Department of Animal Science

AVIAN INFLUENZA: WHAT WE LEARNED FROM 2015

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The presence of highly pathogenic avian influenza (HPAI) in several states early in 2022 has the Tennessee poultry industry taking extra precautions to keep this devastating disease out of Tennessee poultry flocks. Prevention is the best defense against an avian influenza outbreak and following a comprehensive biosecurity plan will ensure that we have a sound prevention program in place. However, while prevention is the key, it is still wise to prepare ahead of time in case Tennessee should experience an HPAI outbreak. There are steps we should take now and lessons that we should revisit from the avian influenza outbreak of 2015 in the upper Midwest that can help us be better prepared should HPAI occur in Tennessee.

Poultry integrators should plan ahead

It is critical that integrators have a mass mortality disposal plan in place for each of their contract farms should HPAI or another reportable disease outbreak occur. How will birds be euthanized? What will be the disposal method (burial, composting, etc.)? Individual producers should know and understand the plan because they will be valuable to the successful implementation of it. They know their farms and their poultry houses better than anyone. Producers are likely to be better equipment operators (tractors and skid steer loaders), particularly inside a poultry house, than government contract crews. There must be constant communication between the depopulation crews and the disposal crews. With the goal being to depopulate infected HPAI flocks within 24 hours of positive confirmation, disposal crews must be ready to go on a moment's notice. If composting is the disposal method of choice, large amounts of carbon material must be en route on short notice.

Photo credit: Tom Tabler

This carbon material and the logistics to get it moved rapidly should be lined up well before it is needed. In addition, a plan should be in place to rapidly deploy the supplies, labor and equipment that will be needed onsite. This includes:

- Personal Protective Equipment (PPE)
- Disinfectant
- Hand pump sprayers
- Portable high-pressure washers
- 36-inch compost thermometers, if composting mass mortality
- Long handled rakes, if composting mass mortality
- Skilled equipment operators
- General laborers
- Skid-steer loaders
- Pay loaders
- Trash management (cans, dumpsters)

Challenges

Poultry mass mortality depopulation and disposal comes with numerous challenges. Time is critical regarding depopulation once the order is given to stop the spread of the virus. However, litter can also be a challenge after depopulation. If foam is used as a euthanasia method, litter may be wet after depopulation. Distribution of the carcasses and wet litter increase the difficulty of building an ideal time windrow. It is best for the wet litter and carcasses to form the inside of the windrow and the imported carbon material with its high carbon to nitrogen (C:N) ratio to form the base of the windrow, along with the sides and the top. Post houses create a variety of maneuvering challenges for equipment operators. Houses with slats, such as breeder houses or primary breeder houses, also create challenges, as mass mortality from these houses may need to be composted outside. If done correctly, composting outside is a viable option. A properly constructed windrow will have no leaching threat. However, moving composting outside may increase the risk of scavengers and flies that could act as vectors to spread the disease offsite. If outside composting is used, be mindful of setback distances.

Lessons Learned from 2015

1. Use the minimum amount of water with foam to do the job. Don't flood a house by using a foamer that leaks significant amounts of water.
2. Construct windrows immediately after depopulation. Do not leave carcasses uncovered any longer than necessary. Decomposition increases the difficulty of managing the situation and attracts flies.
3. Flies may be an issue, so have a fly control program ready to put into place.
4. Have the necessary equipment available to do the job quickly and efficiently.
5. Most poultry producers are efficient equipment operators and know their houses very well. These individuals may be better operators than government contractors inside their own poultry houses. Utilize this talent.
6. If biobags are utilized, there needs to be a dumpster or somewhere to properly dispose of them.

7. Be familiar with the quality of your carbon source. Good quality material that can absorb leachate and odors is what is needed in plentiful supplies. Material that is more sticks and chunks is a poor-quality carbon source that will not do a satisfactory job.
8. Carbon source needs to be stored near each house. This location choice will lessen the time spent hauling carbon from a central location farther from the houses. Time is valuable, so save every minute possible.
9. Have an available water source. Tank sprayers work well.
10. Limit traffic flow to only those that need to be onsite. Appoint someone to deal with traffic. Be mindful of neighbors, media, animal rights groups and others.
11. Be aware of communication capabilities. Is cellphone service available?

Trench burial may also be an option for appropriate soils that are as close as possible to the poultry houses. However, keep in mind that trench burial requires large excavators and/or pans for quick work, so if you are planning to bury you need to pre-select a contractor that can get this type of equipment and operations onsite on short notice. Avoid anything that adds time to the disposal process. Once the depopulation process is complete, you are working against the clock and the decomposition process. Transporting mass mortality to fields/sites long distances from the poultry house is an option you don't have. The greater the state of decomposition, the more difficult the job becomes, regardless of whether the disposal method is burial or composting.

Biosecurity

Biosecurity is our best weapon against HPAI. The overall goal is to prevent the disease from occurring. However, should HPAI find its way to a farm in Tennessee, biosecurity will need to tighten even more. Setting up a portable vehicle wash station will be critical to traffic flow. Do not allow traffic onsite unless a wash station is present. Setting up a decontamination area for essential visitors with foot baths, disinfectant and trash cans will also be necessary. Disinfectant should be available for foot baths, for hand-held sprayers for vehicle tires, and at the concrete apron at loadout door entrance. When there isn't someone in a house working, close that house up. Control measures must be in effect for rodents and insects. Limit the number of visitors to only those necessary to successfully complete the task. Make sure biosecurity signage is in place. Necessary visitors should wear disposable coveralls, boot covers, a hair net, rubber gloves, etc. while onsite. Should an HPAI outbreak occur, biosecurity practices must prevent the virus from leaving the premise by any of the following methods:

- **People**
- **Vehicles/equipment**
- **Infected birds**
- **Litter**
- Aerosol
- Rodents
- Insects
- Wind
- Wild birds
- Fecal/oral contamination
- Fomites

Worker safety

Worker safety is of primary importance in a depopulation and mortality disposal situation. Establish work zones (hot, warm and cold) and understand and follow all protocols. Establish a clean vs. dirty line and stick to it; do not move the line. Always use the buddy system and never work alone. Never enter a poultry house without ventilating the house first to remove any ammonia build-up that may have occurred. For workers, USDA and state representatives, subject matter experts, consultants and others requiring a respirator, these persons must be individually fit tested for that respirator in advance. Additional worker needs will include food, water, tent for onsite shelter, available housing (local hotels) and portable toilets.

Preventing the disease is much better than dealing with an outbreak of HPAI. There is no cure for HPAI, but the disease can be prevented if everyone takes biosecurity seriously and follows the guidelines and checklist developed by the USDA to keep poultry flocks safe. Dealing with an HPAI outbreak is stressful, time-consuming and expensive. It will also be unnecessary if everyone keeps biosecurity as their top priority. However, it's smart thinking to have a plan in place to deal with HPAI should there be an outbreak. It's even smarter to practice sound biosecurity to prevent an outbreak from ever occurring.

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