

The Current State of Pullet and Layer Health Status in the U.S

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AVEP (Association of Veterinarians in Egg Production) 2019 Disease Survey:

A survey of the members of the AVEP is conducted yearly, in the fall, to assess the state of pullet and layer health issues for the annual report to the USAHA Committee on Poultry and Other Avian Species. For the 2019 survey, 30 of 41 targeted members (73% response rate), responded. The members were asked to categorize a list of common diseases of caged and cage-free pullets (22 and 23 conditions listed respectively) and caged and cage-free layers (32 and 36 conditions listed respectively) as to their importance in their area of service on a scale of 1 to 5 with the following categories

- 1 = Little or no importance to flock health or profitability. Very little effort to control
- 2 = Some importance to flock health or profitability. Moderate effort to control on some farms.
- 3 = Moderate importance to flock health or profitability. Moderate effort needed to control on most farms.
- 4 = High importance to flock health or profitability. Significant effort to control on some farms.
- 5 = Very high importance to flock health or profitability. Significant effort to control on most farms.

Starveouts and yolk infections of chicks during the first week continue to be of moderate to high importance indicating there is still work to be done in breeder hatch egg sanitation, hatchery, and brooding management.

	Caged Pullets	Cagefree Pullets
Starveouts	2.47	2.53
Yolk infections	2.40	2.27

The results showing the top 10 diseases and conditions for the different classes of egg layers with their average ranking are shown below:

Top 10 Diseases and Conditions				
Rank	Caged Pullets	CageFree Pullets	Caged Layers	CageFree Layers
1	Infectious Bronchitis (IB) 3.70	Coccidiosis 3.60	E coli 3.63	Peckouts 4.07

2	Coccidiosis 3.40	Piling 3.37	IB 3.53	E coli 3.73
3	Infectious Bursal Disease (IBD) 2.90	IB 3.23	Calcium Depletion 3.17	Piling 3.63
4	Necrotic Enteritis (NE) 2.83	IBD 2.77	Tie: Coccidiosis 3.13	Tie Coccidiosis 3.27
5	Post SE Bacterin Hepatitis 2.70	Tie: NE 2.73	Tie: Mg 3.13	Tie: IB 3.27
6	vILT (Vaccinal Infectious Laryngotracheitis) 2.67	Tie: E coli 2.73	Infectious coryza (IC) 3.10	False Layer 3.13
7	<i>M gallisepticum</i> (Mg) 2.50	vILT 2.63	Focal Duodenal Necrosis (FDN) 3.07	FDN 3.00
8	<i>E. coli</i> 2.40	Tie: Mg 2.40	False Layer Syndrome 2.97	IC 2.97
9	Pox 2.27	Tie: Post SE bacterin hepatitis 2.40	Peckouts/Cannibalism 2.87	Tie: Roundworms 2.73
10	Marek's Disease 2.10	Roundworms 2.30	Necrotic enteritis 2.83	Tie: NE 2.73
11				Tie: ILT 2.73

Coccidiosis and necrotic enteritis continue to be high on the lists of all classes of layers due to the hardy nature of coccidial oocysts once they are established in a house. Vaccination of caged pullets is a challenge due to difficulty in cycling sporulated vaccinal oocysts. Cagefree pullets and layers outbreaks are usually due to breakdowns in litter management which override coccidiostat and gut health medication programs. The lack of routine antibiotic medication usage in early lay leads to an increase in necrotic enteritis should coccidiosis be a problem.

Infectious bronchitis (IB) and False Layer Syndrome (FLS) will be discussed below.

Colibacillosis in layer flocks continues as highly important. The live E coli vaccine does a very good job of preventing the early lay onset problem but immunity is short-lived and does not provide a lot of protection for the late lay onset problems. Some producers are beginning to administer the live vaccine in mid-lay as a booster vaccination.

Piling of cagefree flocks continues to be a major problem involving environment management.

Peckout mortality of cagefree layers continues as well as an important issue. Lighting and behavioral management is often at the root of the problem. Some pressure is on to move to intact beaks for some cagefree programs which may be a real challenge in some operations.

Infectious coryza (IC) will be discussed below.

Post SE Bacterin Hepatitis continues to be seen as an important cause of pullet mortality. Vaccine companies are continuing to work to determine why this syndrome exists. Preventing overheating of vaccine prior to use may be a key to prevention.

The high ranking of infectious bursal disease in pullets is the subclinical form resulting in poor growth rate, body weight uniformity, and response to vaccines not the acute mortality form.

The control of roundworms in egg layers got a boost as the product AquaSol (fenbendazole) was cleared for use in egg layers in production in 2018. Organic layers continue to be without a highly effective product to use for this condition.

Current Diseases of Concern:

Infectious coryza – This disease is caused by *Avibacterium paragallinarum* and spread through Pennsylvania flocks like wildfire between late December 2018 through May 2019 affecting over 12 million layers, pullets, and broilers. Also, an outbreak in Arizona in multiple complexes which previously were coryza-free, occurred in early January 2019. The ease of spread of this supposedly environmentally fragile organism is troubling. Biosecurity procedures seemingly effective in keeping out avian influenza did not stop IC from spreading widely. Recent studies at the University of Pennsylvania shows the causative bacteria can survive in 43F and 77F water for 72 hours and possibly longer with no loss in potency.

The disease has now spread to a complex in north central Ohio starting in late 2019. There appears to be a connection to PA by egg transport vehicles even though an automatic vehicle sanitation system was in place. A layer flock in southern Kentucky broke as well but is not felt to be related to the PA or OH problems.

Vaccination of pullets twice with the commercial trivalent vaccine with a four-week interval in between is now the standard in endemic areas. Some in PA are using a regional autogenous vaccine for one of the applications. Improvements in biosecurity at unaffected sites is ongoing. Premovement testing of pullets is being done in some cases. Multi-age pullet or layer complexes need to cease the traditional practice of re-using transport equipment that delivers birds to a contaminated layer complex or live bird slaughter facility without cleaning and disinfection.

False Layer Syndrome (FLS)/Infectious bronchitis - This syndrome appears to be due to exposure to variant strains of IB such as the DMV/1639/11 virus, in very young pullets in the first 2 weeks is felt to result in FLS. This has been seen in locations in the northeast US, Ontario, Quebec, Southwest US, and Midwest in areas with high broiler populations infected with variant strain IB or multi-age pullet growing units that become infected. Vaccination at day old or just after placement with the Ma5 Mass or GA 08 vaccines have greatly prevented the problem.

Fowl Cholera – This disease is being seen increasingly in cagefree flocks with outdoor access although a midwestern flock with no outdoor access recently broke with the disease. Exposure to respiratory or fecal material from various mammals including cows, pigs, sheep, dogs, cats, rats, raccoons, skunks, etc. is normally the source of the disease organism, *Pasteurella multocida*. Many of these flocks have not received preventative vaccination. Flock mortality from cholera has reached up to 10% in some flocks. Application of live PM-One vaccine by wingweb in the face of the outbreak has resulted in successfully lowering mortality. Water

sanitation, fogging disinfectant into the environment, and/or acidifying the litter has also helped to reduce losses.

It is recommended that any outdoor access flock receives two applications of vaccine during growing with at least a four-week interval in between. Either two applications of the live PM-One strain vaccine by wingweb or one PM-One and one tetravalent bacterin by injection is advised. Preventative water sanitation efforts, litter acidification, prompt dead bird removal, the use of the Danish Entry System for people entering the houses, and reduced exposure to wildlife and farm animals is also advised.

Focal Ulcerative Dermatitis Syndrome – This syndrome remains a mystery as to its cause. Western Ohio has been the site of most of the flocks since 2009. Prior to 2019, all the flocks were brown egg layers but white, cagefree layers were found with the syndrome in late 2019. An ulcer in the middle of the back occurs spontaneously, growing larger to expose underlying tissues, then allows entry of bacteria like *E coli* that develops into a septicemia with death. Losses of up to 50% have been observed. The syndrome may start at any time during egg production and losses may continue weekly for 10 to 20 weeks. Extensive testing of lesions has yet to determine the causative agent.

Egg Drop Syndrome Update – Three sites in Lancaster County PA were involved with an EDS outbreak in 2018. Since then, the multi-age complex continues to suffer losses as it was not depopulated and the non-clinically affected white egg layers on the complex are infected as well. The losses have become less severe and molting at the first sign of the young layers entering the complex has improved results. The challenge level may be subsiding over time even without vaccination. Autogenous vaccine production has not been successful as yet.

A fourth site of single aged birds in Lancaster County was identified as serologically positive in 2019 from routine surveillance with no clinical signs.

Bedbugs - Cagefree operations that are infested with bedbugs in the Northeast and Midwest US have been reported and concerns for house worker, bird movement, and other persons transfer of bedbugs to their dwellings is high. Some egg producers have been rejected by crews for consideration for moving their birds that have bedbugs. Elimination of the bugs requires facility depopulation and either heat or chemical treatment.

Summary – In all the above infectious problems affecting pullets and layers, continual increased investment in biosecurity training, planning, communication to all players, and physical methods are needed to aid in reducing their spread into flocks. Reliance on vaccines is not effective in many cases due to the lack of a vaccine or the lack of vaccine effectiveness against pathogens that have mutated and become different than the vaccine strains. Maintaining good overall health and environmental conditions, including gut health, aids in helping flocks resist disease challenges as well.