Recombinant hatchery vaccine provides uniform ILT protection in layers

by the technical team, Intervet/ Schering-Plough Animal Health.

One dose of a relatively new recombinant vaccine administered in the hatchery is providing uniform coverage to layers and solid protection against infectious laryngotracheitis for a major US egg producer.

Loren Asche is vice president in charge of production for Daybreak Foods Inc, Lake Mills, Wisconsin, USA, which has 9.4 million layers. Over the years, minor outbreaks of infectious laryngotracheitis (ILT) were occurring in the area. The strain of virus was not as virulent nor were the outbreaks as severe as Asche has seen in Utah, California or Colorado, but there were clues that the disease was present.

"We would see mild respiratory distress such as coughing and egg production was down a bit and mortality was slightly up," Asche said.

Growing problem

Infectious laryngotracheitis, a highly contagious respiratory disease caused by a herpesvirus, has been a growing problem in recent years for poultry producers in both North and South America.

Clinical signs of the disease, which can affect broilers as well as breeders and layers, include decreased water and feed consumption, severe depression, conjunctivitis and respiratory distress. In some flocks, there is high mortality.

Like many other poultry producers, Daybreak added a live ILT vaccine to its vaccination program to keep the disease in check. However using a live vaccine in the pullet house was challenging.

"You are trying to administer it by eye drop or spray, or put the vaccine in the water for every bird. That makes uniform administration difficult, and it is a stress on growing birds," Asche added.

About two years ago, Innovax-ILT, a vaccine developed and marketed by Intervet/Schering-Plough Animal Health, came onto the market. It is a recombinant vaccine that causes no side effects and only requires one dose. Daybreak decided to give it a try. Every layer now receives a single, subcutaneous injection of the vaccine at the hatchery.

The vaccine eliminates the need for one of the live vaccines and the coverage they get with Innovax-ILT exceeds what they can get in the field with live ILT since each bird is individually vaccinated.

No ILT problems now

Daybreak has not seen any ILT problems while using this product. With the live ILT vaccine, they occasionally saw minor challenges.

Innovax-ILT provides part of Daybreak's coverage for another important herpesvirus disease of poultry. The 'backbone' of the vaccine is the herpesvirus of turkey (HVT), which serves not only as a vector or carrier for the ILT virus, but protects against virulent Marek's. The combination of ILT and Marek's with one injection makes the vaccine convenient to use.

Since Daybreak started using Innovax-ILT, the US Department of Agriculture accepted a study demonstrating that the vaccine has a duration of immunity that is at least 60 weeks, which is reassuring to producers like Daybreak with long-lived birds, and approved in-ovo administration of Innovax-ILT to 18-day embryos.

Vaccine approval

In addition, Intervet/Schering-Plough Animal Health recently received approval for Innovax-ILT-SB. The vaccine is also administered in ovo; one dose protects against ILT and very virulent Marek's disease.

But is Innovax-ILT cost effective? "If you figure out the cost of the live vaccine and Innovax-ILT, you are about even. But you get better coverage with Innovax-ILT and I think that there is less chance for error than with a live vaccine in the field. Those are the motivating reasons we are using Innovax-ILT," Asche added.

Daybreak is pleased enough with the results that it plans to continue using the vaccine. The company's story about Innovax-ILT is not dramatic – but it is gratifying.

ILT prevalence increasing

Poultry specialists confirm that Daybreak's experience with ILT is not unique and caution that the disease is becoming more prevalent in commercial poultry operations throughout the Americas, prompting other producers to look for new ways to deal with this costly illness.

"It is impacting every country – with very, very few exceptions – from Ontario, Canada, all the way down to Argentina," and there is no clear explanation for the surge, Dr Guillermo Zavala, associate professor and poultry researcher at the University of Georgia, said at an infectious laryngotracheitis seminar held last year during the International Poultry Expo in Atlanta.

Strict biosecurity

The disease usually presents more problems during colder weather, and although it tends to cause the most havoc in broilers, it also shows up from time to time in breeders and layers.

The primary tools to control ILT have been vaccination and strict attention to biosecurity.

Modified-live vaccines have been a mainstay of ILT prevention, but their use has been associated with several problems, including vaccine reactions as well as the potential for increasing virulence as the virus passes from bird to bird.

Another presenter at the seminar, Ruud Hein, then director of the technical services poultry laboratory at Intervet/Schering-Plough Animal Health, said another important drawback to modified-live vaccines in the control of ILT is that vaccinated birds may harbour latent virus that can begin replicating at a later time, putting unvaccinated flocks at risk.

Because Innovax-ILT persists in the chicken but does not shed, administering a single dose on day one or in ovo usually leads to lifelong ILT immunity and does not put unvaccinated birds at risk.

With breeder and layer chicks, lifelong immunity also eliminates the need for revaccination of mature birds – an all too common necessity when using live attenuated ILT vaccines.

The primary advantage of the vaccine is that it is not associated with vaccine-related reactions.

Reactions, such as introducing subclinical disease, while perhaps not lethal to the bird, can significantly blunt performance.

Serological differentiation

Dr Jack Rosenberger, a former professor at the University of Delaware and now president of Aviservice LLC, a company that assists the poultry industry with strategies for disease recognition and control, said at the seminar that any effective ILT vaccine program should include the ability to serologically differentiate between vaccinated birds that have been challenged and those that have not.

One commercially available ELISA kit, developed by Biocheck, based in Gorham, Maine, is effective in documenting exposure to ILT.

Birds vaccinated with Innovax-ILT and tested with the kit typically exhibit limited antibody response to ILT, if they are not challenged.

Dr Rosenberger said that chickens vaccinated with the recombinant ILT vaccine may respond serologically to challenge with ILT virus, but that the response is usually muted.

Another factor that may affect susceptibility to challenge from ILT is the presence in birds of maternal antibodies to ILT. ■