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Ohio State is Helping Protect Valuable Poultry Industry from Deadly Avian Flu

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Mohamed El-Gazzar speaks with veterinary students touring Cooper Farms in western Ohio. (Photo by Ken Chamberlain)

COLUMBUS, Ohio — Since November 2014, an outbreak of highly pathogenic avian influenza H5 has gripped the U.S. poultry industry, killing close to 50 million birds from commercial and backyard flocks in 19 states, according to the U.S. Department of Agriculture.

Originally spread by wild waterfowl, the virus has impacted turkey and chicken producers in the West and Midwest. Heavy losses to egg farms in Iowa — the nation's No. 1 producer of eggs until the current outbreak decimated production there — have sent egg prices soaring across the United States, more than doubling in some parts of the country.

While the virus has not reached Ohio, experts with the College of Food, Agricultural, and Environmental Sciences at The Ohio State University have been helping poultry producers learn about the disease, boost biosecurity measures on the farm, and prepare to minimize the flu's impact if it were to reach the state.

Ohio's poultry industry is worth \$2.3 billion and directly supports more than 14,600 jobs, according to the Ohio Department of Agriculture. Nationally, Ohio ranks ninth in turkey production and has now surpassed Iowa as the top egg producer.

Mohamed El-Gazzar, Ohio State University Extension's poultry veterinarian, has been working with the poultry industry since the virus was discovered in the U.S. He said there are two main types of challenges when it comes to the current outbreak: challenges related to the virus itself and challenges related to the logistics of disease control.

OSU Extension is the outreach arm of the college.

"The initial data shows that this virus has a relatively longer incubation period, about seven days, compared to other highly pathogenic avian influenza viruses," El-Gazzar said. "This allows the virus to get into poultry houses and remain undetected for a longer period of time, which in turn provides a higher chance for the virus to be transmitted to other poultry."

"Another challenge is that, unlike many other highly pathogenic influenza viruses, this virus produces mild to no disease in wild migratory birds, with estimates indicating that this virus might survive in wild bird population for up to five years. This means there could be recurring episodes of this outbreak with possible new introductions in the fall and spring migrations."

Once the virus is found in a particular location, El-Gazzar added, control and eradication strategies pose their own challenges — especially on poultry-dense areas such as Darke and Mercer counties in western Ohio, where it is more likely to spread from one farm to another.

"In this situation, the U.S. strategy is to quickly identify the infected premises, depopulate, properly dispose of carcasses and manure, clean and disinfect the premises, and have 21 days of down time after cleaning before re-population can take place," he said. "As you might imagine, the logistics of depopulation and disposal are very challenging, particularly with the large-scale layer complexes, some of which have a capacity of more than 5 million birds."

El-Gazzar said that OSU Extension has been primarily engaged with informing the poultry industry about the disease and disease progression; working with producers on communication and preparedness for an eventual outbreak; and identifying the best ways to depopulate and dispose of birds.

To address the challenge of safe disposal, El-Gazzar earlier this year sought the collaboration of Fred Michel, a biosystems engineer with the Ohio Agricultural Research and Development Center, which is the research arm of the college.

A composting expert, Michel developed a plan that would allow Ohio egg farms to compost up to hundreds of thousands of dead chickens onsite, reducing the risk of contamination to other layer houses or nearby farms. The plan has been shared with the industry, along with a map that shows where sawdust, wood chips and other materials necessary for the composting process are available.

"Ohio State has worked extensively with us on different scenarios of how the avian flu virus could impact us and how to handle that," said Bill Knapke, environmental manager for Cooper Farms, a large poultry operation in western Ohio. "The emphasis has been on taking biosecurity to a new level to avoid spread of the disease, and focusing on our mortality disposal methods right on the farm."

Ohio State scientists are also tackling avian flu and other poultry respiratory diseases on the research front. For instance, OARDC virologist Chang-Won Lee leads a U.S. Department of Agriculture \$7.2 million grant that partners scientists at Ohio State with colleagues at other universities in poultry-producing states.

The project's goal, Lee said, is to better understand the ecology of poultry diseases to develop more effective prevention strategies; validate diagnostic methods currently employed and create better ones as needed; and gain a better understanding of the relationship between disease, host and environment to aid in the development of new control methods.

Keeping the virus out of Ohio and minimizing its impact if it were to reach the state are crucial for both consumers and farmers, El-Gazzar said. If this outbreak would extend to Ohio layer operations, egg prices would increase even more dramatically nationwide, affecting both consumers and food manufacturers.

Additionally, if Ohio were to experience a 50 percent loss of poultry production, OSU Extension estimates the ripple effect would reach \$1 billion in overall economic losses, including \$815,000 in annual wages, said Sam Custer, an agriculture and natural resources educator based in Darke County.

Poultry production losses, Custer said, would also impact field crop farmers in the state. "If we would lose half of our poultry for a six-month period, you would reduce corn demand by 27 million bushels, the equivalent of 9 percent of our state corn production," he said. "Soybean demand would be reduced by about a 5 million bushels."

In the meantime, El-Gazzar stressed the importance of implementing strict biosecurity practices to help prevent outbreaks in Ohio.

"The wide and fast spread of the virus in poultry farms in the Midwest, particularly in Minnesota and Iowa, indicates that the major change the poultry industry needs to adopt is tighter biosecurity," he said. "This outbreak has clearly shown that the U.S. poultry industry has many gaps in its biosecurity practices, and we need to identify and amend these gaps.

"Another area for improvement is better mapping of the poultry industry in each state, which will help to identify the infected farms, quarantine zones, roads, car wash stations and other useful features that can facilitate the control and eradication efforts."

Jim Chakeres, executive vice president of the Ohio Poultry Association, said having Ohio State as a partner is a significant asset to the industry.

"The partnership between Ohio State and Ohio's poultry farming community has never been more important than during the current avian influenza crisis," Chakeres said. "As our industry faces unprecedented disease challenges, having a leader in animal science and veterinary medicine like Ohio State by our side, providing expert guidance and resources, is invaluable."

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