Biosecurity and vaccination remain the major preventive measures against infectious bronchitis (IB), which continues to be a significant threat to broiler and layer health. No antiviral medication is available for use in poultry. However, new research demonstrates the benefits of supporting the poultry immune system.

**The Disease**
Infectious bronchitis is caused by a single-stranded RNA, enveloped coronavirus (IBV). Significant disease is only seen in chickens infected by this virus. Several serotypes of the virus exist. Cross protection among the IBV serotypes varies widely, which makes selection of viruses for vaccine and immunization difficult.

Infectious bronchitis virus can affect three different body systems – the respiratory, reproductive, and renal systems.

In immature birds, the respiratory system is most often affected resulting in conjunctivitis, tracheitis, and bronchitis. The severity of signs depends on the pathogenicity of the virus and the flock’s immunity level to that particular virus.
Infection with IBV results in birds going off feed and not gaining weight at the proper rate. Viral infection leads to secondary *Escherichia coli* infections from the decreased ability of the respiratory tract ability to resist *E. coli*. The secondary *E. coli* infections lead to mortality and high condemnation rates at slaughter.

There are also nephropathogenic (kidney-seeking) strains of IBV that can result in significant kidney damage and mortality due to kidney failure.
In egg layers, IBV infection can result in thin-shelled eggs, loss of pigment in brown egg layer flocks, and irregular-shaped eggs.

Current Prevention and Control Measures
Antiviral medications to control IBV are not available for poultry use. The major measures used to prevent IBV infection are biosecurity and vaccination.

Biosecurity can take several forms:

- **Broilers**
  - Allow enough downtime between flocks to allow the virus to die off. Downtimes of 14 days or more appear to work best.
  - Require people entering houses to don clean coveralls, footwear, headwear, and sanitize their hands or require that they wear disposable gloves.
  - Clean and disinfect any equipment moved between farms, including cake-out equipment, in-house composting equipment, etc.

- **Egg layers, breeders, or pullets**
  - Properly clean and disinfect any equipment moved between farms, such as egg handling materials, bird moving equipment, manure moving equipment, etc.
  - Require that people entering houses don clean coveralls, footwear, headwear, and sanitize their hands or require that they wear disposable gloves.
  - Do not backfill old fowl from other farms into multi-age complexes.
  - For moving into multi-age complexes, obtain pullets that have a low risk of carrying a variant strain of IBV.

Vaccination programs for IBV vary by type of bird and region where the birds are located. Seven different live vaccines are available:
1. Massachusetts – regular (Mass)
2. Massachusetts – Holland (Ma5, H-72, H-120)
3. Massachusetts – Connaught
4. Connecticut (Conn)
5. Arkansas (Ark)
6. Delaware 072
7. Georgia ’08

- Vaccination of broilers
  - Most receive a Mass (regular Mass or Ma5)/Connecticut or Mass/Ark combination vaccination by spray cabinet at the hatchery.
  - Broilers grown out to over 42 days may receive a booster vaccination by spray at 12 to 18 days with a Mass/Conn or Mass/Ark combination.
  - An in ovo Newcastle Disease (NDV) vaccine is used at transfer at 18 days of incubation to cause less interference with the IBV vaccination given on day of hatch.

- Vaccination of layers and breeders
  - A typical program consists of the following:
    - 18 days – Mass/Conn/Ark by spray
    - 35 days – Mass/Conn/Ark by spray
    - 70 days – Mass-Connaught/Mass-Holland/Conn by spray
    - 98 days – (commercial layers) inactivated vaccine (commercial layers) by injection
    - 98 days – (broiler breeders) Mass-Connaught/Mass-Holland/Conn by spray
    - Boost during layer period every 6 to 8 weeks – (commercial layers) Mass-Connaught/Conn by spray
  - Minimal antibody from vaccination is desired in broiler breeders in order to reduce the maternal antibody level passed onto the chicks. This transfer can interfere with their response to IB vaccination.

New Research from Diamond V
The accompanying article in this edition of PoultryAdvisor shows the benefits of feeding Diamond V Original XPC™ on the poultry immune system’s response to either vaccination with IBV vaccine or challenge with field IBV virus.

Research conducted at the Auburn University College of Veterinary Medicine shows feeding Original XPC results in a stronger innate immune response that reduces the overall damaging effects of the infection and increases the number of cells secreting secretory IgA (McIntyre, PoultryAdvisor, October 2014).
In addition, the innate immune response creates more T memory cells, which results in a quicker anamnestic response upon re-exposure to IBV. Also, Original XPC has an effect on the adaptive immune response such that an increase in B memory cells occurs resulting in a higher serum antibody response.

A properly functioning immune system means broilers can benefit from reduced vaccine reaction, reduced secondary *E. coli* infections from exposure to vaccine or field strains of IBV, and improved performance during an IBV break. Similarly, egg layers with a properly functioning immune system can better resist infections of the various IBV types that tend to build up in multi-age complexes. The result is better shell quality and egg production.

Infectious bronchitis continues to be a significant threat to broiler and layer health. Biosecurity and vaccination can help minimize the costly effects during IBV challenges. At the same time, feeding Original XPC supports the birds’ immune system and overall performance of poultry during production challenges, including IBV.

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