

Matthew Underwood - Biosecurity in Effect

Background:

In 2004, Avian Influenza ravaged British Columbia's poultry industry. Initially 400,000 birds, including chickens, turkeys and ducks, were destroyed when the disease was first confirmed. An additional 19 million birds were destroyed in an attempt to halt the spread of this highly contagious disease. This represented 84% of British Columbia's poultry industry. It has been discovered that the contamination of these domestic birds likely came from wild fowl or from a backyard flock. Even though these birds didn't exhibit the disease, they were instead carriers. I live on a farm where we have two chicken barns, on two different properties. In our rural area we have multiple backyard flocks in very close proximity to our farm, as well as a river that attracts wild ducks and geese. If there was an Avian Influenza outbreak in Ontario, we are in a high-risk zone. What can we do on our properties to maintain a biosecure farm operation, if we can't see what we are trying to keep out? Do our current practices protect our other property should there be an outbreak on one of the farms?

Purpose:

Using our own farm as a model, determine the various ways in which the Avian Influenza virus could be introduced into a chicken barn during routine activity on the farm. Consider how the findings of the model could be applied industry wide in the prevention of an Avian Influenza outbreak.

Hypothesis:

I believe I will find several ways that the Avian Influenza virus could enter our chicken barns and be transferred from one facility to the other with our current biosecurity standards. However, I do believe that once a better biosecurity protocol has been implemented, I will see a decrease in ways in which the Avian Influenza virus could enter our barns or be transferred between the two.

Materials:

Computer	Paper	Glitter Bug* Powder	Test Farm Site
Black Light	Test Subjects	Chicken Catching Crew	Hand Wash
Paper Towels	Cameras - digital & 35 mm		

Method:

1. Determine the areas to be sprinkled with the Glitter Bug* Powder which will simulate infected wild fowl feces that have been deposited outside the test barn.
2. Sprinkle the Glitter Bug* Powder in the pre-determined areas outside Poultry barn #1.
3. Perform normal inspection and feeding routines in the barn (Scenario #1).
4. Using the black light, detect and record all areas showing evidence of powder residue that has been tracked from its original location.
5. Repeat the procedure using a Chicken Catching Crew (Scenario #2), a Contractor doing barn maintenance (Scenario #3), and a Feed Delivery Truck Driver (Scenario #4).
6. Analyze, map and summarize the data collected.

Observations and Conclusions:

Scenario #1: During the normal inspection and feeding routines, the powder was tracked from outside the barn into several parts of the barn. Most of the powder was found in the entranceway into the barn and in the area around the feed hopper. Some powder was found on the stairs leading to the second floor of the barn but very little was actually found in areas around the second floor. If this same person then went into another barn, there would be a risk that some of the powder (contaminated feces) could be transferred, therefore spreading disease.

Scenario #2: While the chicken catching crew was working, it was very interesting to see how quickly the powder spread from its initial locations to locations all through the barn. The powder was found in greatest quantities in the entranceway, on the stairs and by the loading doors. The powder spread to areas outside the barn also and was found 23.5 metres from the barn. Reasons for finding more areas of powder would have to do with the number of people entering the barn at one

time and the number of times the members of the crew re-entered the barn i.e. after taking breaks. Another note of interest, the powder was also found on the gates that the crew used to corral the chickens while catching them. This crew was scheduled to catch more chickens immediately after leaving our farm, at another farm 62 kms away. Those same gates would be used to corral the chickens at that next farm, therefore possibly transferring the disease. Depending on how many farms were visited, the disease could be spread over a very large area in a short period of time. When the black light was shone onto the chicken catchers, powder was found on many areas of their clothing and footwear, and significant amounts of powder were found around their faces. This would provide another avenue for disease spread and possible health concerns for the catchers.

Scenario #3: During the simulation of a contract worker entering the barn for routine maintenance, powder was tracked into the barn but was limited to only the bottom floor. The majority of the powder was found in the entranceway and under the heater that was being repaired. A small amount of powder was found at the bottom of the stairs where the contractor had set his toolbox. No powder was found further up the stairs. While retrieving tools from his truck, the contractor must have set his toolbox down outside where it picked up powder that was then carried into the barn. If the contractor had been going to do work at another facility, the virus could have been transferred.

Scenario #4: The feed truck driver only tracked powder into the entranceway of the barn. He had come into the barn after unloading the feed to drop off the information slips and weigh bills. Powder was not found in with the chickens, on the stairs or on the second floor. This scenario tracked the least amount of powder residue into the barn.

Several different methods of disease transmission were identified, showing that what you can't see, can hurt you. Currently our biosecurity measures fall well short of preventing the introduction of the Avian Influenza virus or any other disease, into our barn. Should we have a disease outbreak in one of the barns, it would be almost certain that the other barn would become contaminated.

Practical Applications:

The best protection against any disease is good management and an effective biosecurity program. In an attempt to decrease the chance of the Avian Influenza virus being tracked into poultry barns or transferred between farms, the following should be considered.

- Eliminate contact with, or the existence of back yard flocks - educate your neighbours of the potential risks and monitor visitors very carefully.
- Put a chain across all lanes into the barns to control traffic. Construct a second lane way in order to keep visitor and services vehicles separate from farm and family vehicles.
- Put up signs at entranceways instructing visitors to sign in at the "off farm" office. At the office, review where they have been recently and inspect the vehicle. Keep barn doors locked.
- Establish a perimeter zone for all foot and vehicular traffic around the barns to limit debris that may be tracked up close or into the barns. This is very important in the spring and fall.
- Everyone must sign a logbook when entering the barn. Should there be a problem, it will be much easier to track down possible links to the outbreak.
- Inspect the barn to find any openings where nuisance pests could enter and bring disease in with them. Repair as necessary.
- Remove all manure piles during barn clean out to eliminate hosts for the disease to survive on between crops. This is particularly important around entranceways to the barn.
- Add cement slabs around all entranceways. They are much easier to keep clean and disinfect and will reduce the chance of contamination from the outside.
- A different pair of footwear should be used for each barn and consideration should be given to wearing disposable boot covers.
- If possible, different people should be assigned to work at each barn, reducing the chance of spreading disease to the second or subsequent barn.
- The use of footbaths may be considered, however they are only effective if the disinfectant is changed on a regular basis according to the manufacture's instructions.
- Chicken catchers should be provided an area where they can change into and out of biosecurity

clothing. It should include a wash up area to ensure their safety as well.

- Ensure all equipment, be cleaned and disinfected prior to being brought onto the farm. The farm operator should give consideration to buying his own nets, gates etc. so that they remain on site and he can monitor the cleaning and disinfecting protocols.
- The contractor should be encouraged to wear biosecurity clothing and at a very minimum he should wear disposable boot covers.
- When tools and toolboxes are entering the barn from unknown sources, they should be kept in bags provided by the farm. The contractor can set the clean bags down in the barn and return his tools to them between uses.
- Mount a mailbox onto the outside of the barn so that service people can leave paperwork in them, eliminating the need for them to enter the barn.
- Consider filling in decorative ponds around the farm that may attract wild fowl and therefore increase the chance of contamination.
- Meet with municipal officials to discuss disposal options in the event of a large loss of birds due to disease. For example, burying on site, incinerating, or transfer to a rendering facility.
- Always maintain an adequate inventory of biosecurity supplies such as disposable coveralls, disposable boot covers, masks, gloves, bouffants and disinfectant.

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