IS IN-HOUSE COMPOSTING A PRACTICABLE METHOD OF DISEASE CONTAINMENT AND DISPOSAL FOR TURKEYS, BREEDER OPERATIONS, AND MULTI-LEVEL HOUSES?

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The expansion, density, and diversity of poultry production in the Shenandoah Valley has posed challenges to the industry and regulatory officials in the control of contagious diseases like avian influenza (AI). Within the Shenandoah Valley, there are many bird types for breeding and meat production; different poultry house designs; and aged structures such as multi-level and pole houses. Similarly, turkey production and breeding is particularly prominent in the Shenandoah Valley because of early developments in commercial hatchery technology, artificial incubation and brooding, and other key infrastructure improvements.

In 2002, an avian influenza outbreak affected a total of 197 poultry farms in six counties of Virginia. Farms affected and depopulated included 28 turkey breeder, 125 commercial turkey, 30 chicken broiler breeder, 12 chicken broiler, and 2 layer operations. Composting was used with limited success as a disposal method on two commercial flocks in 2002. In-house composting of poultry—particularly on turkey, breeder, and multilevel house operations—has not been considered a viable option because of concerns the composting process would keep poultry houses out of production too long, and not work on larger birds or in non-free span houses.

Building on the success of in-house composting in Delaware and Maryland on broilers, the research team conducted two separate studies to evaluate the effectiveness of in-house composting for Virginia's diverse poultry production industry since many turkey farms and operations with non-free span poultry houses were affected in 2002. The first study was conducted to simulate a catastrophic loss event; determine whether turkeys could be effectively composted in-house as a means of disposal; and the minimum amount of carbon material needed to compost turkeys. The effects of different carbon materials, different size turkeys, shredding, tilling, crushing, and use of whole turkeys were investigated on a local poultry farm in Dayton, Virginia. Nine windrows representing nine treatments were constructed in December 2004/January 2005. The temperatures of all the windrows reached 140 F° degrees and maintained temperatures adequate for pathogen kill.

The research and demonstration of in-house composting of turkeys demonstrated that with a good base, cap, and proper disease monitoring, the compost could be turned and moved out of

the poultry house within 3 to 4 weeks. The composted material could then be stored in a litter storage shed or under a compost fleece for later land application. This time would be comparable to the minimum down time experienced by farmers in the 2002 avian influenza outbreak.

As a result of this initial study and success with composting larger birds, the research team and authors worked with industry personnel to evaluate and discuss preparations for in-house composting all bird types and poultry house designs in Virginia. The continued spread of bird flu in Southeast Asia, Europe, and Africa has made the poultry industry and regulatory officials justifiably concerned that in an outbreak of the highly pathogenic H5N1 avian influenza virus infected birds will not be permitted to be transported off the farm and disposed of by other methods because of public outcry and concern for further spread of the disease. Therefore, there is increased urgency and need for additional research and preparations for on-farm disposal options.

The second study was conducted in 2006 in cooperation with the West Virginia Department of Agriculture to specifically address in-house composting in breeder operations and work with the height and width constraints common in breeder and multi-level houses. This study simulated a catastrophic loss event with the bird populations and densities that would be expected in breeder houses where the only area available for composting is the scratch area between the slats and cages. Additionally, this study evaluated the effects of two different euthanasia methods on the composting process. Although the results of the second project are still being evaluated, the use of firefighting foam for euthanasia does not hinder the composting process.

Results from the two studies indicate that in-house composting can be an effective and practicable disposal method for most bird types and poultry house designs common in Virginia. Our experience with off-farm carcass disposal methods indicates that transportation of carcasses off the farm introduces additional economic, environmental, and social challenges. On-farm disposal methods such as in-house composting minimize these challenges and offer the poultry industry and health officials a biosecure and cost-effective option for disease containment and carcass disposal.