

# **NATIONAL AVIAN INFLUENZA CONTROL PROGRAMS HOW WILL IT AFFECT SMALL POULTRY PRODUCERS?**

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## **Introduction**

As avian influenza continues to be an issue for both the commercial and non-commercial poultry industries in the upper Midwest, organic poultry producers need to be aware of the importance of this situation. There are a number of reasons for this heightened awareness.

- ❖ Media attention and public perception of the Bird Flu issue in East Asia
- ❖ Persistence of Avian Influenza in Live Bird Markets in the United States
- ❖ The impact on trade, poultry consumption and commerce
- ❖ The potential public health issue
- ❖ The poultry disease

This presentation will address the disease, the avian influenza control programs available and prevention of the disease.

## **Avian Influenza – The disease, what is it?**

Avian Influenza (AI) is an infectious disease of birds caused by an influenza virus. The virus can cause infections and disease in the upper respiratory tract of many birds. The disease occurs worldwide. All birds are susceptible to AI, though some species are more resistant than others. AI viruses have been identified in the United States and around the world since the early 1900's, and is a relatively common finding just as human flu viruses are a common finding in people.

The AI virus is maintained in a worldwide natural reservoir of wild waterfowl and shorebirds with the virus sometimes infecting commercial poultry. Wild waterfowl and shorebirds that migrate through Minnesota and the upper Midwest are natural reservoirs of AI viruses. These birds are also the most resistant to infection and may harbor the virus without symptoms or clinical signs. Domestic poultry, including chickens and turkeys, are particularly susceptible with wild waterfowl contact shown to spread the virus. The virus is sensitive to heat, thrives in cold moist conditions and is preserved by freezing. These characteristics result in heavy contamination of pond and slough water, especially when the water is cold. Live bird markets in Northeastern United States have also been identified as being a reservoir for the AI virus.

AI is spread in poultry flocks as the virus is excreted from the respiratory tract and droppings of infected birds. Within a flock the virus may be spread from bird to bird by aerosol droplets or shared drinking water. AI is transmitted by direct contact with infected birds and by indirect contact with contaminated people or equipment. Transmission from flock to flock is usually by people (contaminated footwear and clothing) and equipment involved in production, live-haul or live bird marketing. People, clothing and equipment involved with infected poultry must be carefully cleaned and disinfected to prevent transmission of the disease. Avian Influenza **is not** an egg transmitted disease. Avian Influenza **is not** a food safety issue for consumers in properly cooked poultry and eggs.

All avian influenza viruses are Type A. On the surface of influenza viruses are external projections called Hemagglutinin (H) and Neuraminidase (N) proteins. There are 16 known Hemagglutinin and 9 known Neuraminidase proteins. Influenza viruses are subtyped by their Hs and Ns; for example, H4N8, H5N1 or H1N1. AI viruses are relatively unstable in the environment and are inactivated with physical factors such as heat, dry conditions or disinfectants. The viruses also have the ability to evolve and mutate. This a major factor in the behavior of the virus as it can adapt to different hosts quickly.

Two pathotypes of virus are recognized: Low Pathogenic Avian Influenza (LPAI) viruses and Highly Pathogenic Avian Influenza (HPAI) viruses. Most viruses isolated are low pathogenic with outbreaks in poultry occurring annually in the United States. These outbreaks are the result of the virus escaping the natural or man made reservoirs and infecting poultry. Highly pathogenic influenza viruses have only been found in the H5 and H7 subtypes. ***This does not mean that all H5s and H7s are highly pathogenic.***

The East Asian Bird Flu is identified as HPAI H5N1 because of the severe mortality it causes in wild and domestic poultry. This particular strain of virus, H5N1, has never been found in the United States. Highly Pathogenic Avian Influenza (HPAI) has never been found in Minnesota. Scenarios for the introduction of the East Asian Bird Flu strain (H5N1) into the United States include:

- ❖ Illegal movement of infected poultry or poultry products from East Asian countries.
- ❖ Movement by wild birds.
- ❖ Human infection and spread from travelers to the United States or Minnesota.
- ❖ Purposeful or agro terrorist introduction.

LPAI introductions fall under the jurisdiction of State animal health officials. HPAI introductions are consistent with a foreign animal disease and require a Federal response. In Minnesota, AI is reportable to the Minnesota Board of Animal Health. AI has been identified in Minnesota since the mid 1960's and has been held in check with a cooperative avian influenza control plan that includes education, monitoring, reporting, and a responsible response. Flocks are routinely monitored for evidence of influenza infection through a voluntary AI monitoring program. States will vary in their monitoring programs, reporting and response plans.

## National Control Programs

Two programs have been set up by the USDA/APHIS/VS (U.S. Department of Agriculture's Animal and Plant Health Inspection Service, Veterinary Services) to conduct AI surveillance. Both programs have federal standards, are coordinated at the state level, but are very different programs. They are the National Poultry Improvement Plan and the Live Bird Market System programs, both designed to monitor poultry flocks for AI. The program details follow:

**NPIP** - The National Poultry Improvement Plan (NPIP) is a voluntary, cooperative Industry-State-Federal program through which new technology, test standards and test protocols can be effectively applied for the improvement of poultry and poultry products throughout the country. The provisions of the NPIP, developed jointly by industry members, State and Federal officials, establish standards for the evaluation of poultry breeding stock and hatchery products and freedom from hatchery-disseminated diseases. Products conforming to specific standards are identified by authorized terms that are uniformly applicable in all parts of the country. In the 1990's AI was added to the list of diseases that are being tested as part of the NPIP breeder programs. An AI surveillance program for commercial layer, broiler and turkey industries, passed at the 2004 NPIP Biennial Conference, is nearing completion and approval from USDA.

Small game farm hatcheries and flockowners have the opportunity to participate in AI surveillance programs. The types of poultry that may participate include exhibition poultry breeding flocks (domesticated fowl which are bred for the combined purposes of meat or egg production and competitive showing), game bird breeding flocks (domesticated fowl such as pheasants, partridge, quail, grouse, and guineas, but not doves and pigeons) and waterfowl breeding flocks (domesticated fowl that normally swim, such as ducks and geese). The U.S. Avian Influenza Clean program is intended to be the basis from which the breeding-hatchery industry conducts a program for the prevention and control of avian influenza. It is intended to determine the presence of avian influenza in waterfowl, exhibition poultry, and game bird breeding flocks through routine serological surveillance of each participating breeding flock. A flock, the hatching eggs and chicks produced from it, will qualify for this classification when the Official State Agency determines that it has met one of the following requirements:

- (1) It is a primary breeding flock in which a minimum of 30 birds has been tested negative for antibodies to avian influenza by the agar gel immunodiffusion test when more than 4 months of age. To retain this classification a sample of at least 30 birds must be tested negative at intervals of 90 days; or a sample of fewer than 30 birds may be tested, and found to be negative, at any one time if all pens are equally represented and a total of 30 birds are tested within each 90-day period.
- (2) It is a multiplier breeding flock in which a minimum of 30 birds has been tested negative for antibodies to avian influenza by the agar gel immunodiffusion test when more than 4 months of age. To retain this classification a sample of at least 30 birds must be tested negative at intervals of 180 days or a sample of fewer than 30 birds may be

tested, and found to be negative, at any one time if all pens are equally represented and a total of 30 birds are tested within each 180-day period.

**LBM** – The Live Bird Market (LBM) program was established by USDA/APHIS/VS to address the persistence of LPAI associated with the live bird market system in the United States. The cooperative program with States and industry is to prevent and control the disease not only in the markets themselves, but also among production premises and poultry distributors that supply those markets. The program was first proposed to USDA in 2003 by the U.S. Animal Health Association. The control and prevention program targeting the live bird market system has multiple goals:

- ❖ Diagnose, control, and prevent the H5 and H7 LPAI subtypes
- ❖ Improve biosecurity, sanitation, and disease control at participating operations
- ❖ Minimize the effects of LPAI on the U.S. commercial poultry industry

States are responsible for enforcing LPAI program standards. Should LPAI be detected, Federal indemnification is available to participating facilities that follow all program directives. In order for a State to join the LPAI program, all of its live bird markets, as well as producers and distributors that supply those markets, must be registered or licensed with the State and must allow Federal/State inspectors access to their facilities, birds and records. These facilities must also have written biosecurity protocols in place. Under the program, sample collection and testing is carried out by Federal/State officials. For most bird species, tracheal swabs are collected, but for waterfowl, cloacal swabs are taken. In addition, swabs taken from the environment at markets, production premises, and distribution locations are also tested for LPAI. This can include swabs of such things as conveyances and crates. Blood samples are also collected from poultry at production premises to qualify them for movement into the live bird market system. These swab and blood samples are submitted to USDA approved laboratories to test for the LPAI virus. Any positive samples are sent to the National Veterinary Services Laboratories in Ames, IA, to confirm the subtype of the virus and to test the pathogenicity of the virus.

Regular monitoring and surveillance of all facilities in participating states is required for state participation. If LPAI is detected, a series of measures are undertaken to clean, disinfect, and depopulate the affected premises in order to quickly contain and eradicate the disease. Each participating state will develop responses plans to deal with a LPAI H5/H7 introduction. If no cases are found, such a program can help document that the United States is free of the H5/H7 subtypes of the disease.

The Live Bird Market System program recognizes three basic components, all of which can play a role in the spread of LPAI: live bird markets, distribution units and production units. A state can participate in the program when all components of the LBM system operating within the state are registered and/or licensed. A breakdown of definitions and program standard requirements follow.

**Live Bird Markets** are defined as any facility where live poultry are brought to be slaughtered and sold on site. Other end-stage poultry markets in a participating state that

are not “slaughter-only” markets will require development and approval of special biosecurity safeguards and inspections. This is necessary to assure that they meet program standards and are successful in the prevention and control of LPAI. The program standard requirements for live bird markets follow:

1. Live bird markets may be tested for LPAI at any time, but testing must occur at least quarterly.
2. Live bird market personnel must receive biosecurity training, and training records must be available and maintained in personnel files.
3. Live bird markets are required to undergo regular, quarterly closures with depopulation, cleaning, disinfection and downtime of at least 24 hours.
4. Markets must be inspected by a State/Federal animal health official before reopening.
5. Live bird markets that test positive for H5/H7 subtypes will undergo mandatory closure. Such markets will be required to depopulate, clean and disinfect.
6. Before a live bird market can reopen for business, the facility must pass inspection by a State/Federal animal health official and be retested. If the results are positive, the market will be shut down again and the sanitation process will be repeated, followed by inspection and retesting.
7. Any live bird market that tests positive for H5/H7 subtypes will be required to undergo monthly testing. Should a positive result occur again, the market will be shut down for depopulation, cleaning and disinfection. After three consecutive negative tests, the market will be able to return to a schedule of quarterly testing.
8. Whenever birds are found to be positive, for H5/H7 subtypes, an investigation will be initiated to determine where the virus is occurring in the system.
9. Markets are responsible for verifying bird identification and obtaining documentation of negative AI test results for all birds at the time of their receipt. If records are not available, the birds cannot enter the market. Records for avian species, which include their date of entry and premise of origin identification number, must be retained for at least 12 months.

**Poultry Distributors** are defined as those businesses or individuals (such as wholesalers, dealers, haulers and auction markets) engaged in the transportation and/or sale of poultry to LBM. The program standard requirements for poultry distributors follow:

1. Poultry distributors are subject to random inspections by State officials, performed at least quarterly to ensure equipment is clean and sanitary and that records are being kept in accord with program requirements.
2. Distributors' property including facilities, conveyances, crates, and birds, will be tested at least quarterly for AI.
3. Distributors' facilities that test positive for H5/H7 subtypes of AI will undergo depopulation of any birds on the premises followed by cleaning and disinfection.
4. Any distributor's birds that tests positive for H5/H7 subtypes will be required to undergo monthly testing. After three consecutive negative tests, the distributor will be able to return to a schedule of quarterly testing.
5. Whenever birds are found to be positive, an investigation will be initiated to determine where H5/H7 AI subtypes are occurring in the system.

6. Distributors may only accept properly identified and properly documented birds from AI negative flocks with certification of negative test results accompanying each delivery of birds. Documentation and laboratory results must be provided when birds are delivered to other distributors and to the live bird markets.
7. Distributors must maintain records of bird pickups and deliveries for 12 months.
8. Distributor vehicles, bird holding devices, and any premises where birds are held must be clean and sanitary at all times. Before a distributor returns to a farm after visiting a live bird market, all cages, vehicles, and other equipment must undergo cleaning and disinfection.
9. Distributors may not transport live birds or other live animals from live bird markets.

**Production Premises** are the production facility or farm that is the origin of poultry offered for sale in a LBM. The program standard requirements for production premises follow:

1. All birds provided to a distributor or directly to a live bird market from a production premise must originate from an AI negative flock. Production facilities and equipment must be clean and sanitary at all times. Categories of production premises and the testing requirements for each category are as follows:
  - a. LPAI monitored flocks are tested monthly for the virus for at least 3 months. At least 30 birds per flock must be tested 10 days prior to movement.
  - b. Established flocks are those that have been maintained together for at least 21 days prior to sample collection with no additions to the flock. To qualify for the first shipment or to requalify after any breaks in the monthly sample testing regimen, 30 birds must be tested within 10 days prior to movement.
  - c. Commingled flocks are defined as groups of poultry from multiple sources that have been assembled for one or more shipments. When untested birds are added to the flock, previous test reports are void and the flock must requalify as an established flock. This requires that they wait 21 days before sampling and are tested 10 days prior to movement.
  - d. Non monitored flocks are those which have not been on a program of monthly testing for at least 3 months. To qualify for sale in the live bird market system, 30 birds in the flock must be tested within 10 days of movement.
2. In addition to testing regimens, production premises may be subjected to random inspections and testing by State/Federal animal health officials to ensure that their property, conveyances, and coops are clean and sanitary and that records are being kept in accord with program requirements.
3. Findings of H5/H7 LPAI will result in a quarantine of the infected premises, depopulation, cleaning and disinfection. The premises will be inventoried in order to conduct tracebacks and traceforwards and to stop any possible spread of the disease. A negative environmental test result is required before restocking.
4. Flock test records, as well as records of bird transfers, must be maintained for 12 months. Birds loaded for transportation to a distributor must be identified by premises of origin and must contain an appropriate date or lot number that will distinguish the shipment from others.

5. Birds from production premises may not be sold directly to live bird markets unless the flock owner or manager is also registered as a distributor.

## **Surveillance, Biosecurity**

Surveillance, the early detection and reporting of AI, education and biosecurity are the keys to controlling its spread. The identification of an AI introduction and an early response are crucial in order to initiate control measures. Functional and physical separation of commercial and non-commercial poultry industries in the upper Midwest are needed to prevent a crossover of AI introductions. In Minnesota, these measures are being taken in cooperation with and under the direction of the Minnesota Board of Animal Health. In other states this may fall under the direction of the Department of Agriculture, Animal Industry Board, Bureau of Animal Industry, Board of Animal Health or other appropriate state agency.

**Biosecurity** are the methods, practices and protocols used to prevent the introduction of infectious agents into a flock. There can be biological transmission (transovarian or through the egg, mixing sources of birds, wild birds, rodents, insects or mammals) or mechanical transmission (humans, feed, hatchery contamination, dead birds or airborne transmission) routes of infection. Looking at it in a different way, flocks can become infected by:

- ❖ Pathogens (germs) being present in the barn or on the farm (multi-age or the C & D program didn't work).
- ❖ Chicks or poults bring the pathogens with them (Mycoplasma, Salmonella, not AI)
- ❖ Pathogens are brought in by a vector (people, vehicles, wild birds, feed, flies, equipment, beetles, water, litter, rodents).

Management plans for each organic production facility must address preventative livestock health care practices, including sanitation practices that will be followed to minimize the occurrence and spread of AI. Management strategies for small poultry producers that can prevent the introduction of AI viruses include:

- ❖ **Poultry producers must establish and maintain a biosecurity program.** The establishment of non-confinement housing and pastures conditions are examples of farming practices that may not be biosecure. The exposure of birds to wild waterfowl, other flying and wild birds that could be a potential source of AI should be limited. An established biosecurity program needs to keep out ground and overhead predators which could spread AI and other diseases.
- ❖ **Practice All In, All Out poultry management if possible.** Leftover birds harbor diseases and can infect new birds. Avoid multiple species or types on the same farm. Disease can be harbored in one type of poultry without signs, and be devastating in a different type of poultry.
- ❖ **Control the traffic of birds, humans and equipment to and from your farm.** Practice good hygiene on your farm. Avoid putting new birds, including baby chicks

- in contact with droppings, feathers, dust and debris left over from previous flocks. Some disease-causing organisms may survive for long periods of time.
- ❖ **Direct the flow of on-farm traffic from the youngest to the oldest birds.** Older birds harbor disease organisms and can tolerate diseases that younger poultry can not.
  - ❖ **Dispose of dead birds promptly by rendering, burning, burying, composting or landfill.** Dead birds harbor disease and can be the source of many disease problems and can also attract predators and other animals to your operation.
  - ❖ **New birds represent the greatest risk because their disease status is unknown.** Isolate all purchased birds for a minimum of ten days and preferably for 30 days. If they are incubating a disease, you may detect it before other animals are exposed.
  - ❖ **Know the warning signs of major avian diseases.** Signs such as loss of appetite, sudden drop in egg production, and higher death loss need a diagnosis by a veterinarian. Don't wait! For help diagnosing sick birds call your local veterinarian or a diagnostic laboratory you are familiar with.

### **Take Home Message**

- ✚ Avian Influenza, is a viral disease of poultry that has been identified in poultry flocks in Minnesota, the upper Midwest and the United States for years.
- ✚ The vast majority of AI viruses isolated are low pathogenic viruses.
- ✚ Outbreaks in poultry occurring annually in the United States as a result of the virus escaping the natural or man made reservoirs and infecting poultry.
- ✚ Surveillance programs conducted in cooperation with state government agencies are available to ensure that poultry flocks are AI monitored.
- ✚ State LPAI response plans will be different in their approach and strategy to eliminate a LPAI introduction.
- ✚ Biosecurity that is established, maintained and monitored is the key to preventing an AI introduction onto your premises.
- ✚ There is a continual need to educate all poultry producers about AI (the disease), AI biosecurity (the needs), AI best management practices and the implementation of those practices.

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