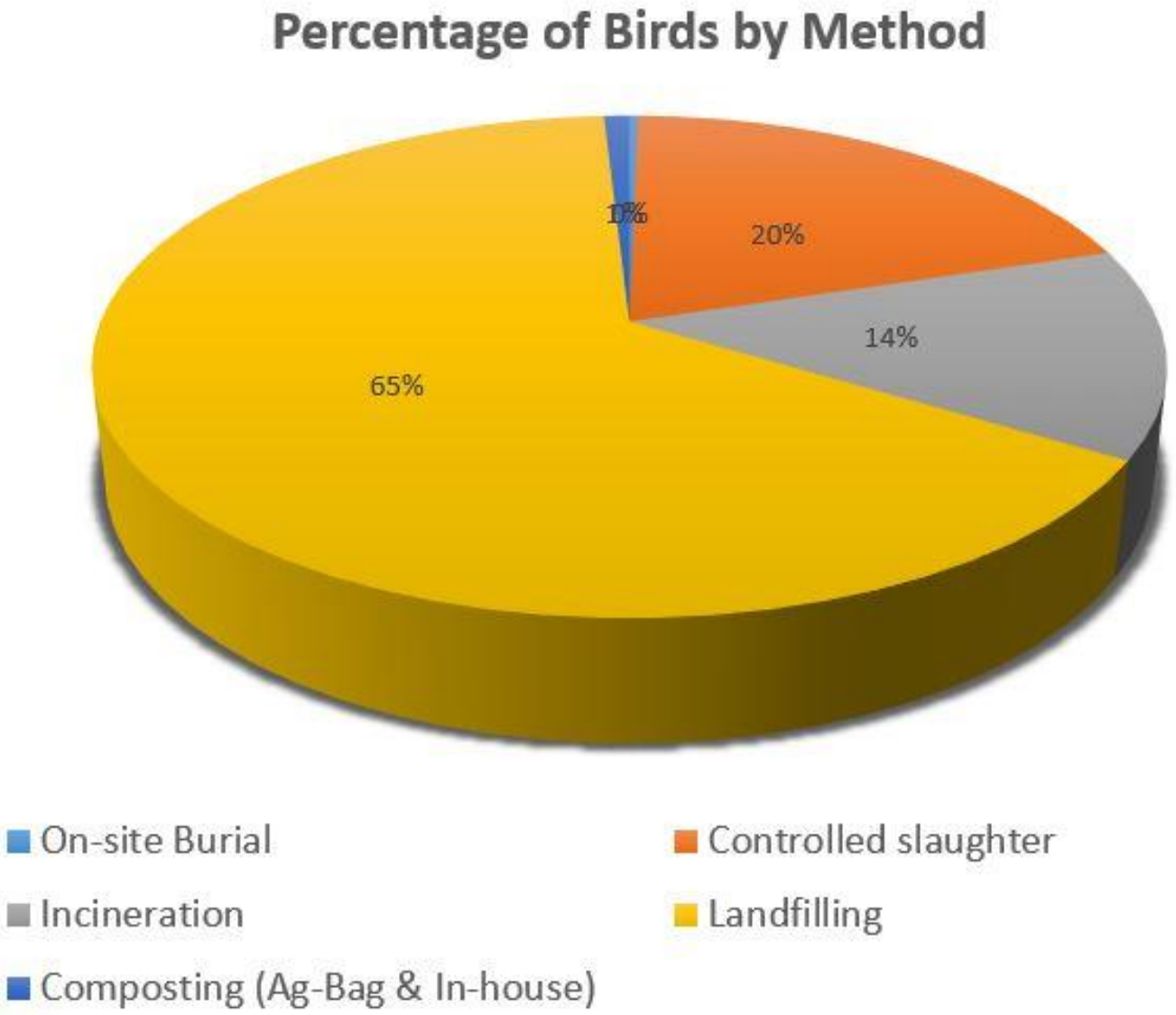
Gary A. Flory

Virginia's Experience with AI

- 1984 – 69 flocks, H5N2
- 1999 – 1 flock, H5N2
- 2002 – 197 flocks, H7N2
- 2007 – 1 flock, H5N2
- 2007 – 1 flock, H5N1


Carcass Disposal Methods in 1984
On-Farm Burial
Landfilling

Methods of Disposal Used in 2002



The Delmarva Experience

- 2004 avian influenza outbreak
- In-house composting
- 5-pound broilers
- Confined to 3 poultry farms

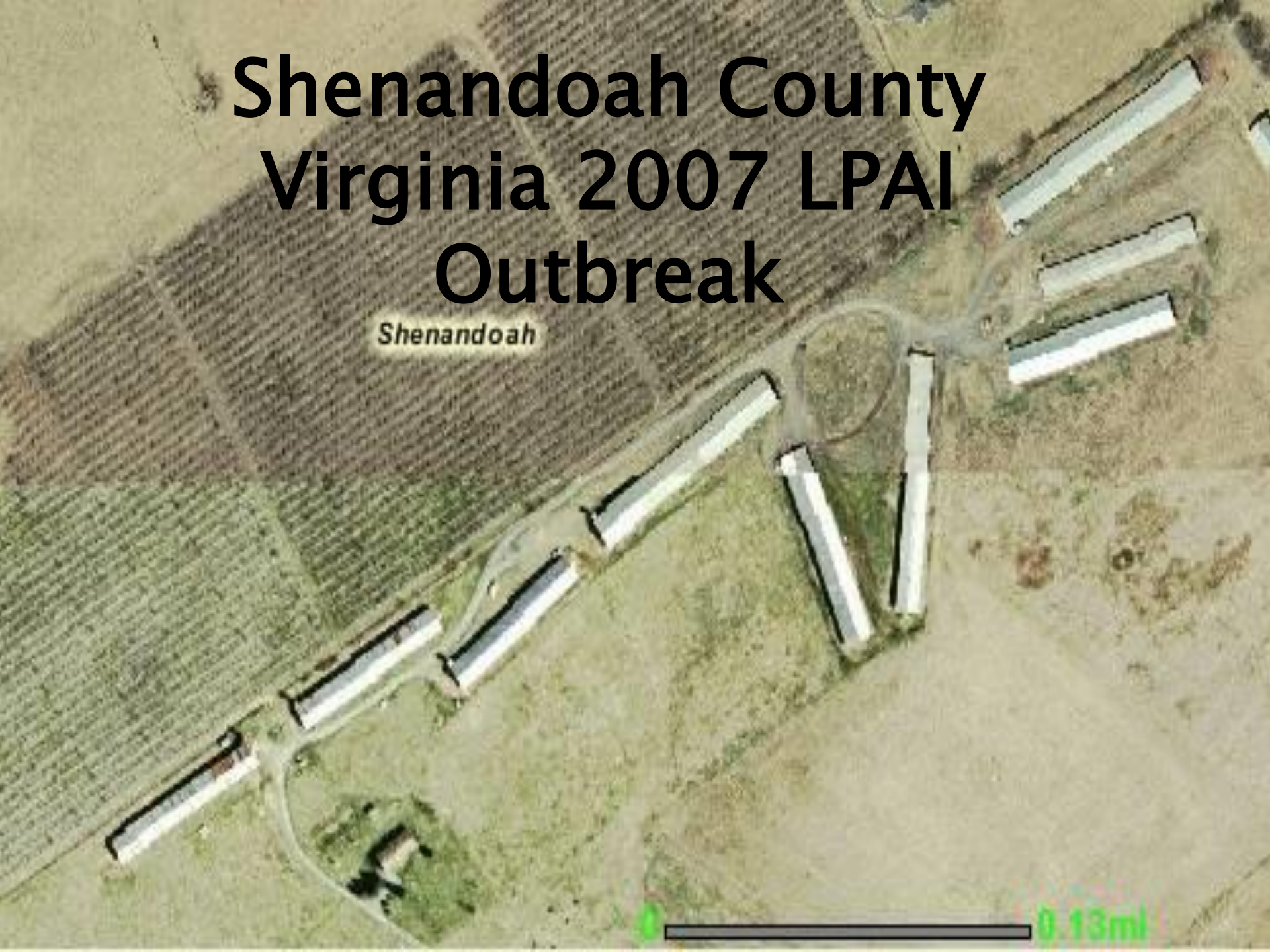
Research in Virginia 2004

Successful in-house composting of large turkeys

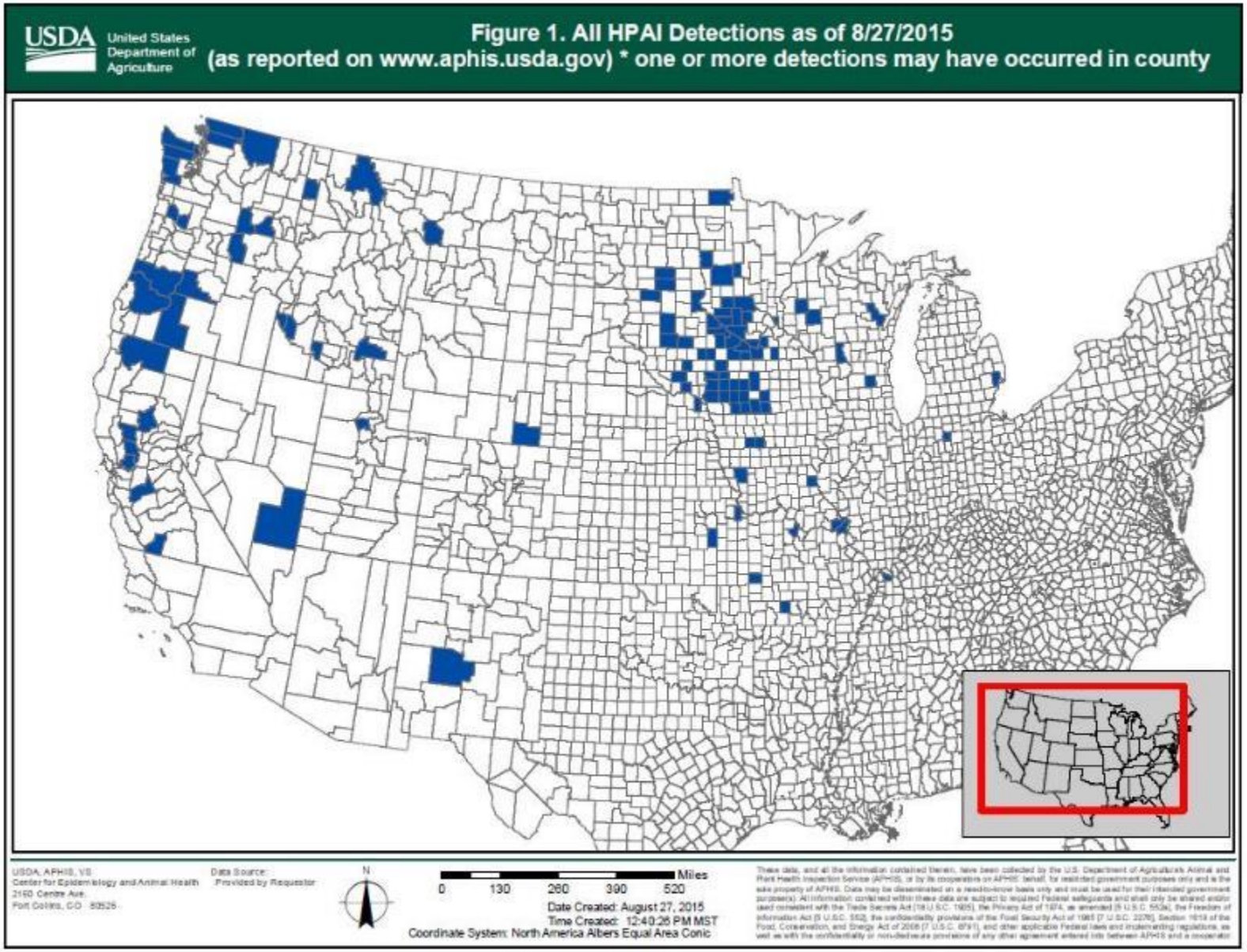
First Successful Use of Composting for Turkeys During a Disease Outbreak

Sugar Grove, West Virginia 2007

Shenandoah County Virginia 2007 LPAI Outbreak



HPAI 2015


USDA
United States Department of Agriculture
Figure 1. All HPAI Detections as of 8/27/2015
(as reported on www.aphis.usda.gov) * one or more detections may have occurred in county
USDA, APHIS, VS
Center for Epidemiology and Animal Health
2150 Centre Ave.
Fort Collins, CO 80526
Data Source:
Provided by Requestor
N
Miles
0 130 260 390 520
Date Created: August 27, 2015
Time Created: 12:40:26 PM MST
Coordinate System: North America Albers Equal Area Conic

Disposal Methods

85% Composting

8% Burial

7% Incineration or Landfilling

Carcass Disposal Oversight

- Managed by USDA
- Subject Matter Experts
- Composting Technical Committee
- HPAI Composting SOP

Standard Operating Procedures

Guidelines for In-House Composting Poultry Mortality as a Rapid Response to Avian Influenza

Version August 13, 2015

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SUMMARY OF THE METHOD

Composting is a biological heating process that results in the natural degradation of organic resources (such as poultry carcasses) by microorganisms. Composting has been successfully used throughout the United States for nearly 2 decades to control outbreaks avian influenza. Composting can be effective with most bird types and poultry house designs.

Microbial activity within a well-constructed compost pile can generate and maintain temperatures sufficient to inactivate the avian influenza virus. The effectiveness of this virus inactivation process can be assessed by evaluating compost temperatures, the shape of the time and temperature curve, visual observation of carcass decomposition and the homogeneity of the compost mix.

ADVANTAGES OF IN-HOUSE COMPOSTING

- Contains the disease and limits off-farm disease transmission
- Limits the risks of groundwater and air pollution
- Inactivates pathogens in carcasses and litter
- Limits public concerns over disease exposure
- Composting equipment and supplies are readily available
- Composting equipment and process disruptions due to severe weather (precipitation, temperature fluctuation, etc.) Minimizes delays, environmental impacts and

KEY ELEMENTS FOR SUCCESSFUL COMPOSTING

- Windrows (6 to 8 feet high and 12 to 15 feet wide) are constructed on an adequate and uniform base layer (10 to 15 inches thick) of sufficiently porous carbon material;
- The base layer and windrow are not compacted with equipment;
- Ensure good carcass to carbon contact, by creating a core with a minimum 1:1 mix by volume of carcasses, carbon and other infected material (manure, egg shells, feed, etc.) THERE IS NO NEED TO GRIND/CRUSH/MASCERATE THE CARCASSES DURING CONSTRUCTION!
- Windrows should be constructed to ensure adequate distribution of moisture throughout; and
- The windrows are capped with carbon material (8 to 12 inches thick) to ensure that no carcasses are exposed and to minimize odor.

"Research indicates that Avian Influenza Virus (AIV) can be inactivated in 10 minutes at 140°F (60°C) or 90 minutes at 133°F (56°C) (Lu et al., 2003)."

USDA United States Department of Agriculture

FY2016 HPAI Response
Mortality Composting Protocol for Avian Influenza Infected Flocks

February 5, 2016

Please note. These procedures may be revised as the situation develops.

EXECUTIVE SUMMARY OF THE METHOD

Composting is a biological heating process that results in the natural degradation of organic resources (such as poultry carcasses) by microorganisms. Composting has been successfully used throughout the United States for nearly two decades to control outbreaks of low pathogenicity avian influenza (LPAI) and highly pathogenic avian influenza (HPAI). Composting can be effective with most bird types and poultry house designs.

Microbial activity within a well-constructed compost pile can generate and maintain temperatures sufficient to inactivate the avian influenza virus. The effectiveness of this virus inactivation process can be assessed by evaluating compost temperatures and the shape of the time and temperature curve, visual observation of carcass decomposition, and the homogeneity of the compost mix.

Successful mortality composting requires the following:

1. **A qualified composting expert to guide windrow construction.**
2. **Trained equipment operators.**
3. **Sufficient carbon, water, and space.**

If any of these components is lacking, composting is NOT recommended.

Prepared by members of the USDA Composting Technical Committee: Lori P. Miller, Gary A. Flory, Robert W. Peer, Eric S. Bendfeldt, Mark L. Hutcherson, Mark A. King, Bill Sawkins, George W. Malone, Joshua B. Payne, Jerry Floren, Edward Malek, Mary Schwarz, and Jean Bonhotal

Completed windrow (photo by Gary Flory)

So what?

Method and Model

Adapting Protocol for International Use

- 68 countries*
- 6,946 outbreaks*
- 12 subtypes*

*2013-18

Livestock SOP

United States Department of Agriculture

Composting Livestock 2017
Livestock Mortality Composting Protocol
August 15, 2017

Please note: These procedures may be revised as circumstances change.

EXECUTIVE SUMMARY OF THE METHOD

Composting is a biological heating process that results in the natural degradation of organic resources (such as animal carcasses) by microorganisms. Composting mortalities, including sheep, goats, deer, pigs, cattle and horses, has been successfully used throughout the United States for nearly two decades to control animal disease outbreaks and to respond to natural disasters.

Microbial activity within a well-constructed compost pile can generate and maintain temperatures sufficient to inactivate most livestock pathogens. The effectiveness of this pathogen inactivation process can be assessed by evaluating compost temperatures, i.e., the shape of the time and temperature curve, visually observing carcass decomposition, and evaluating the homogeneity of the compost mix.

Successful mortality composting requires the following:

1. **A qualified composting expert to guide windrow construction.**
2. **Trained equipment operators.**
3. **Sufficient carbon, water, and space.**

If any of these components are lacking, composting is NOT recommended.

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Compost Pile Monitoring (photo by Gary Flory)

Hurricane Matthew 2016

North Carolina Animal Agriculture Impacts
NCDA&CS Response and Recovery

Mike Mayes/Joe Hudyncia
N.C. Department of Agriculture & Consumer Services

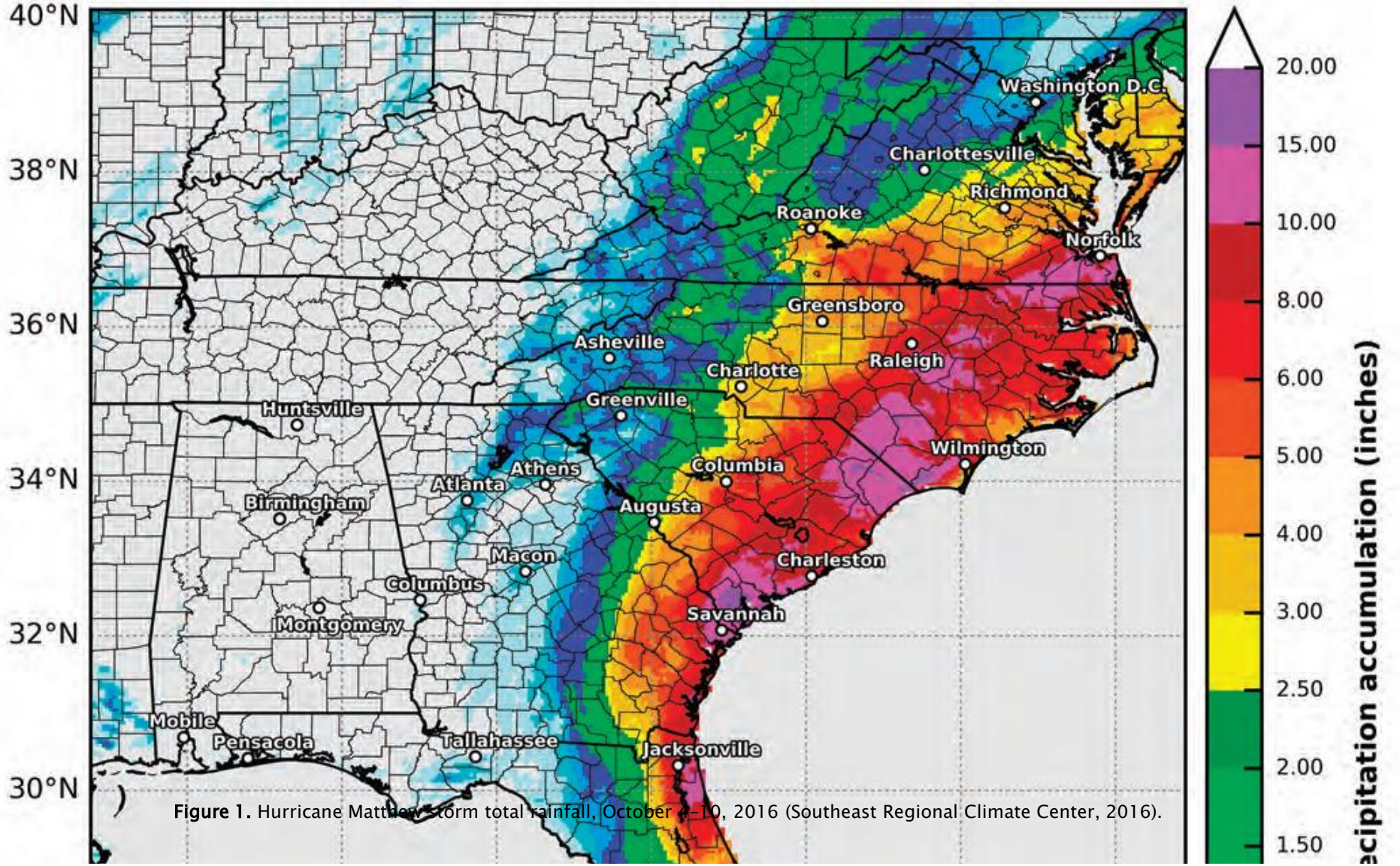

Figure 1. Hurricane Matthew storm total rainfall, October 4–10, 2016 (Southeast Regional Climate Center, 2016).

Agriculture Impacts

- 1,809,124 commercial poultry
- 49 farms with >180 total poultry houses
- 2,800 commercial nursery swine (1 farm)
- Major field crops ~$400 million
- Landscape and nursery crops >$20 million

Collaboration with FEMA to procure carbon material

Aerial View of On-Farm Compost Windrows!

PBS NEWS HOUR

By –
Associated Press

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comments

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Federal government to pay for all debris removal from Virgin Islands in wake of Hurricane Maria

Method and Model

June 3-7, 2016, Amarillo, Texas

animalmortmgmt.org

Questions?

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