Defend the Flock: Controlling Salmonella in Commercial Poultry through Biosecurity
October 5, 2020
Webinar Questions

COMMERCIAL:

Is any proactive testing recommended to check the situation of existing bacteria in the farm?
The best way to check for existing Salmonella within the house environment is to take swabs inside the house. Drag swabs or boot swabs are often used on the floors of the house to pick up bacteria and used for Salmonella environmental testing. Although these swabs are commonly used for the floor or the manure pits in the house, remember that these swabs can also be utilized in nest boxes, manure belts, and any other location within the house.

Do any other insects besides the darkling beetle carry Salmonella?
Any insect that has gained access to a chicken house can carry Salmonella. Insects that tend to live in the poultry's feces or manure have the ability to pick up Salmonella bacteria on their legs, bodies, and wings and can easily leave one house and travel to another, taking the bacteria with them. Flies are a major source of disease spread in general, and flies have been found to carry Salmonella between farms.

With the increase of No Antibiotics Ever (NAE) poultry production, does feed need to be more protected?
Antibiotics are rarely useful as a treatment for Salmonella in poultry. Salmonella is often considered normal gut flora for poultry species and treatment for Salmonella rarely lasts. No Antibiotics Ever poultry production can be challenging, so we rely heavily on management practices to keep our poultry healthy. Management practices, including biosecurity, have increased as antibiotic use decreased.

As a general statement, feedstuff suppliers and feed mills are becoming incorporated in many companies' biosecurity plans. In the US, vertical integration of the poultry industry allows for the company to own all aspects of the production chain, including the feed mill, so that there is more control over the products that are taken into the poultry house.

When controlling rodents, is there a concern about other animals or birds eating the rodents that have been poisoned?
Rodenticide toxicity in other animals that have eaten poisoned mice and rats are always a concern worth considering. Many commercial poultry houses now use of rat traps (such as the Tin Cat Mouse trap) that do not require rodenticides. You can also reduce the chances wildlife will be in the immediate area by ensuring that there is limited vegetation and trees near the house and cleaning up feed spills. For example, if there is concern about owls gaining access to poisoned rodents, then ensure that there are no nearby trees that would serve as a habitat for owls.

What are major Hazard Analysis Critical Control Points (HACCP) for Salmonella?
A full HACCP program for Salmonella depends on the risk assessment for the farm. Major critical control points that have been identified for many farms have been as follows:

- **Clean and disinfect between flocks.** This includes cleaning prior to placement, cleaning clothes and shoes between different houses or flocks and cleaning equipment between houses or flocks.
- **Monitor and control rodents and flies.** Monitor rodent bait stations and replace bait as needed. If using a trap, ensure that the trap is being emptied regularly and tracking numbers can help

producers understand rodent load on the farm. Fly traps and ribbons should be replaced regularly. Tacking up index cards in the house and counting fly specks (daily to weekly) can help estimate number of flies on the farm.

- **Place clean chicks or pullets**. This can be done by knowing the status of the breeders or by testing the chick papers from the hatchery.
- **Monitor the environment**. Environmental testing for Salmonella can help determine what the flock is exposed to, or what the flock is shedding.

In your opinion, do you think constant monitoring, culture, sensitivity and treatment will reduce the impact of Salmonella in the poultry industry, especially in developing countries like Nigeria?
Dr. Hofacre participated in a panel session during the 2009 World Health Organization Microbial Risk Assessment Series that addresses some of these concerns. A direct link to this document is found here: https://apps.who.int/iris/bitstream/handle/10665/44211/9789241547901_eng.pdf?sequence=1

Given the role of breeder flocks on Salmonella load in broilers, does it make sense to use Salmonella vaccination in broilers or are other interventions more impactful? Can you clear or at least reduce the load in already infected birds?
Salmonella vaccination in breeder flocks is helping to accomplish two things. It gives the breeders immunity so that they are less susceptible to becoming infected, and if they do become infected they will shed much lower amounts of Salmonella into their environment and less into or on the egg. During Dr. Hofacre's portion of the presentation, the following reference was provided that addresses this question: Appl. Environ. Microbiol. Vol. 76, No. 23, pp. 7820–7825. 2010.

What we have also found, is that the reduction or elimination of one Salmonella serotype within the gut microbiome can sometimes allow for other Salmonella serotypes to become more predominant.

Are more interventions in the live operation needed in order to reduce the risk of Salmonella in the processing plants?
There are, every day, new interventions that we learn about for the live side to reduce Salmonella in the plant. Unfortunately, what works for one complex or location may not be successful in other complexes or locations. This question is difficult to answer because it depends largely on the location of the house and the sources of Salmonella coming into the live operation as well as the interventions that are put in to try and stop that input.

How do you remove salmonella enteritidis (SE) from the environment inside and outside of barns?
The best way to keep SE out of a poultry facility is to ensure that the chicks placed at the farm are negative for SE and keep rodent and fly numbers down. Once SE is on the farm, the best option for elimination is to remove as much of the used litter or manure from the house as possible, dry clean the house to remove most of the organic material and then disinfect to kill bacteria. Salmonella requires moisture to live, so drying out the house has been shown to impact bacterial numbers. Prior to placing the next set of birds, do environmental testing to ensure that SE is not present.

Treating outside of the house can be very challenging. Reducing vegetation and areas where water may puddle may help reduce the locations where you may be able to locate Salmonella in the outside environment. If there is concern that Salmonella is being "tracked" into the house from the outside, the best option is to implement biosecurity practices where shoes are changed upon entering the anteroom of the chicken house. Typically, this pair of shoes is stored in the anteroom and disinfected prior to

entering and exiting the chicken house, but these shoes are not intended to be worn outside of the house. This reduces the risk that you would "track" in anything via your shoes.

Are there biosecurity recommendations for pasture raised poultry?
Many of these recommendations are transferrable to pasture raised poultry.

For pasture raised poultry, manure management is important. Ensure that the area is appropriate for the number of birds being raised on the property. Overloading the pasture with too many birds can result in an overabundance of manure buildup. Bird feces and manure can harbor Salmonella and attract insects, which can also bring Salmonella onto the property.

Ensure that vegetation within the pasture and surrounding the fence are maintained to deter wildlife. If feed is offered, ensure that it is covered and maintained in an appropriate manner to reduce feed waste and spillage, which can attract rodents and flies. Salmonella needs moisture to stay viable, so reducing water waste and spillage is also necessary.

I have a small flock (24) in my backyard. Many of these tips are transferable to my situation. Are you planning to do this type of webinar for back yard chickens?
We hold separate webinars for backyard chicken owners, typically in February or March. We will consider including salmonella control in a future backyard webinar.

Do we need USDA permission to use those social media materials?
You can use the social media posts and other Defend the Flock materials without USDA permission, as long as no modifications are made.