The information was obtained from a survey of the clinical impressions of practicing veterinarians between May 1st to July 31st , 2017, and laboratory data from the Animal Health Laboratory, with input from poultry specialists. It is the intent of this program to advance and protect the health of poultry in Ontario.

Ontario Animal Health Network (OAHN)
Quarterly Producer Report

Quarter 3, 2017 (May 1st - July 31th 2017)

Reovirus Update

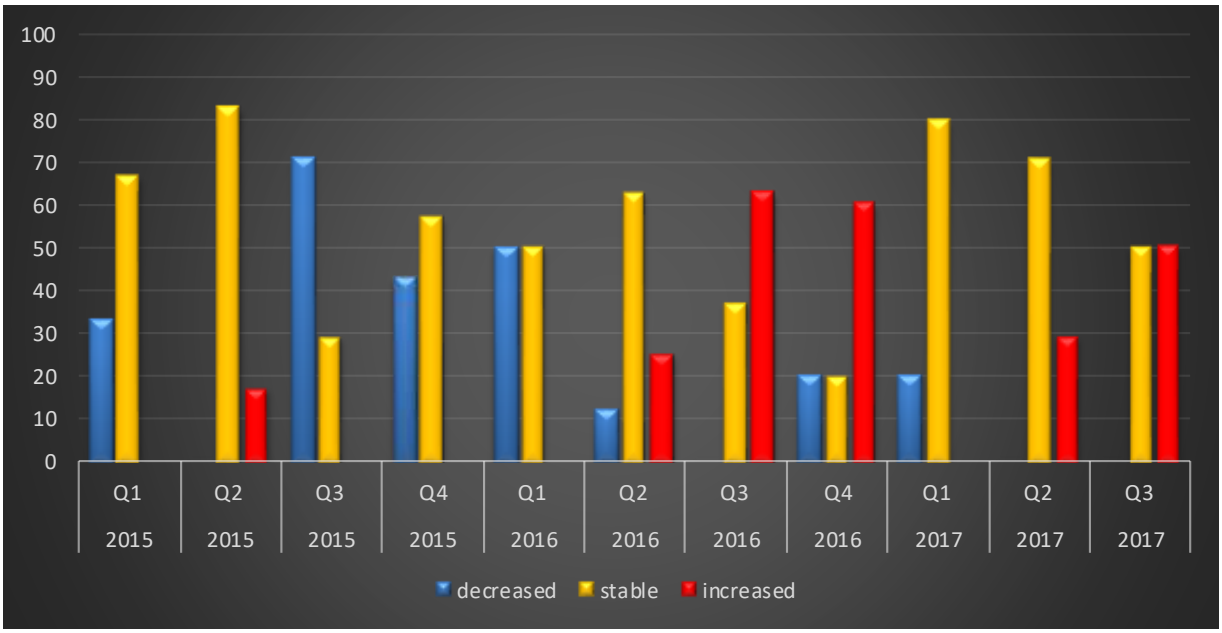
Throughout Ontario between May and July 2017, broiler flocks reported increased numbers of reovirus-associated lameness cases. The major clinical presentations were: lameness, leg deformities, especially splayed legs, and tenosynovitis. In addition, higher numbers of birds were unsuitable for loading at the end of the grow out. Increased culling continued to be the main concern and was highly variable ranging from 2 to 50%, with elevated mortality being less of an issue. The age of the affected flocks was variable, and flocks composed of non-domestic source origin (i.e. eggs or chicks) were at higher risk. The number of reovirus-associated lameness cases started to surge in Q2 2016 (Feb 01 -Apr 30 2016) and continued to increase in Q3 and Q4, 2016. A decrease in reovirus cases was observed in Q1 2017, which was followed by an increase in cases in Q2 and Q3, 2017 (**Fig A**).

Genotyping results indicate that since Ontario's first exposure to variant reoviruses in 2012, there has been a shift in the genetic composition of the variant reovirus strains with greater divergence and the development of five phylogenetic groups of variants (Variant A, C, D, E and those termed "classic" for they are also sufficiently different from the vaccine). Interestingly, the variant B cluster that represented almost half of viruses detected in 2012 has not been detected since December 2016. In Q3, 2017 the most prevalent strains were variant C and D (**Fig B**). Genotyping of all reovirus isolates is important to better understand what strains of reovirus are currently in the Ontario broiler population. New virus strains show low similarity to vaccine virus strains and historical avian reoviruses. The variant D virus strain is highly virulent and can spread through the infected flocks quickly, causing severe clinical signs. Severity of the clinical signs, speed of spread through the flock, and the proportion of chicks affected with these variant reovirus infections are all very unpredictable.

PRODUCER TIPS:

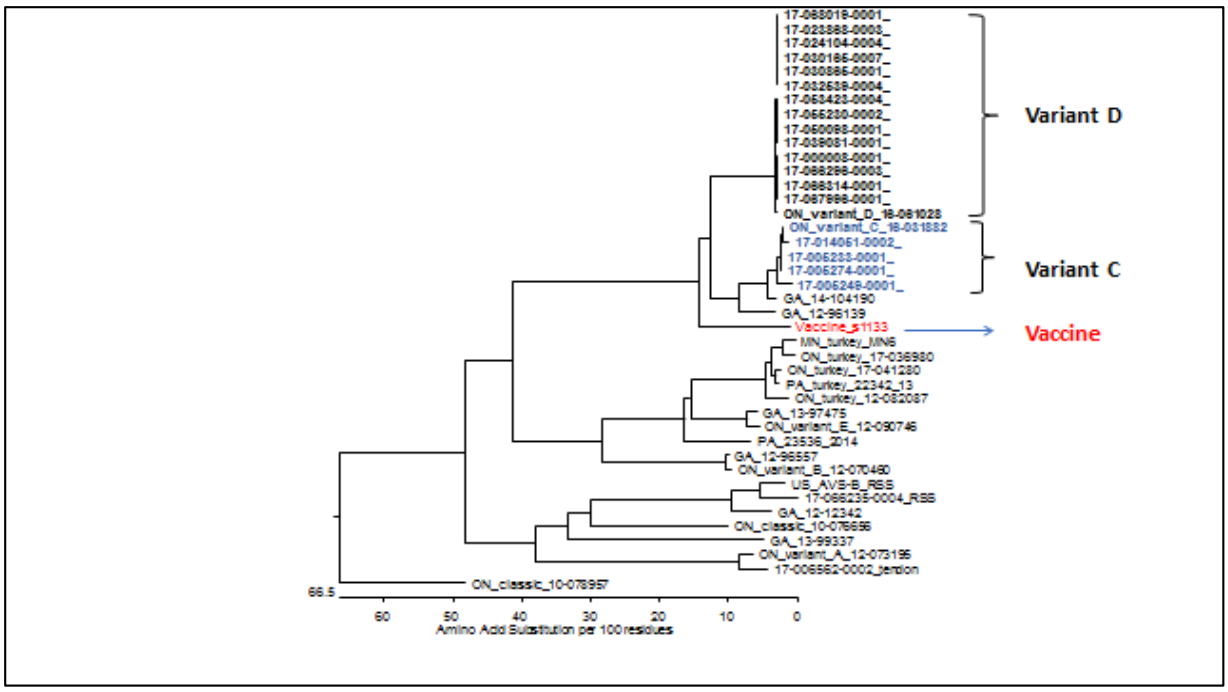
- Discuss culling with your veterinarian. The old adage, "cull early, cull often" applies here. Submission of lame birds to your vet will aid in the diagnosis of the underlying cause of the lameness, so you can better understand how to manage affected birds in the flock.
- Thorough cleaning and disinfection of affected barns are recommended before placement of new flocks.
- If possible, "heat treat" the barn/litter after cleanout and introduction of new bedding, and in advance of bird placement (to 32˚C or 90˚ F for a minimum of 2-3 days). Note the floor under the bedding must reach 32˚ C for this technique to be effective. The temperature should be measured with an appropriate thermometer (consider an infrared thermometer) at multiple locations along the inside perimeter of the barn at least three times a day.

Fig A) Trend of reoviral associated lameness in broilers between January 2015 and July 2017 based on the clinical impression survey of Ontario poultry veterinarians [a)]



[a)] The bars represent the proportion (%) of veterinarians who report the number of cases seen in a quarter as decreased, stable or increased compared to historical expected numbers of cases.

Fig B) Genotyping results of reovirus cases in broilers that were submitted to the Animal Health Laboratory between January 2017 and August 2017.



Infectious Bronchitis Virus Update

Infectious bronchitis virus (IBV) infections slightly decreased this quarter (Q3,2017) in broiler, broiler breeder, and layer sectors (**Figure C, D, and E**). Genotyping results of 2017 isolates show that the Delmarva (DMV) strain has emerged as the predominant strain (**Figure F**). Flocks can be infected with more than 1 strain sequentially or concurrently.

- Infectious bronchitis virus can be spread by aerosol, ingestion of contaminated feed and water from secretions of infected birds, and contact with contaminated equipment or clothing.
- The virus is not transmitted vertically directly from the hen to the embryo in the egg.
- The virus is highly infectious and can spread quickly in a susceptible flock. As the virus generally survives and thrives better in cold weather, IBV infections are more commonly seen in the winter in Canada.
- The virus is fragile and easy to kill if exposed to warmer temperatures or disinfectants, but will survive longer if protected in organic material.
- Flocks infected with different virus variants may show very different clinical signs that can include: increase in mortality with or without respiratory signs, decrease in egg production in layers and broiler breeders, reduced growth rates, increase in secondary complications including systemic bacterial infections, ascites, and elevated condemnations, and very high bronchitis titers at slaughter in broilers.

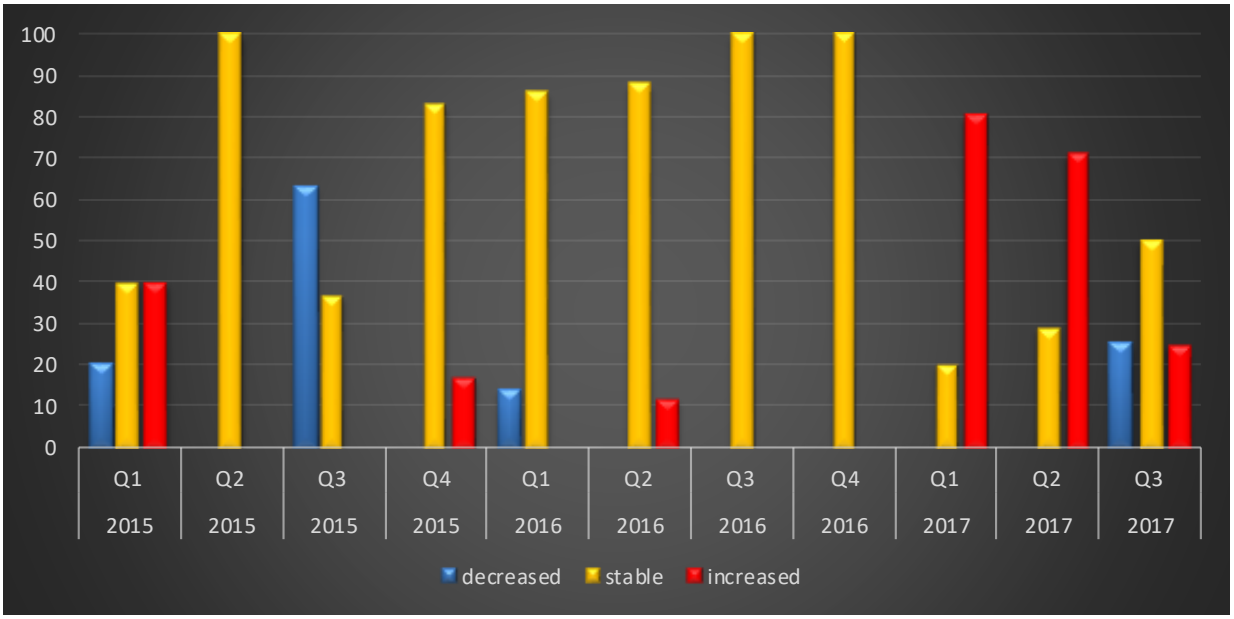
Although commercial IBV vaccines are not directly protective against variant strains, they may provide some cell-mediated local immunity; therefore, it is recommended to use a robust vaccination program. For broilers, this may include a hatchery vaccination plus a spray vaccination at 14 days of age. For broiler breeders and layers, this may involve day-of-age vaccination at hatchery as well as additional on farm vaccinations during production. It is important to follow proper vaccine mixing and application protocols to ensure the best efficacy possible. Industry is investigating the potential to import vaccine to protect against the newly emerging DMV strain that has been isolated.

Properly implemented biosecurity is the poultry producers' first-line of defense against infectious bronchitis. Farm biosecurity protocols should be well thought-out, stringently implemented, and continuously followed.

The following is a list of **suggested biosecurity measures** for Ontario poultry farms:

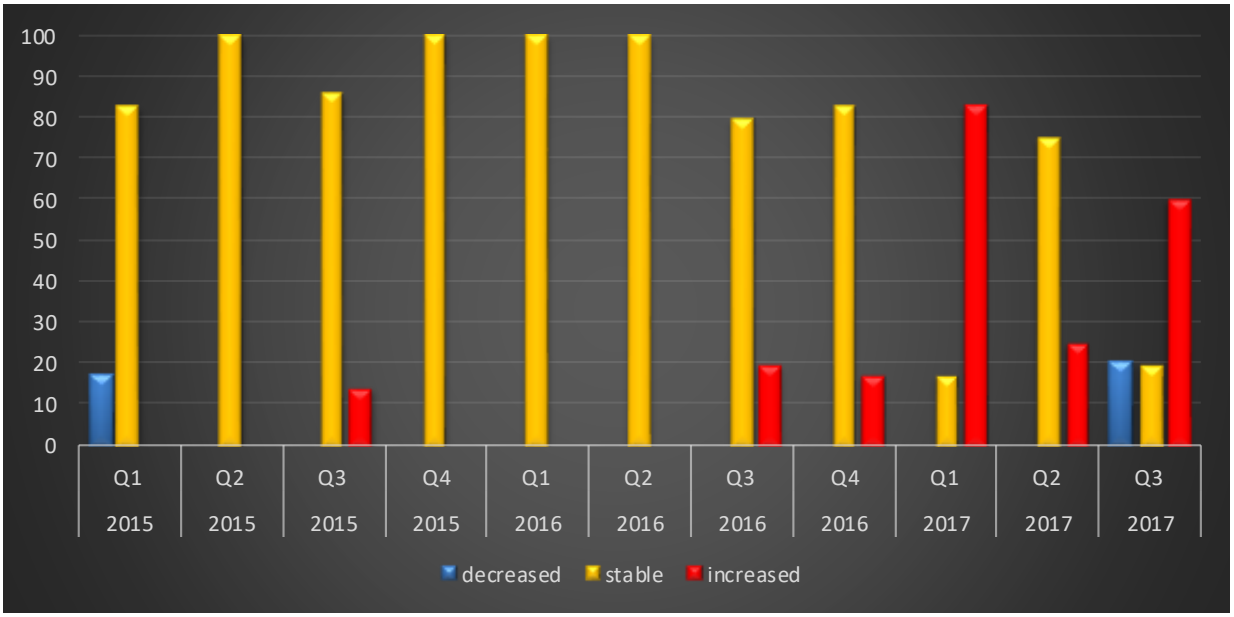
- Each farmer, employee and every person entering any poultry barn must put on clean footwear, protective clothing, and follow all biosecurity protocols.
- Minimize visits to other poultry production sites and avoid any co-mingling of birds.
- Avoid exchanging equipment with other poultry production sites.
- Ensure all vehicles/farm equipment that access the barn vicinity are clean and that the laneway is restricted/secured.
- If possible, have a pressure washer or a hose available to wash tires and equipment, and make this available to all service vehicles and visitors.
- If possible, "heat treat" the barn/litter after cleanout and introduction of new bedding, and in advance of bird placement (to 32˚C or 90˚ F for a minimum of 2-3 days). Note the floor under the bedding must reach 32˚ C for this technique to be effective. The temperature should be measured with an appropriate thermometer (consider an infrared thermometer) at multiple locations along the inside perimeter of the barn at least three times a day.

Fig C) Trend of Infectious bronchitis virus (IBV) infections in broilers between January 2015 and July 2017 based on the clinical impression survey of Ontario poultry veterinarians [a)]



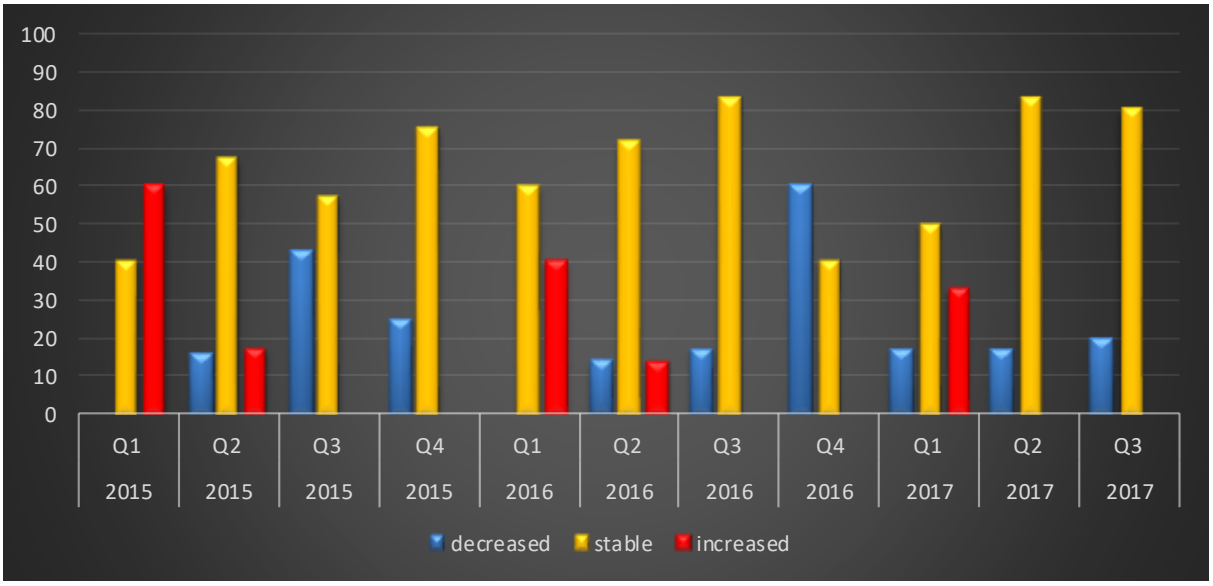
[a)] The bars represent the proportion (%) of veterinarians who report the number of cases seen in a quarter as decreased, stable or increased compared to historical expected numbers of cases.

Fig D) Trend of Infectious bronchitis virus (IBV) infections in layers causing production loss and abnormal eggs between January 2015 and July 2017 based on the clinical impression survey of Ontario poultry veterinarians [a)]



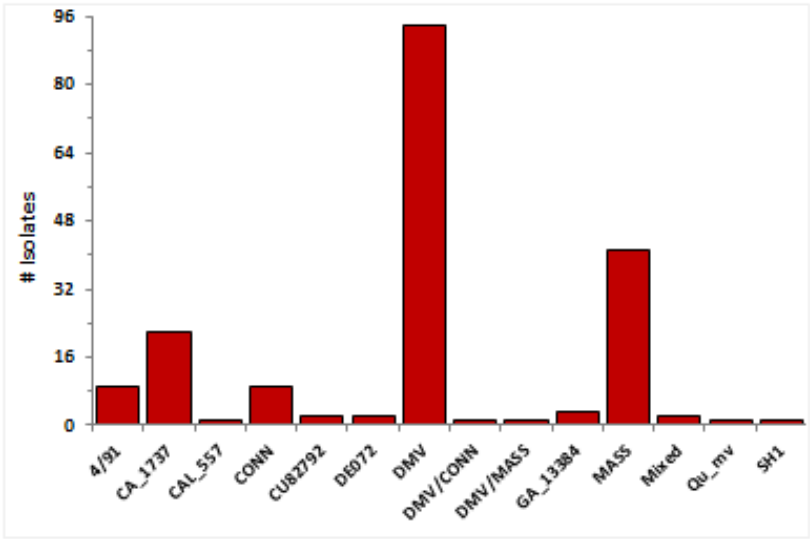
[a)] The bars represent the proportion (%) of veterinarians who report the number of cases seen in a quarter as decreased, stable or increased compared to historical expected numbers of cases.

Fig E) Trend of Infectious bronchitis virus (IBV) infections in broiler breeders causing production loss and abnormal eggs between January 2015 and July 2017 based on the clinical impression survey of Ontario poultry veterinarians [a)]



[a)] The bars represent the proportion (%) of veterinarians who report the number of cases seen in a quarter as decreased, stable or increased compared to historical expected numbers of cases.

Fig F) Distribution of IBV strains from IBV positive samples from broilers, broiler breeders and layers tested at the Animal Health Laboratory between January 2017 and August 2017.



N	189	
Genotype	Frequency	Relative frequency
4/91	9	4.76%
CA_1737	22	11.64%
CAL_557	1	0.53%
CONN	9	4.76%
CU82792	2	1.06%
DE072	2	1.06%
DMV	94	49.74%
DMV/CONN	1	0.53%
DMV/MASS	1	0.53%
GA_13384	3	1.59%
MASS	41	21.69%
Mixed	2	1.06%
Qu_mv	1	0.53%
SH1	1	0.53%

Poultry Veterinarian Survey Highlights

Broilers

- A slight decrease in the number of **IBV** infections has been noted. Several flocks were serologically positive with very high titers; however they did not show clinical signs. A few flocks were stalling out at the end of production but many fewer than in the previous period.
- **Late systemic bacterial infections** (>14 d old) and **early systemic bacterial infections** (<14 d old) with ***E. coli*** involvement became stable.
- **Lameness of viral origin** has increased this quarter. One severe case of **reovirus** in US egg origin flock was reported, causing very high culling/losses (up to 50%) with reports of other flocks of US egg origin chicks, showing clinical signs of lameness with 2-3% mortality.
- **Lameness of bacterial origin** with *Enterococcus cecorum* and *E. coli* involvement continues to be reported.
- One case of **lameness - nutritional origin** (vitamin D deficiency) was reported due to a feed formulation error.
- Intestinal conditions including **coccidiosis** (*E. tenella* and *E. maxima*) and **necrotic enteritis** were considered to be stable and reported mostly in RWA flocks.
- Individual birds with **inclusion body hepatitis** continue to be seen in flocks
- Some flocks have elevated titers to Infectious bursal disease virus (IBDV) with or without secondary production problems. Disinfection and vaccination are useful strategies.

Broiler-Breeders

- **IBV** infections in broiler breeders were stable. One 16- week- old flock experienced increased mortality. Very high IBV titers and secondary mixed bacterial septicemia with both *E. coli* and *Pseudomonas aeruginosa* were identified.
- IBV related decreased production/ abnormal eggs were seen in broiler breeder flocks; however, it was not as severe as in the previous quarter. Increase in IBV titers, has also been seen but the clinical signs were moderate. The IBV DMV variant has been associated with disease but also is reported to be identified in flocks with no to minimal clinical signs. A few cases of cystic oviducts were seen but with no identified link to IBV.
- **Bacterial, viral, and developmental lameness** cases remained stable.
- A few **early bacterial infection (<14 d old)** cases have been reported this quarter with mortality ranging from 1.8-5.9 %. Most commonly *E. coli* was isolated, and less frequently *E. coli* mixed with *Pseudomonas aeruginosa*.
- **In-lay bacterial septicemia** has remained stable. Often these systemic infections are secondary to IBV and management issues that increase the risk of internal lay. Mostly *E.coli* in pure culture or less often, in mixed culture with *G. anatis* or *E. cecorum* were identified.
- Several cases of cecal **coccidiosis** at 2-3 weeks were reported. One of these cases was followed by increased numbers of birds with **intestinal intussusceptions**. Coccidiosis typically tends to be less of a concern in the summer, but this summer was unusual in that it was cooler and wetter.
- A few cases of **white chick syndrome** were reported, which is the normal rate for Ontario flocks.
- **Aggression** with **cannibalism** resulting in excessive mortality has been reported in a few cases.

- A couple cases of **heat stress** were diagnosed. Clinically, transient production and shell quality drops were reported and low to no mortality was noted. With the cooler summer, the birds were likely not heat acclimatized and sudden increases in environmental temperature resulted in challenges in barn ventilation to provide sufficient air flow over the birds.
- Frequency of diagnosis of **Histomoniasis** is now being followed in order to gain a better understanding of the prevalence of this condition. This disease is of concern to turkey and chicken layer/broiler breeder commercial and small flock producers as the treatment of choice was removed from the market several years ago. A multipronged approach to treatment is currently being practiced but is not always effective

Layers

- Clinical cases of **IBV** in mature laying flocks continue to be reported. DMV is the predominant strain however, 4/91 was reported in one flock. There is more testing of pullet flocks with more positives being reported, DMV variant strain being the most common strain identified. One field practitioner noted that the variant DMV strain has caused significant respiratory lesions in mature laying hens and also caused reduced egg production.
- **False layer syndrome** continues to be recognized in flocks of laying hens and clinically presents as a reduced rate of lay. Hens develop cystic oviducts, permanently affecting their laying potential but in most flocks, the mortality rate is low. This condition has been linked to IBV infections occurring early in the life of the pullets prior to the onset of production.
- Increase in **coccidiosis** (*E. brunetti)* and necrotic enteritis have been reported by veterinarians again for the second quarter. Coccidiosis/NE are diseases with a cyclical nature and tend to be seen less often in the hot dry summers but this summer has been wetter and cooler. The style of housing was not provided limiting the ability for further interpretation.
- **Bacterial peritonitis/ salpingitis** due to *E. coli* were increased this quarter.
- **Infectious Laryngotracheitis (ILT)** was diagnosed in a layer flock that have been previously vaccinated. Vaccination failure was suspected.
- There was one report of increased incidence of cannibalism.

Turkeys

- **Early** (<14 d old) **and late systemic bacterial infections** (>14 d old) were stable. *E coli* was isolated from a few cases.
- A slight increase in **Mycoplasma** cases was reported by a couple of practitioners, however no details regarding species were provided.
- A couple of cases of **reovirus** associated tenosynovitis were reported.
- Single cases of Erysipelas, clostridial dermatitis, and adenoviral-associated inclusion body hepatitis were reported.
- Over the last two quarters, there has been one report of increased cases of multidrug resistant ***E. coli*** noted.

Updates

- Since October 1, 2015, the University of Guelph and OMAFRA, through the Animal Health Laboratory (AHL) and the Ontario Animal Health Network, have offered subsidized postmortem and disease surveillance testing for non-quota flocks. For more information go to: http://www.guelphlabservices.com/AHL/Poultry_Flock_Disease.aspx.
  This 2-year project will end as of Friday September 29, 2017. After this date, regular AHL diagnostic testing fees will apply to all small flock submissions received at the AHL.
- Poultry Health Research Network lectures can be accessed on the PHRN website or on the PHRN YouTube channel: https://www.youtube.com/user/PoultryHRN

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