

Survival and Transmission of Current Respiratory Pathogens

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We are approaching the winter season, which means cooler temperatures and most pathogens thrive in these conditions, especially viruses!

This edition of the GPLN EpiLink focuses on three important diseases to the poultry industry: Highly Pathogenic Avian influenza (HPAI), Mycoplasma, particularly Mycoplasma synoviae (MS) and avian Metapneumovirus (aMPV). Survival of the pathogen and transmission routes are discussed.

Highly Pathogenic Avian Influenza (HPAI)

Survival

- Avian influenza type A virus has a lipid envelope, easily inactivated by heat and detergents (1).
- Cool temperatures enhance this virus survival from 4 days at 90°F (32°C) to 35 days at 39°F (4°C) under shade, but only last few minutes when exposed to the sun (Fig. 1) (1).

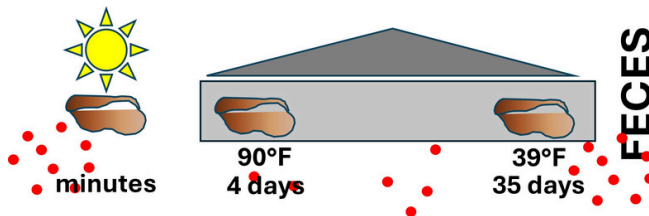


Figure 1 : Survival of avian influenza virus in feces under different conditions (shade or sun).

Transmission

- Wild birds are not the only source of this virus anymore. The virus is now present in the environment and peri-domestic mammals are becoming potential carriers.
- Even more surprisingly, dairy cattle are also susceptible to this virus and this strain associated with cattle was found to infect poultry farms, proof that the virus can likely travel on equipment or with hired help shared between commodities (2).

Mycoplasma

Survival

- This bacterium survives well on different surfaces: 3 days on human hair, 1 day in nose, up to 4 days on cotton fabric (clothing), 4 hours on human skin, up to 2 days on rubber (boots) and up to 7 days in manure (Fig. 2) (3,4).

Transmission

- Introduction of Mycoplasma were reported from on-farm investigations to be either from:
 - individuals walking in the house without observing proper biosecurity measures;
 - infected birds traveling from pullet to breeder farms or replacement males;
 - rodents; or
 - individuals in contact with backyard poultry and live markets.
- Where there are many active cases in the field, breeder flock to breeder flock transmission is highly likely through routine visits because flocks are asymptomatic and before the testing results are obtained, transmission may have already occurred.
- In addition, it is more likely that transmission also originates from infected broiler farms contributing to the disease pressure.



Figure 2: Survival of mycoplasma on different surfaces

Recommendations

- Consider breeder servicemen to only service one breeder farm per day.
- Implement containment for Mycoplasma positive farm including:
 - Schedule this farm for servicing and feed delivery last of the week and last of the day for egg pickup with egg truck wash/disinfection scheduled after;
 - Full compliance with strict biosecurity measures when visiting the farm maintaining only critical visits;
 - Enhance rodent control on the farm; and
 - Have a one-week period of rest where the houses are closed and the litter stays in before clean-out starts.

Avian metapneumovirus (aMPV)

Survival

- Avian metapneumovirus is an enveloped virus, making it sensitive to heat and most disinfectants.
- This virus survives better in cooler temperatures from 12 weeks when at 39°F (4°C) compared to 2 days at 98°F (37°C).
- In litter maintained between 10°F and 47°F (-12°C and 8°C), the virus was detected up to 60 days! (1)

Transmission

- Sick birds and excretions from infected birds on equipment are the main routes of transmission (Fig. 3) (1).
- No evidence of vertical transmission from hen to progeny (1).

Update on the aMPV situation in Georgia

In a recent seroprevalence study from saved sera from broiler breeders, GPLN has observed a shift in positivity to aMPV from a small proportion to a high proportion of flocks with equivocal and positive titers over the year 2024 since its introduction in Georgia last January (Fig. 4). This finding likely indicates that more flocks were exposed to aMPV over time, but it is unclear if the chicken population will benefit from this herd immunity for the upcoming months.

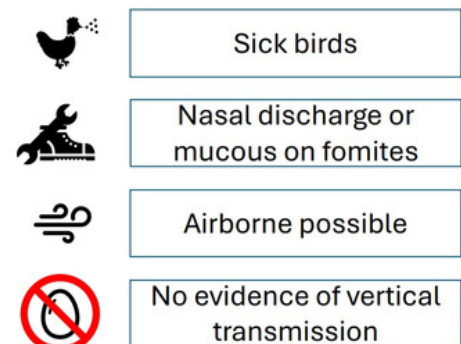


Figure 3: Transmission routes of aMPV

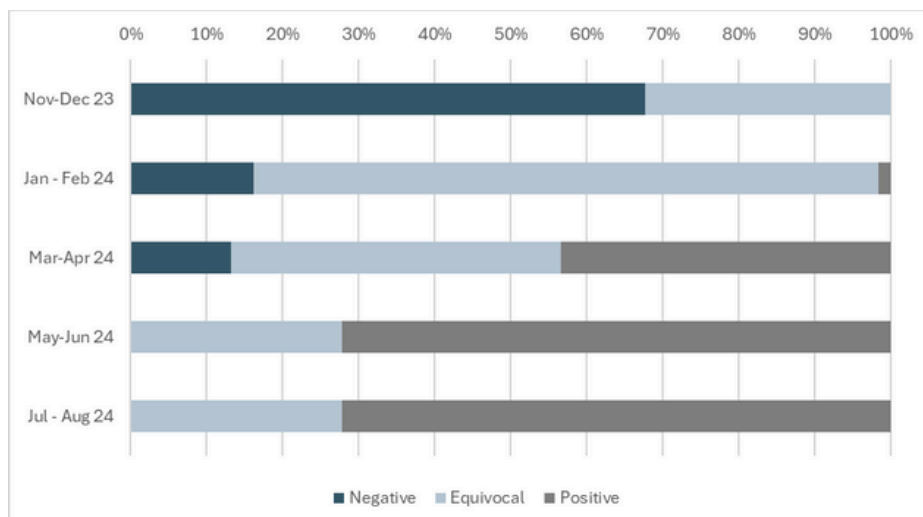


Figure 4: Proportion of broiler breeder flocks (aged >55 weeks old) in each category based on titers range (Negative < 397, Equivocal >397 and <2,000, Positive > 2,000) from the first serology survey between November and December 2023 and the second serology survey between January and August 2024.