

THE IMPACT OF INDUSTRY CHANGES
ON AVIAN INFLUENZA IN TURKEYS

P. E. Poss, DVM
Earl B. Olson Farms, Inc.
Willmar, Minnesota

WILDLIFE RESERVOIR PROBLEM

The close proximity of turkey production farms and buildings to wild waterfowl habitat in Minnesota will continue to result in a high exposure to new introductions of A.I. virus each year. Whether or not the virus establishes itself in a flock of turkeys depends on many factors. The large number of sloughs and lakes in conjunction with large numbers of native and migrating juvenile ducks insures that the virus will be present every year. Historically, there have been numerous subtypes found in wild waterfowl but not many of these have diffused into turkeys. More information is needed on how and why some of these subtypes are able to transmit and infect commercial turkey flocks in order to prevent these new introductions each year.

CONFINEMENT REARING

Historically, the seasonally produced Thanksgiving turkey has been grown on open range in Minnesota and this method still provides close to half of the annual production. 62% of the annual crop is slaughtered from June through November which are primarily range reared.

Total Pounds of Turkey Slaughtered under Federal Inspection

1985

January	9,257,000	*July	17,273,000
February	9,167,000	*August	18,590,000
March	11,231,000	*September	18,138,000
April	11,168,000	*October	20,831,000
May	13,619,000	*November	17,682,000
*June	15,204,000	December	13,004,000

Total - all seasons 175,164,000

*Six month range season

It is not unusual in the fall to see many different species of wild birds and waterfowl out in the range pen with the turkeys where direct viral transmission may occur. Additionally, most of the production buildings have outside pens or yards for flocks that go to market in the summer and fall where direct viral exposure may also occur.

Replacement of range facilities with confinement buildings for year-round production has occurred to some extent over the years however new expansion has been, and will certainly continue to be, in year-round confinement housing. Construction is expensive because of snow load and many hinged or sliding ventilation openings required for hot summer and cold winter weather extremes in Minnesota. It is difficult to match the excellent growing conditions on range in the summer and fall with a confinement building and, as long as there is a seasonal Thanksgiving market, the industry will likely continue to have open range and outside yards to increase summer and fall production numbers in Minnesota.

Maintaining confinement buildings in a wildlife-proof condition is difficult because of the many individual door and ventilation openings that require screening. Additionally, the integrity of the perimeter is a problem due to movement caused by ground frost heaving in the winter.

Since the virus is well preserved by cold and freezing temperatures there is still a risk of exposure even in well-maintained wildlife-free buildings. Contaminated manure from outside the building can be carried or walked inside the building on clothing or footwear unless adequate cleanup facilities are provided and properly used in each individual building.

Most of the new outbreaks of avian influenza have started in range or semi-confined flocks with outside yards or pens, however initial introductions have been detected in totally confined flocks as well.

Further processing is rapidly increasing the need for more year-round production and the turkey industry in Minnesota will continue to move in the direction of more confinement housing. This change will reduce the risk of wildlife-introduced avian influenza on range. It will however also stop the automatic winter depopulation that occurs on most range farms which may increase the risk of carrying over A.I. into the next season.

REDUCTION OF ECONOMIC LOSSES

Treatment with antibiotics for the specific secondary disease problems will help reduce losses, however there are also a number of other practices currently in use that are helping to reduce the economic loss due to avian influenza.

1. The use of live oral cholera vaccine with lower pathogenicity has reduced the mortality in subsequently infected A.I. flocks.
2. Vaccination of negative flocks to prevent economic loss, especially in breeders and vaccination of infected flocks to reduce viral shed.
3. Daily or continuous drinking water disinfection will reduce the spread and introduction of water borne infection.

RESEARCH NEEDS

There are many unanswered questions concerning the biology of the A.I. virus and the epidemiology of the disease which need to be answered in order for future significant improvement in the control of A.I. to occur.

1. Direct exposure to wildlife is not always apparent with new introductions and other modes of transmission, such as ground and well water contamination, need to be studied.
2. Identification of the virus types in wildlife that are capable of diffusing into domestic poultry and turkeys would allow us to predict impending new introductions so that available vaccines can be better utilized.
3. A killed or a safe modified live virus vaccine that will protect against all subtypes would allow immunization of the high risk population each year such as late fall range flocks.

THE MINNESOTA CONTROL PROGRAM

The program is a cooperative voluntary industry-wide program which includes funding of research to learn more about the disease and its control. This results in a better and stronger program each year which has helped to reduce the economic losses due to A.I. in the past and will continue to do so in the future for several reasons.

1. The number of nonpathogenic viral introductions each year will be reduced.
2. The risk of a highly pathogenic viral introduction is reduced.
3. The risk of spreading either a highly pathogenic or a non-pathogenic virus is reduced.

4. The industry treats all introductions in the same manner and it is very possible that a highly pathogenic viral introduction could be eradicated before a definitive diagnosis is made.

Eradicate as defined in Webster's II New Riverside University Dictionary means: 1. to pull or tear up by or as if by the roots; 2. to get rid of completely. The removal and disappearance of the A.I. virus from all the infected premises through isolation and controlled marketing so that it does not reoccur in subsequent flocks, does get rid of the infection completely, and it is eradicated.

5. Most importantly, the program will certainly continue to insure that each year's outbreak of A.I. in Minnesota will be eradicated quickly and will not be allowed to mutate into a highly pathogenic form of the disease.