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Zoetis is at IPPE in booth B19021.

Poultry Expert Insights From Zoetis: *This content series is designed to inspire conversations around the expanding use of vector vaccines to address prominent disease challenges facing global poultry producers and veterinarians. Leading experts provide analysis and insights on relevant research and what they are seeing in terms of effective vaccination strategies that are working. This is the second in a six-part series from Zoetis.*

Immune-complex vaccines pair with vector vaccines to cool IBD challenges

PARSIPPANY, N.J., — September 10, 2024 — When it comes to protecting flocks from infectious bursal disease (IBD), poultry producers and veterinarians have several strategies available, including immune-complex vaccines that may be included in a rotation strategy with recombinant HVT-IBD vaccines.

Immune-complex vaccines provide unique attributes in the IBD protection toolbox. These vaccines contain an IBD virus vaccine coated by antibodies, which must first degrade before the vaccine virus is released in the bird, delaying the stimulate a robust immune response compared with classic live vaccines.

Often used in cases of high field-virus pressure, immune-complex vaccines are useful for “cooling down the house” and keeping the field pressure low for subsequent flocks, said Leticia Frizzo da Silva, DVM, PhD, senior principal scientist, Zoetis.



They do this by colonizing the bursa and blocking early replication of the field virus. The introduction and repeated use of immune-complex vaccines can repopulate a house with the vaccine virus, creating a “diluting” effect, she added.

Over time, this approach can replace the field virus to the point where the farm mostly has the vaccine virus.

Vector and live vaccine comparisons

Because of the way the immune-complex vaccine is manufactured, it cannot be immediately neutralized by maternally derived antibodies as conventional live vaccines can, said Frizzo da Silva.

This delayed release brings at least three major advantages:

1. The robust vaccine-induced active immune response reduces the high chance of neutralization of vaccine virus by maternal antibodies.
2. The onset of immunity is naturally adapted to when each individual bird is ready to respond, due to the active vaccine-induced immunity starting as passive immunity decreases.
3. The immunosuppression often seen with the use of conventional live vaccines is reduced.¹ Whether the birds are vaccinated *in ovo* or at day of age, the immune-complex vaccine gradually dissociates in the bird’s body and releases the live vaccine virus, which stimulates a robust immune response without being immediately neutralized by maternally derived antibodies.

Vectored IBD vaccines – based on herpesvirus of turkey (HVT) – and immune-complex vaccines have complementary roles. While vectored HVT-IBD vaccines cushion the bursa better and tackle clinical disease effectively, they cannot replace field virus to reduce the environmental load or lower the overall infection pressure in the long run. This makes rotation of the two approaches a sensible option, said Frizzo da Silva.

Options for different field scenarios

The IBD virus is genetically diverse, with seven different genogroups falling into classical virulent, antigenic variant and very virulent types.² Different field challenges can call for different immune-complex formulations.



A Zoetis vaccine based on the Winterfield 2512 classical virus strain is one such formulation, which has been tested against a high, early IBD challenge, she said.

Another alternative is an immune-complex vaccine based on the V877 IBD strain, which is also considered intermediate plus and distinctly categorized as Genogroup 7,² Frizzo da Silva added. This option brings a unique mix of efficacy and safety, based on additional research.

A rotation strategy of immune-complex and vector vaccines could offer an option for controlling IBD. In broiler chickens, immune complex vaccines based on the Winterfield 2512 strain and the V877 strain can be used, while the V877 strain can be used in layer chickens.

References:

¹ Muniz EC, Ressende MS, et al. Histopathology and serology reaction to an immune complex infectious bursal disease vaccine (V811 strain) in SPF and commercial birds. *ARS Veterinaria*. 2018;34(2):69-76. AR-20693.

² Michel LO, Jackwood DJ. Classification of infectious bursal disease virus into genogroups. *Arch Virol*. 2017;162:3661-3670. AR-13682.

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As the world's leading animal health company, Zoetis is driven by a singular purpose: to nurture our world and humankind by advancing care for animals. After innovating ways to predict, prevent, detect, and treat animal illness for more than 70 years, Zoetis continues to stand by those raising and caring for animals worldwide - from veterinarians and pet owners to livestock farmers and ranchers. The company's leading portfolio and pipeline of medicines, vaccines, diagnostics, and technologies make a difference in over 100 countries. A Fortune 500 company, Zoetis generated revenue of \$8.1 billion in 2022 with approximately 13,800 employees. For more, visit www.zoetis.com.

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