Midwest Poultry Federation – Pullet/Layer Health Workshop

Case Studies of Re-Emerging Bacterial Diseases in Cage-Free and Organic Flocks

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With almost 30% of US layer production in cage-free[1], there are regional or emerging diseases that are starting to be more prevalent in these production systems. Of concern is the increasing numbers of bacterial diseases such as fowl cholera (*Pasteurella multocida*), infectious coryza (*Avibacterium paragallinarum*), and spotty liver disease (SLD) (*Campylobacter hepaticus*). According to the 2021 Association of Veterinarians in Egg Production (AVEP) survey, fowl cholera ranked as #8 and infectious coryza ranked #7 out of the top 10 diseases in the cage-free layer industry, with special notice to SLD as an emerging disease (US Animal Health Association national meeting, 2021). Scenarios presented to the lab in the recent year will be discussed as a case study format at the live meeting.

Fowl cholera: Caused by gram negative bacteria, *Pasteurella multocida*, fowl cholera is an acute bacterial disease that results in sepsis and high mortality in all types of poultry. Mortalities range up to 20%, although even higher rates are reported with secondary infections. Lesions and clinical pictures can mimic Highly Pathogenic Avian Influenza (HPAI), with peritonitis and acute mortality. Survivors maintain within a flock of chickens as chronic and persistent shedders, resulting in nagging mortality and egg production drops in subsequent flocks[2]. This is especially a problem in multi-age flocks, where all-in-all-out practices cannot be done. Control with vaccination in the face of the outbreak with live vaccination by wing web has met with success in some organic flocks. Antibiotic therapy in conventional flocks has also been successful in the short term but chronic mortality and suppression of production returns after treatment subsides. Increasing the frequency of vaccination is being used preventatively in flocks with a history of outbreaks.

Infectious coryza: Caused by gram negative bacteria, *Avibacterium paragallinarum*, coryza is another acute bacterial disease that causes severe drops in water and feed consumption, followed by drops in egg production. The disease is highly contagious and once a flock is infected on a multi-age layer site, it is hard to remove unless vaccination and depopulation methods are used. Clinical signs of upper respiratory infection usually are exacerbated by co-infections with other agents such as infectious bronchitis, ILT, colibacillosis—however coryza alone has been reported to cause up to 28% mortality in layer flocks[3]. Diagnosis is mainly through bacterial culture, which could be challenging. Vaccination is usually a multiple dose regimen during the pullet phase using commercial vaccines and reported success with autogenous vaccines. Molecular methods using qPCR has been used for diagnosis, although recently there are several reports of positive coryza PCR with the absence of clinical signs.

Spotty Liver Disease (SLD): Flocks with this condition experience a five to 20% drop in egg production over a three to four-week period and have 0.5 to 5% mortality. Missouri and

Arkansas have most of the cases although breaks have been seen in other high density cagefree, outdoor access areas. This is also a major problem in pastured flocks in Australia where the cause was determined to be due to Campylobacter hepaticus. A major vaccine company is producing an autogenous vaccine that is showing great promise in effectively reducing this problem.

References:

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