

## **Control of Low Pathogenic Avian Influenza in Virginia—Lessons Learned**

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The commercial poultry industry of the Shenandoah Valley of Virginia is a highly concentrated industry of over 1000 poultry farms in a 3-4 county area. The industry in this area consists of both broiler and turkey production and their associated breeder flocks. In March of 2002, the initial case of avian influenza was identified in a turkey breeder flock. Laboratory serotyping identified this as a low pathogenic H7N2. Highly Pathogenic Avian Influenza (HPAI) is a list A OIE reportable disease and subject to Federal action and response. In the past, all cases of HPAI have emerged from a LPAI serotype H5 or H7 that have circulated in a commercial industry for a period of time. This occurred in Pennsylvania in 1983, Mexico in 1995 and Italy in 2000.

Low Pathogenic avian influenza (LPAI) is under state authority for control programs. With increasing numbers of cases and limited resources the Commonwealth of Virginia requested assistance from USDA in dealing with this outbreak of LPAI H7N2. In response to this request, a task force was formed to assist Virginia in this control effort. Programs were directed to prevent the spread to other poultry production areas, identify cases, and to eradicate H7N2 LPAI to preempt the emergence of HPAI. Authority for this program and depopulation orders were from the Commonwealth of Virginia.

In pursuit of these goals, the task force developed case criteria, surveillance methods, and epidemiologic investigations as well as assisting in depopulation and disposal protocols. By the end of June 2002, over 197 flocks had been identified, including meat turkeys, breeder turkeys, broilers, broiler breeders and table egg layers. At total of 4.7 million birds were affected by this outbreak.

### **Types of Poultry Operations Depopulated in the Shenandoah Valley**

	<b>Breeders</b>	<b>Grow Out</b>	<b>Table Egg</b>	<b>Total</b>
<b>Chickens</b>	29	13	2	<b>44</b>
<b>Turkeys</b>	26	127		<b>153</b>
<b>Total</b>	<b>55</b>	<b>140</b>	<b>2</b>	<b>197</b>

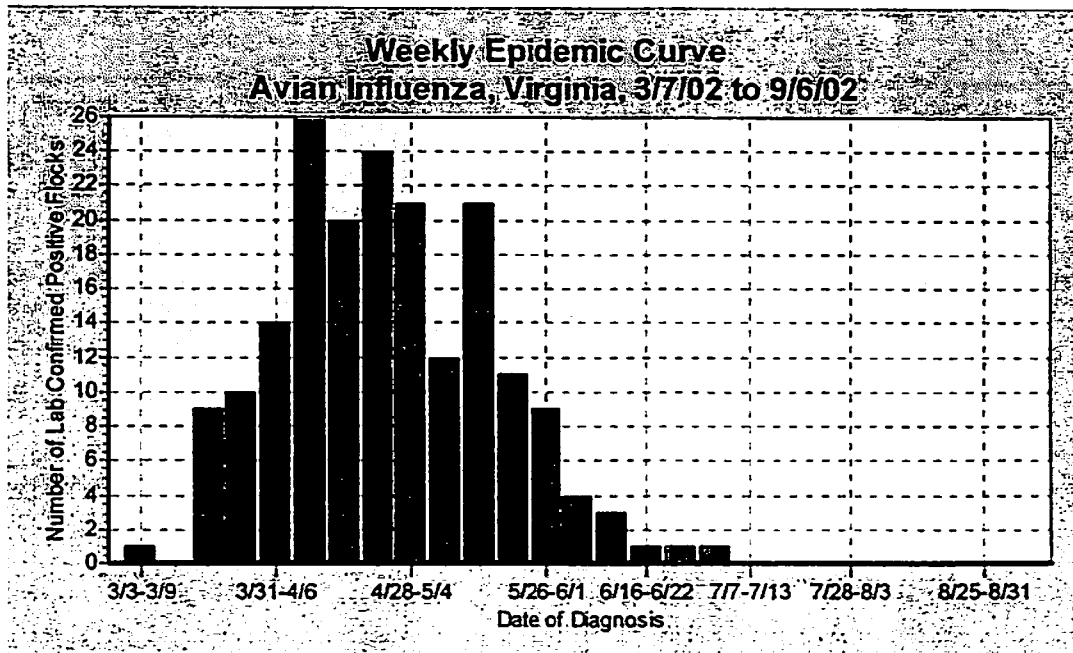
Laboratory tests available initially were the Agar Gel Immunodiffusion (AGID), a screening test for influenza A antibody and the Directigen test, a rapid screening test for

influenza A antigen. Confirmation by virus isolation was submitted to NVSL in Ames, Iowa. Prior to the outbreak the laboratory ran approximately 800 tests per week. It became apparent that the volume of testing needed would rapidly overwhelm the laboratory system. The task force assisted in personnel, equipment and testing materials. Personnel and equipment were brought in to conduct RT-PCR testing at the regional laboratory in Harrisonburg for rapid confirmatory testing in the local area. It is essential that in large outbreaks, confirmatory tests are readily and rapidly available for decision makers.

Initial cases were identified primarily from testing of birds with clinical symptoms and the associated area testing. Clinical symptoms were primarily respiratory signs such as snicking and sneezing. Drops in water and feed consumption were also noted. Breeder birds in addition to clinical symptoms showed egg production drops. High mortality was not associated with this LPAI in most cases. Turkeys showed the most significant respiratory lesions and were most often affected shortly after 10 weeks of age. Very few symptoms were noted in broilers.

Barrel (dead bird) surveillance became a main surveillance method at the end of April. On a specified day, each farm was tested by this method weekly. The grower would place ten birds of daily mortality from each house in plastic bags and place these in a barrel at the end of the farm drive way or entrance. Surveillance teams collected tracheal swabs from these birds for Directigen, PCR and virus isolation. Pre-slaughter surveillance was also begun, requiring negative results on serology and tracheal swabs within 72 hours prior to movement off the farm to processing.

Molecular fingerprinting of this isolate confirms this as identical to the virus found in the Northeast the past 7 years. No direct ties however, were identified to definitively trace this to the Live Bird Markets of the Northeast. Testing done on backyard flocks and local migratory waterfowl were negative for this serotype. Epidemiology studies conducted during this outbreak showed that growers using off farm mortality disposal were six time more likely to be positive. Rendering locations and drop off sites for daily mortality should be considered high risk areas. Much task force effort and education, as well as company programs, were directed to eliminating this point of spread. Use of only family members for farm labor showed indications of protective value. Airborne transmission was not believed to be involved. Movement of persons, vehicles and equipment appear to be the primary method of spread.



After the decision was made that positive flocks would be destroyed, carcass disposal became a primary issue. On farm burial was not permitted by environmental agencies. There was a three week delay in local approval for landfill use to bury large numbers of birds. In house composting was attempted on several flocks. With the numbers of birds, the size of birds and extended down time needed, in house composting did not become a viable option in this outbreak. Incineration of the depopulated birds was also done for a period of time. Air curtain incinerators were brought to an isolated area to facilitate carcass disposal. These proved to be very expensive to operate, unable to keep up with the volume and resulting environmental (air and water) quality issues relating to smoke, ash and runoff became prohibitive. Landfill became the method of choice after arrangements were made with a county landfill, out of the area, able to handle the numbers of birds to be disposed of.

In conclusion, no evidence has been found to indicate this was introduced from local backyard flocks or migratory waterfowl. Off farm mortality disposal methods such as rendering drop off sites need to have special consideration in regards to proper cleaning and disinfection of vehicles, persons and containers prior to returning to farms. On farm methods of dead bird disposal such as incineration and composting should be promoted and encouraged. Environmental agencies will play a major role in disposal decisions especially when emergencies are not officially declared. It is apparent that uniform national policies are needed to deal with LPAI. The availability or lack of indemnity will be essential as to how these programs develop and their ultimate success. This will be true whether dealing with large commercial companies or the smaller poultry system operations such as the LBM marketing system. State decisions in handling local animal disease issues such as controlled marketing, depopulation and vaccination will be heavily influenced by national export policies.