

The image features three white feathers of varying sizes and orientations scattered across a black and white checkered pattern. The pattern is a classic houndstooth or checkerboard design, which is partially obscured by the feathers. The background transitions from the checkered pattern to a solid black area where the text is located. The text is centered and reads: "LE RENDEZ-VOUS avicole AQUINAC".

LE  
RENDEZ-VOUS  
**avicole**  
AQUINAC



LE  
**RENDEZ-VOUS**  
**avicole**  
AQINAC

**14<sup>th</sup>**  
**EDITION**

# Emerging Disease Concerns in Egg Laying Flocks in the United States and Canada

**Eric Gingerich DVM**

**Diamond V**



# Disease Trends in the Layer Industry

## Outline

- United States Animal Health Association (USAHA) Committee on Diseases of Poultry annual reports
- Layer industry diseases of importance
  - Pullets
  - Layers
  - Caged and Cagefree
- Emerging disease issues



# USAHA

**The United States Animal Health Association (USAHA) was established in 1897 to provide a forum of for industry, government, and academia to discuss disease control strategies**

## **24 committees**

- Species oriented
- Subject oriented
- USAHA/AAVLD (American Association of Laboratory Diagnosticians)
- Governance

## **USAHA Committee on Poultry and other avian species**

- Annual industry reports
- Summarizes the state of health of turkeys, broilers, and egg layers





# 2019 USAHA Annual Meeting

**Providence Rhode Island**

**October 26 to 29, 2019**

**October 28 - Committee on Poultry and other avian species**

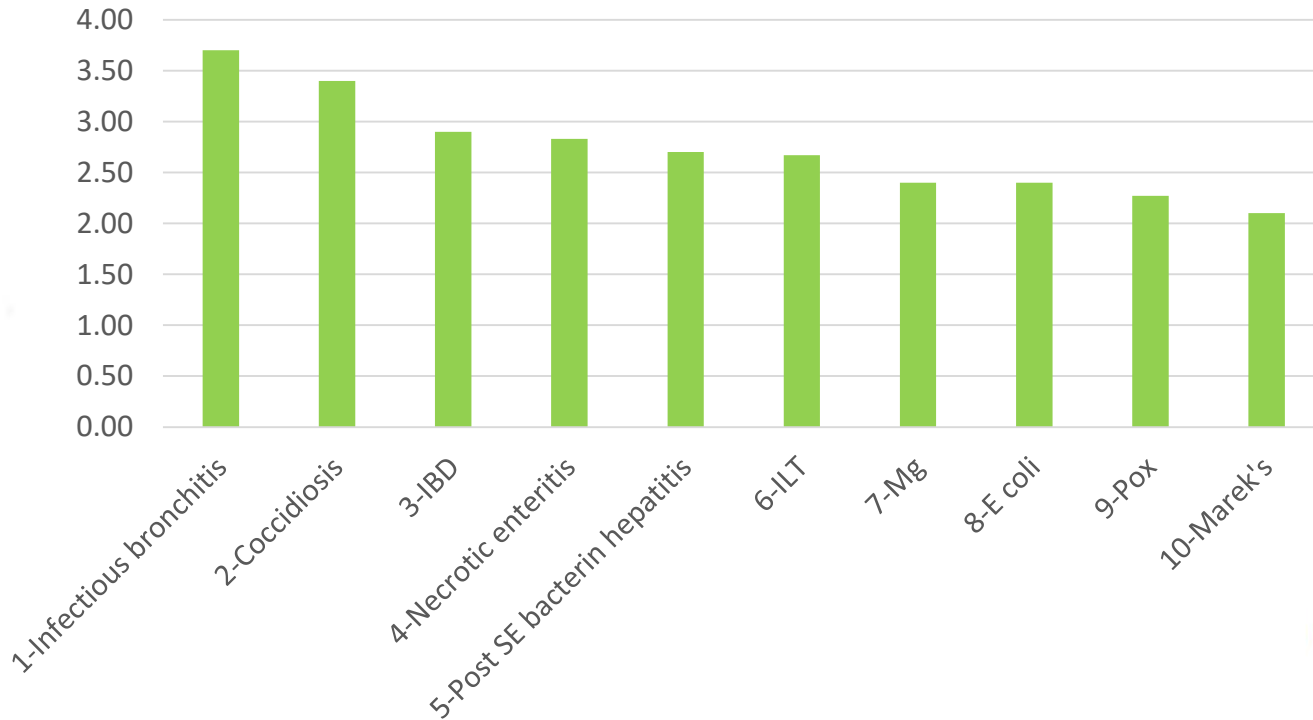
- Broiler Industry Update – Scott Gustin DVM, Tyson Foods
- Turkey Industry Update – Lindy Froebel, National Turkey Federation/Steven Clark DVM, Devenish Nutrition
- Table Egg Industry – Eric Gingerich DVM, Diamond V

# Egg Layer Health Update

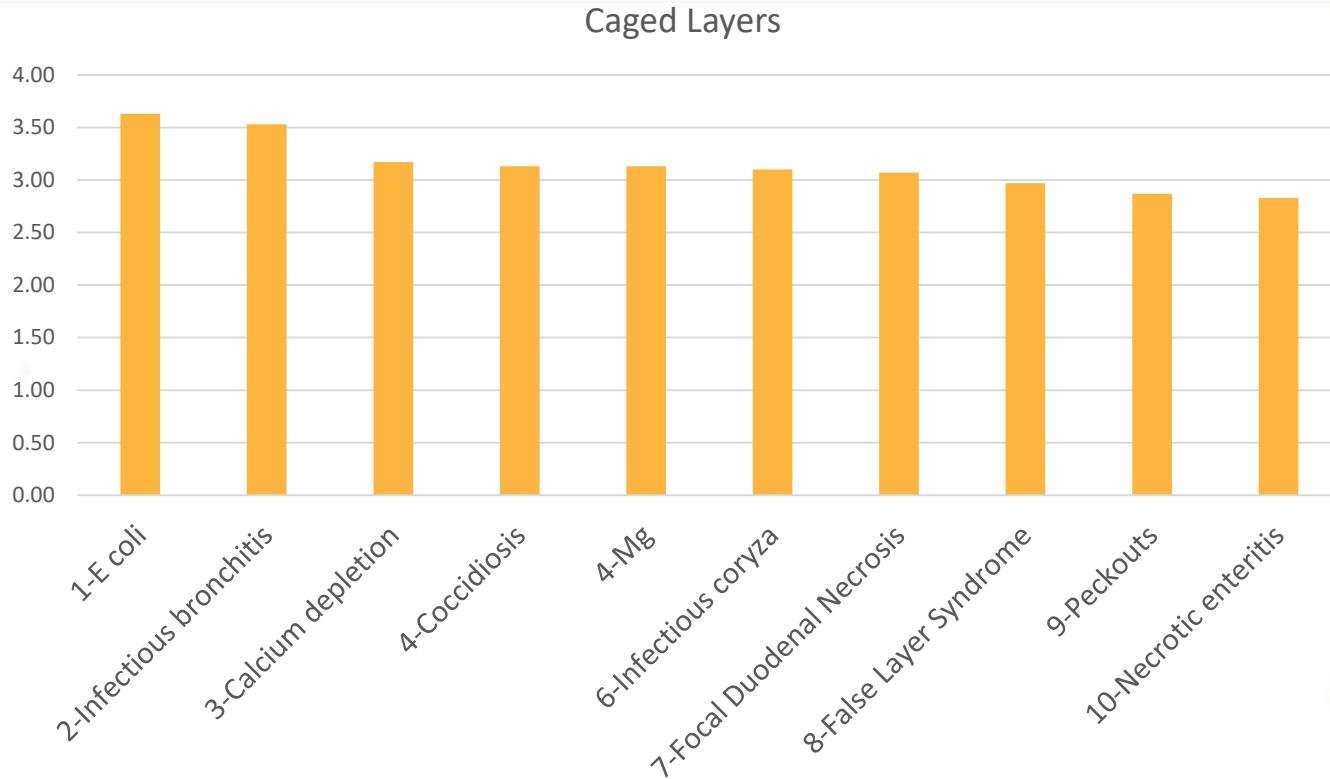


# Top 10 Caged Pullet Diseases - 2019

Caged Pullets

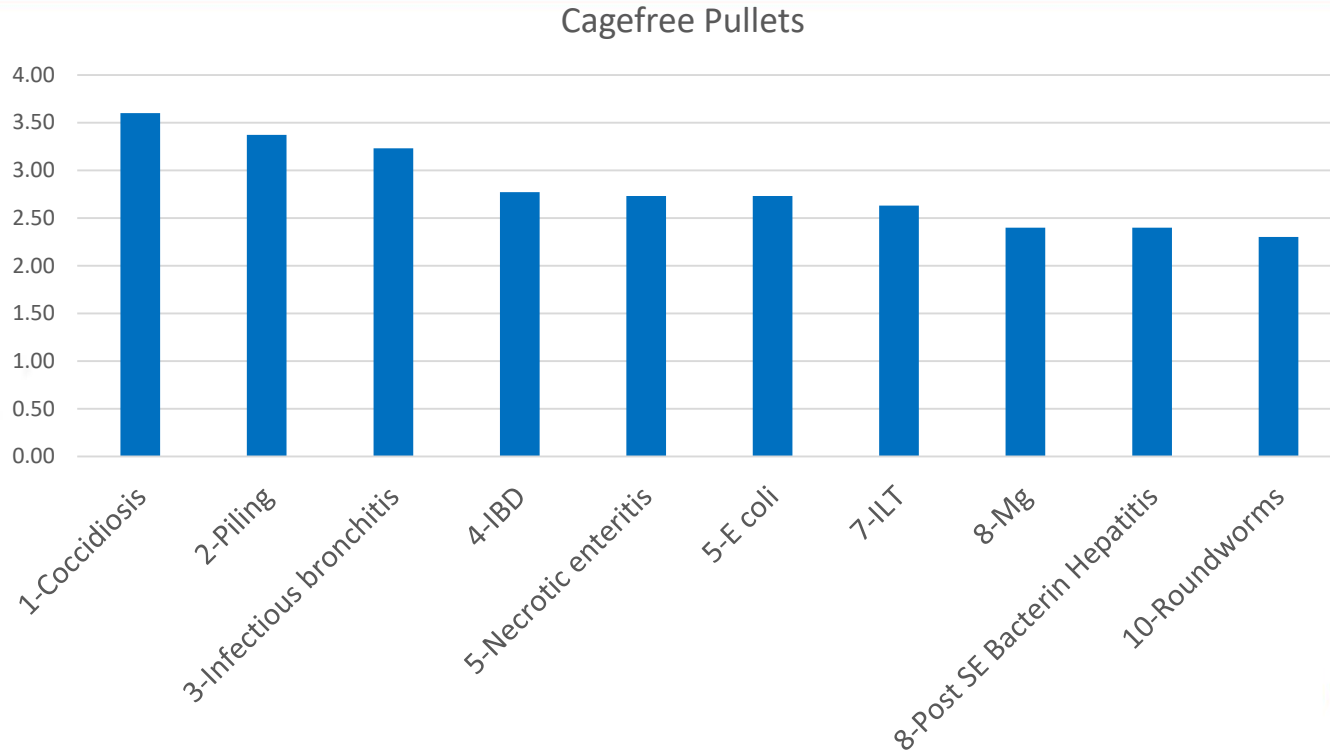


# Top 10 Caged Layer Diseases - 2019

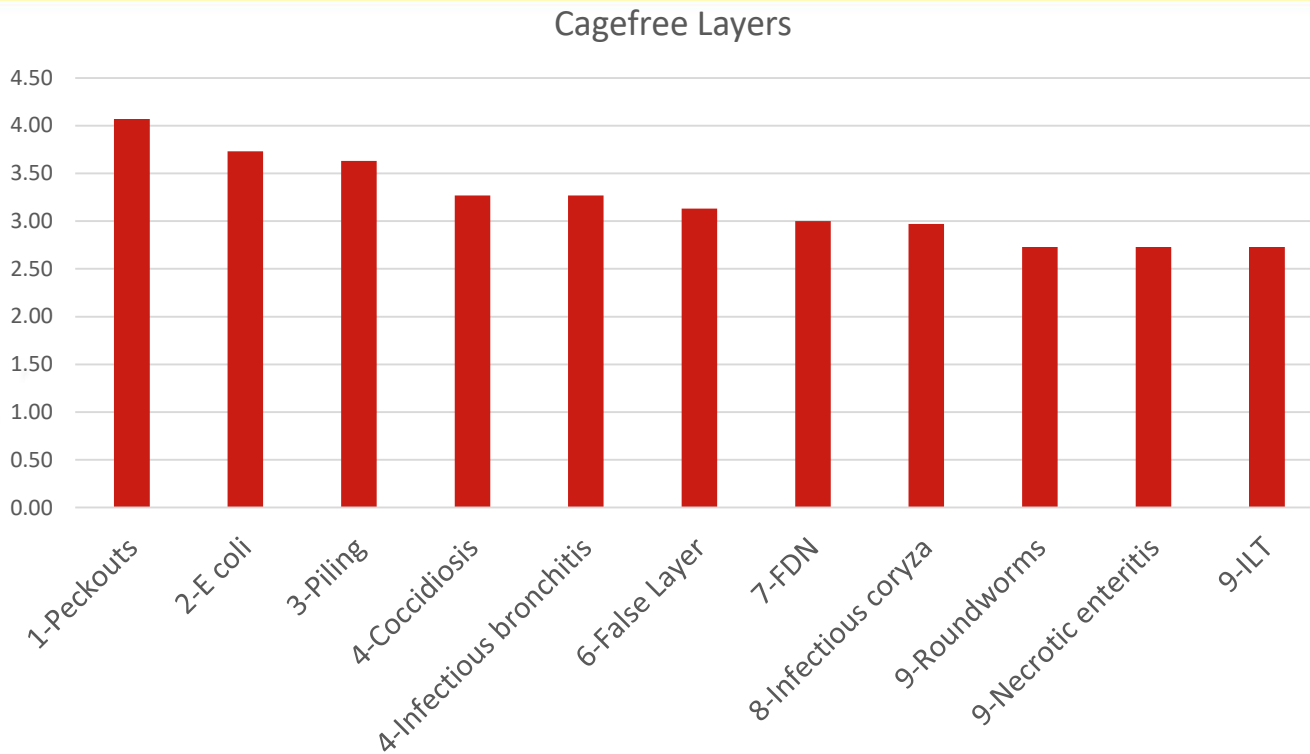




# Top 10 Cagefree Pullet Diseases - 2019



# Top 10 Cagefree Layer Diseases - 2019



# Roundworms in Cagefree Layers





# Emerging or Problematic Layer Diseases

- Group C Salmonella human egg-associated outbreaks
- Variant strain IBV – False Layer Syndrome
- Ulcerative dermatitis with secondary E. coli
- Spotty Liver Disease (*Campylobacter hepaticus*)
- *Pasteurella multocida* (fowl cholera)
- Fowl Coryza
- Erysipelas
- Egg Drop Syndrome – Brown egg layers

# Group C Salmonella Egg Associated Human Outbreaks

## *Salmonella oranienburg* – Missouri, 2015 and 2016

- Human infections related to eggs from Missouri egg farm sold to restaurants
- Recall of eggs in late 2015 + FDA Warning letter in February 2016
- 2<sup>nd</sup> outbreak in August 2016, operation closed until flocks depopulated and negative tests obtained

# Group C Salmonella Egg Associated Human Outbreaks

## *S braenderup* – Hyde County NC, 2018

- Human infections related to eggs sold to restaurants from layer complex with 3 million hens
- Recall of eggs plus all eggs produced to breaking from April to August
- Complex depopulated and undergoing C&D

# Group C Salmonella Egg Associated Human Outbreaks

- Studies on *S oranienburg* by USDA show this Salmonella to not be truly egg transmitted only shell borne
- Why are these group C Salmonella causing disease in humans?
- Why were these group C Salmonella not eliminated during the cleaning and disinfection process of eggs?
- Are these group C Salmonella more pathogenic to humans than others?



# Group C Salmonella Egg Associated Human Outbreaks

## How can producers reduce their risk of foodborne illness in customers from group C Salmonella from their eggs?

- Increase egg wash water pH to 11 using their alkaline detergent
  - Dr. Deana Jones, USDA - “I have never isolated Salmonella from wash water that was at a pH of 11!”
- Utilize a chlorine rinse step in lieu of U-V light sanitation of eggs





# Group C Salmonella Egg Associated Human Outbreaks

## Reducing risk of Group C Salmonella (continued...)

- Reduce in house Salmonella levels
  - Reduce moisture and condensation
  - Utilize feed or water additives known to reduce Salmonella levels in feces
  - Use an autogenous bacterin containing group C Salmonella

# Group C Salmonella Egg Associated Human Outbreaks

## Reducing Risk of Group C Salmonella (continued...)

- Blow off dust off eggs prior to entry into the processing area
- Do not place floor eggs in the farm pack of eggs sent to processing
- Restrict movement of pallets, flats, boxes, etc. in processing that can result in movement of Salmonella contamination

# Variant Strain IBV – False Layer Syndrome

## Two syndromes

- Early exposure (first two weeks)
  - ONL (Ovulating Non-Laying) Syndrome – oviduct nonfunctional but ovary is
  - Also called False Layer Syndrome
  - Low peaks and poor overall performance
- During lay exposure
  - Drop in production
  - Poor shells
- Seen in Northeast US, Midwest US, Southwest US, and Ontario Canada

# False Layer Syndrome (FLS)



Small cystic, hydropic oviduct, infectious bronchitis, variant IB virus

# False Layer Syndrome - Canada



Photos credit – Dr.  
Mike Petrik

# False Layer Syndrome - Ontario

Pullet Cases					
Grower	Producer	Hatch Date	Breed	Production %	Flock Size
1	1	Nov 22-29	Shaver	41	17600
	2	Nov 22-29	Dekalb/Sha	74/58	36000
	3	Nov 22-29	Bovan	55	16800
	4	Nov 22-29	Bovan	70	7600
	5	Nov 22-29	Bovan	50	4000
	6	Nov 22-29	HY BR	86	5200
	7	Nov 22-29	HY BR	90	9696
	8	Nov 22-29	ISA Br	90	8972
2	9	14-Dec	Lohmann	80	26000
3	10	23-Nov	Lohmann	84	62400
4	11	27-Sep	Lohmann	90	40320
	12	23-Sep	Lohmann	94	23500
	13	05-Oct	Lohmann	86	14428
	14	05-Oct	Lohmann	88	5935
	15	05-Oct	Lohmann	87	11880
	16	05-Oct	Lohmann	87	3840
5	17	18-Nov	Shaver	75	23240
	18	18-Nov	Lohmann	60	30720
	19	22-Nov	Lohmann	70	4278
	20	22-Nov	Lohmann	66	7500
6	21	30-Nov	Lohmann		
7	22	18-Nov	Bovan	66	13545

Information courtesy of Dr.  
Mike Petrik



# False Layer Syndrome

## Treatment

- None
- Cannot remove non-layers as they continue to show normal comb development and pelvic spread

## Prevention

- Day old vaccination
  - Ma5 vaccine
  - GA 08 variant vaccine
- First growout IB vaccination by 14 days

# Ulcerative Dermatitis of Brown Cagefree Layers

- A problem in western OH area since 2014
- 1 current flock affected
- High mortality due to secondary E. coli infection from a variable-sized open ulcer on the back – Some flocks 50% in one cycle
- Ruled out so far
  - ✓ Rodents
  - ✓ Insects
  - ✓ Chemical irritants
  - ✓ Wounding

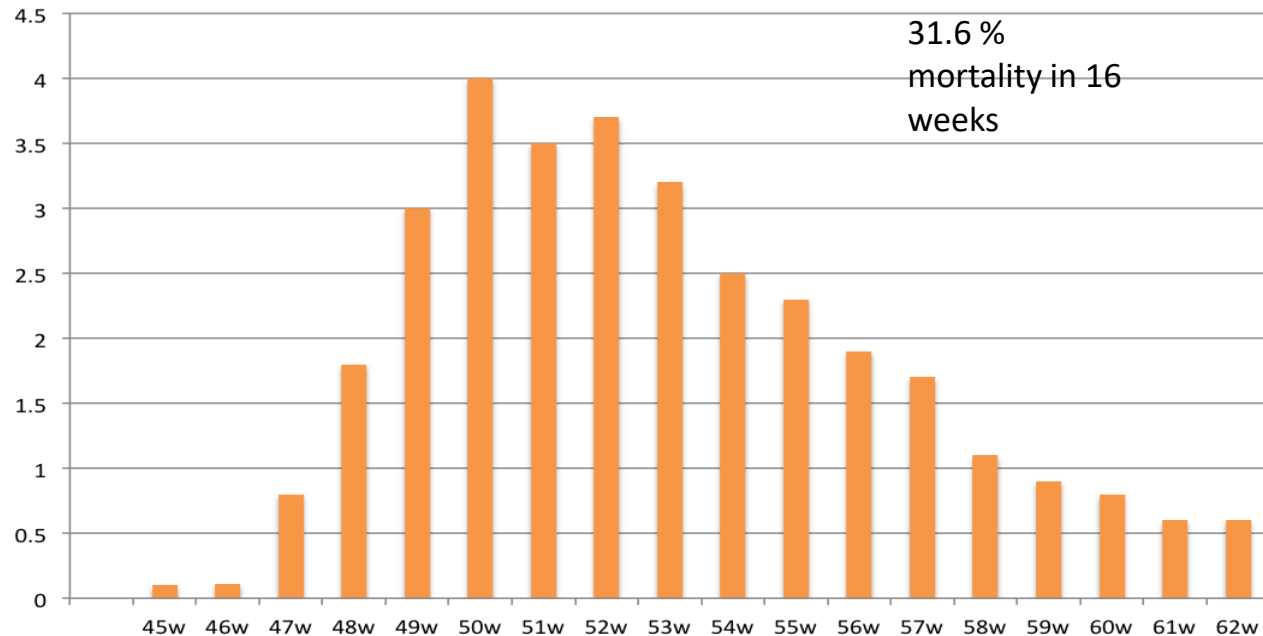


# Ulcerative Dermatitis of Brown Cagefree Layers



# Ulcerative Dermatitis of Brown Cagefree Layers

Ohio Case Mortality Percent Per Week



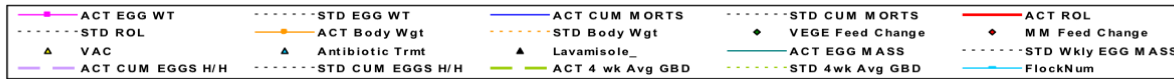
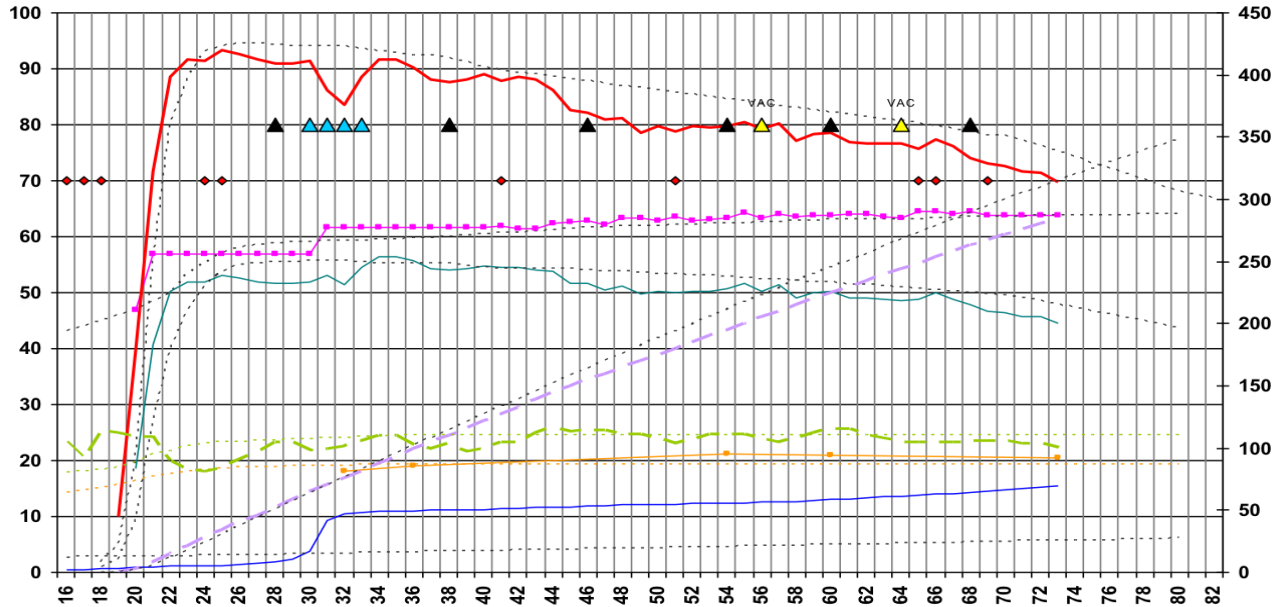


# Spotty Liver Disease (SLD)

- A serious problem in Australia
- Seen in a several pastured flocks in the US Midwest last several summers
- Also a problem in several caged layer facilities in the South US
- Wet, hot weather associated
- 1 to 2 % mortality per week
- Loss of egg production of 5 to 10%
- Cause now determined to be *Campylobacter hepaticus*
- Treatable with antibiotics

# Spotty Liver Disease (SLD)

McLeans - Standard: McL Free Range  
 LAYING ID:20603 8811 PLACED on 6/11/2009 REARING ID:31206

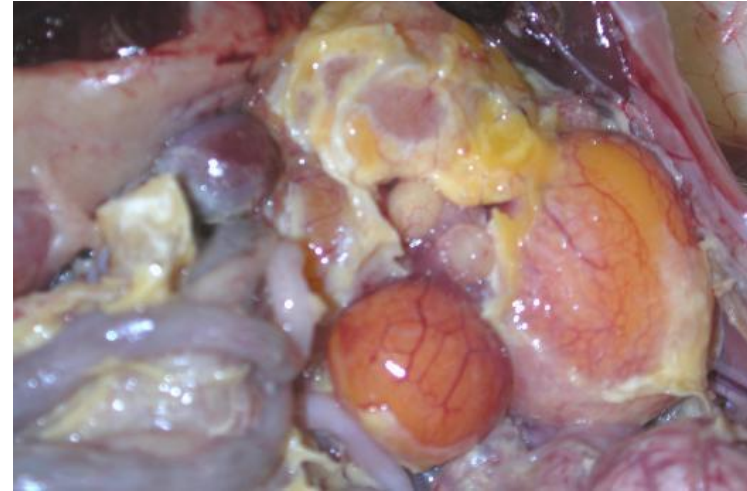


# Spotty Liver Disease (SLD)



# ***Pasteurella multocida* (fowl cholera)**

- Fowl cholera being increasingly seen in cage free flocks with outdoor access
- Vaccinations of pullets with killed and live vaccines increasing
- Up to 5% per day mortality seen





# **Fowl Coryza – *Avibacterium paragallinarum***

- **Enzootic in California, Texas, and Florida historically**
  - Recently more serious cases seen in California
- **Large outbreaks seen in complexes in the northeast US in Connecticut in 1992 and Maine in 2002**
- **Outbreaks seen in layer flocks in Colorado (2014) and Virginia (2017)**
- **Starting in early January 2019, significant losses in a large complex in Arizona**



# **Fowl Coryza – *Avibacterium paragallinarum***

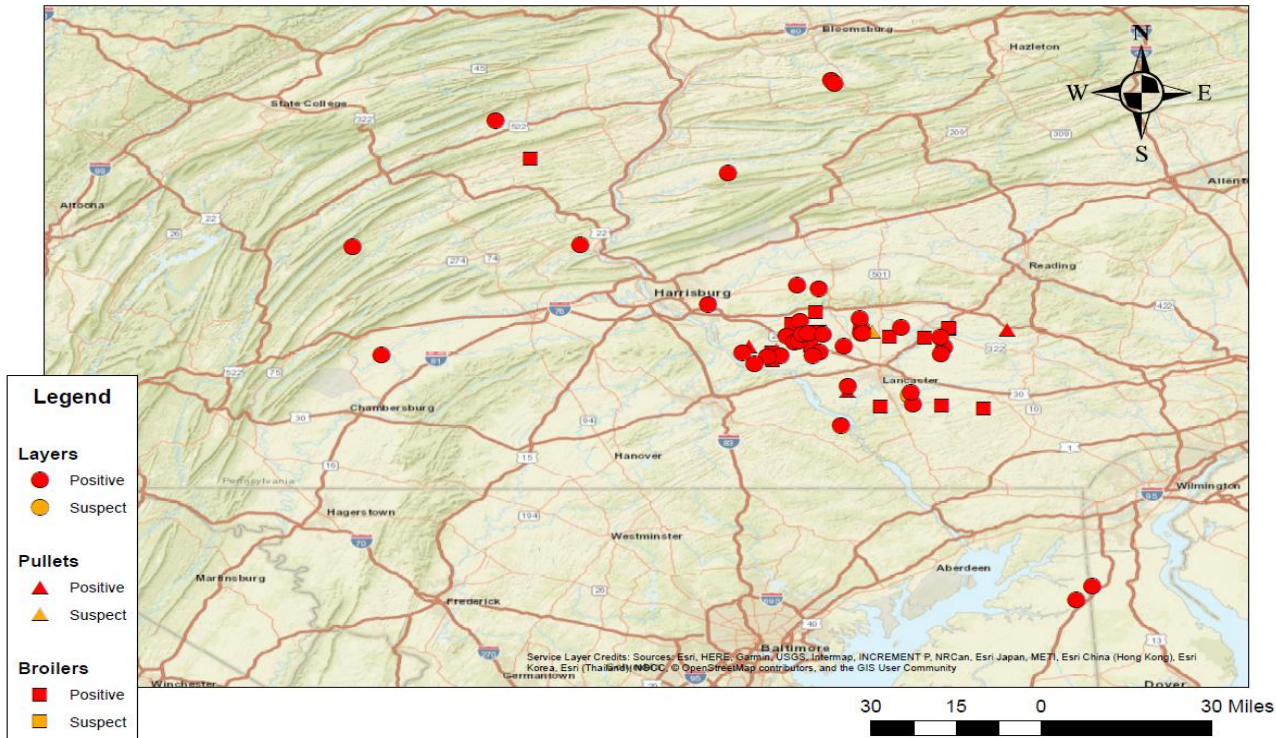
## **Pennsylvania Outbreak - 2019**

- **From late Dec 2018 thru Oct 2019, Pennsylvania has had 35 layer, 9 pullet, and 16 broiler premises affected**
- **Approximately 14 million layers, pullets, and broilers affected**
- **Means of spread not known in most cases**
  - Airborne spread to outside of houses then tracked in suspected
- **Vaccines in short supply due to AZ outbreak**



# Fowl Coryza – *Avibacterium paragallinarum*

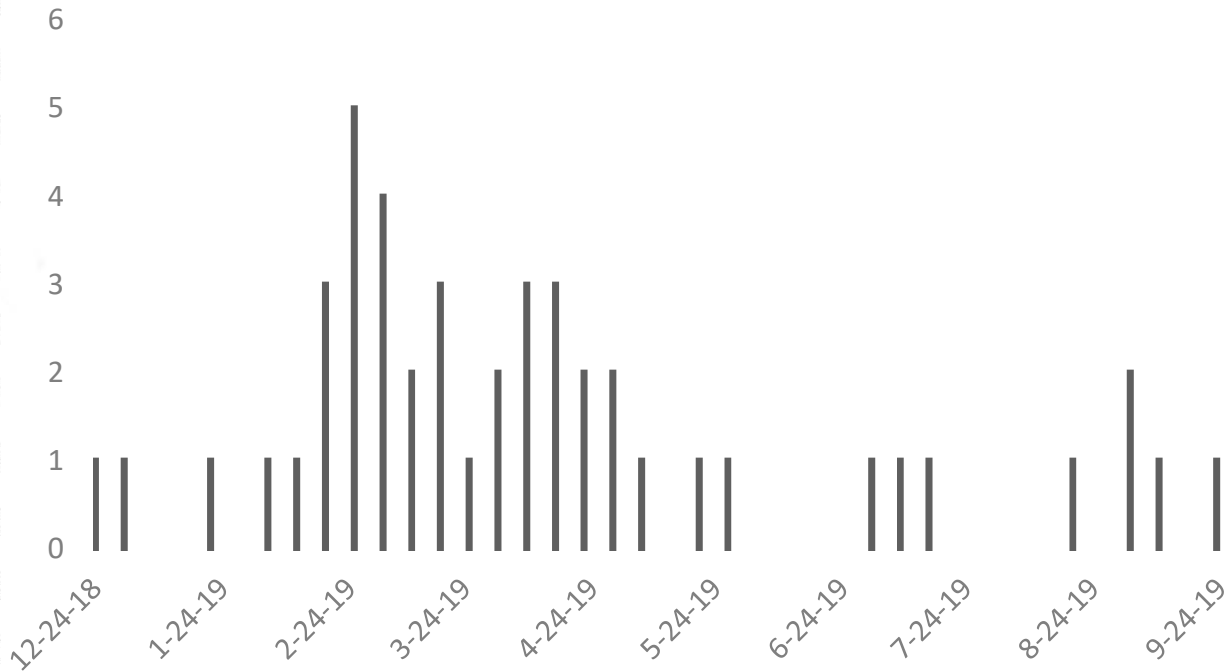
Coryza September 25 of 2019



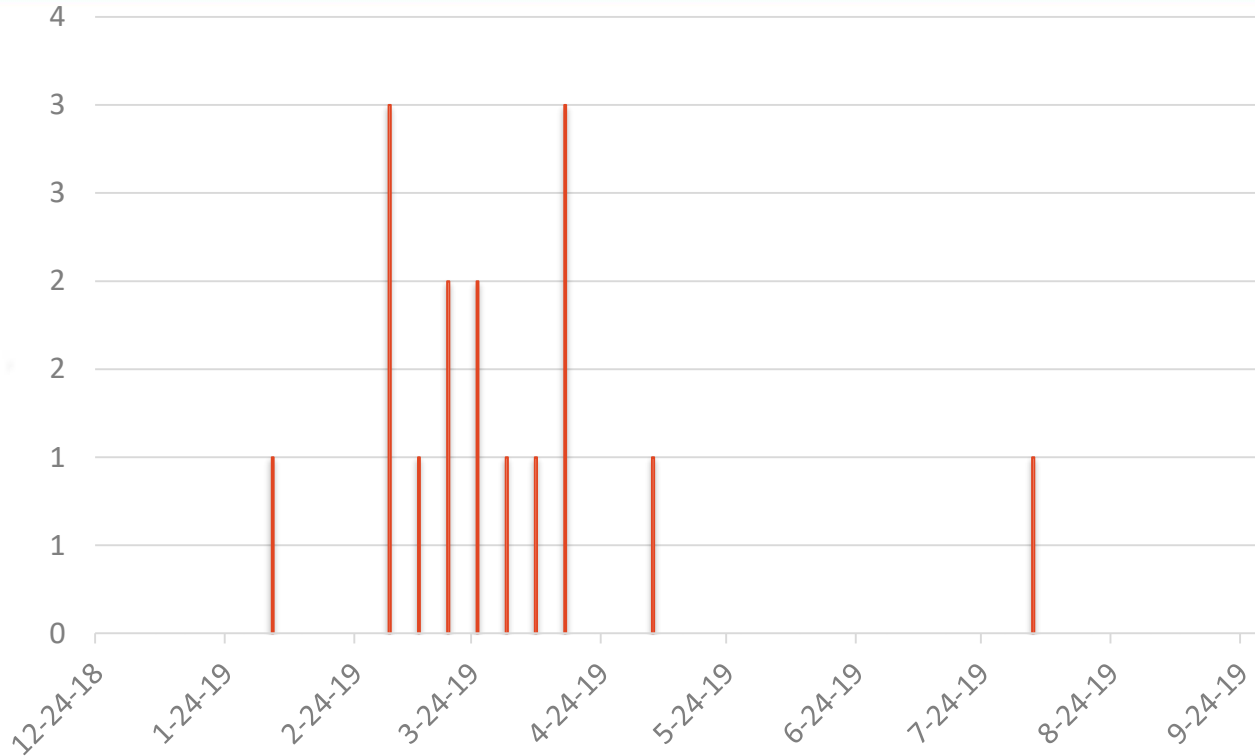
Map courtesy of PennAg

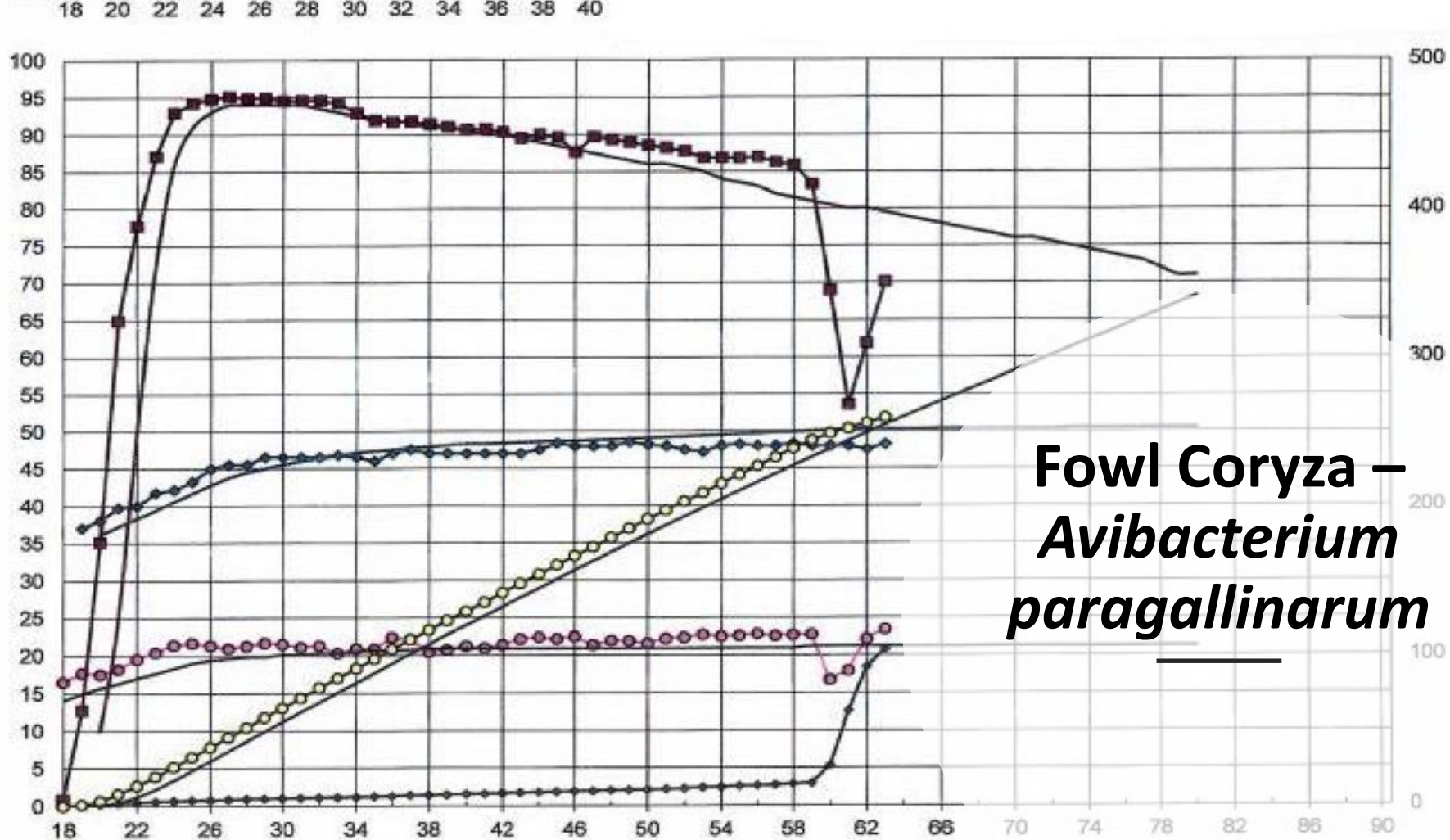


# Timeline of Pullet and Layer Coryza Cases



# Timeline of Broiler Coryza Cases





# Fowl Coryza – *Avibacterium paragallinarum*





# Fowl Coryza – *Avibacterium paragallinarum*

- **Treatment**
  - ✓ Antibiotics – Chlortetracycline in US
  - ✓ Live E coli vaccination
- **Prevention**
  - ✓ Vaccinations
    - Commercial bacterin
    - Autogenous bacterin
    - 2 applications during grow
  - ✓ Biosecurity



**Erysipelas – *Erysipelothrix rhusiopathiae***

- Lesions of septicemia seen
  - Enlarged, congested spleen
  - Enlarged, congested liver
  - Some livers may have miliary spots of necrosis



# **Erysipelas – *Erysipelothrix rhusiopathiae***

- **Seen in outdoor access cagefree layers**
- **See increased mortality from a septicemic disease usually in flocks after 60 weeks of age**
  - ✓ Can be up to 50%
- **Vaccination in the face of the outbreak with live erysipelas vaccine for turkeys has helped reduce losses greatly**





# Egg Drop Syndrome - EDS

- **Caused by adenovirus named EDS '76**
- **Brown egg layers only affected**
- **Production loss due oviduct infection and loss of poor shell quality and shell-less eggs not able to be collected**
- **EDS outbreak in Pennsylvania in June 2018**
  - 3 farms, one a multi-age complex
  - No spread to other flocks in the area



**Egg Drop  
Syndrome - EDS**

---



## **Egg Drop Syndrome - EDS**

---

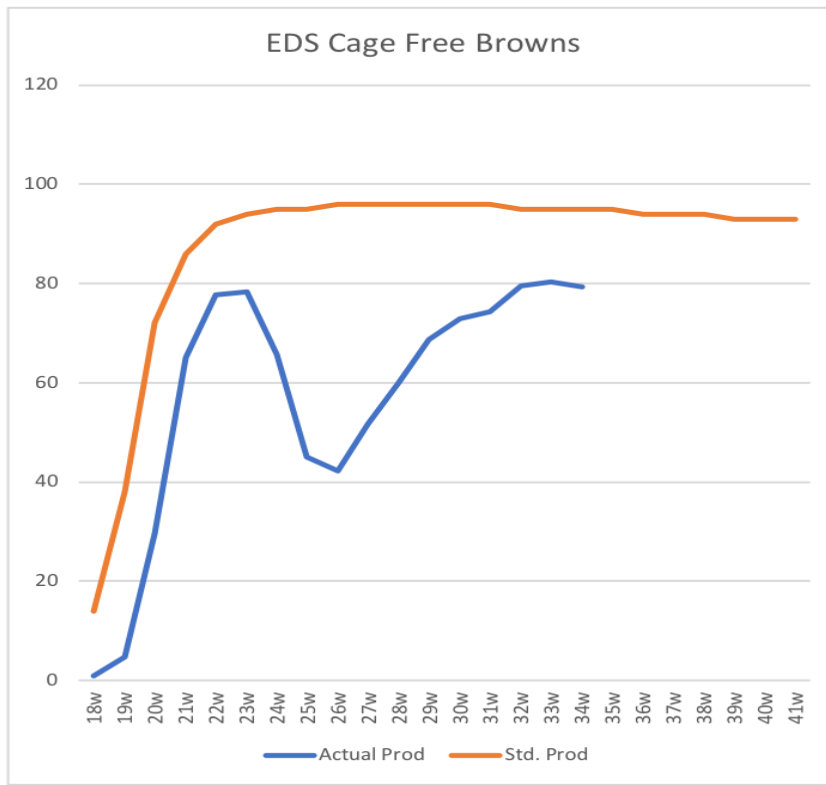
*Fieldcasestudy.com*



**Egg Drop Syndrome**

---

# Egg Drop Syndrome - EDS





# Egg Drop Syndrome - EDS

## Unknown source

- Eggs from outside sources processed in the farm's processing plant?
- People?
  - Crews?
  - Workers?
- Equipment?
  - Transport equipment?
- Other?



# Egg Drop Syndrome - EDS

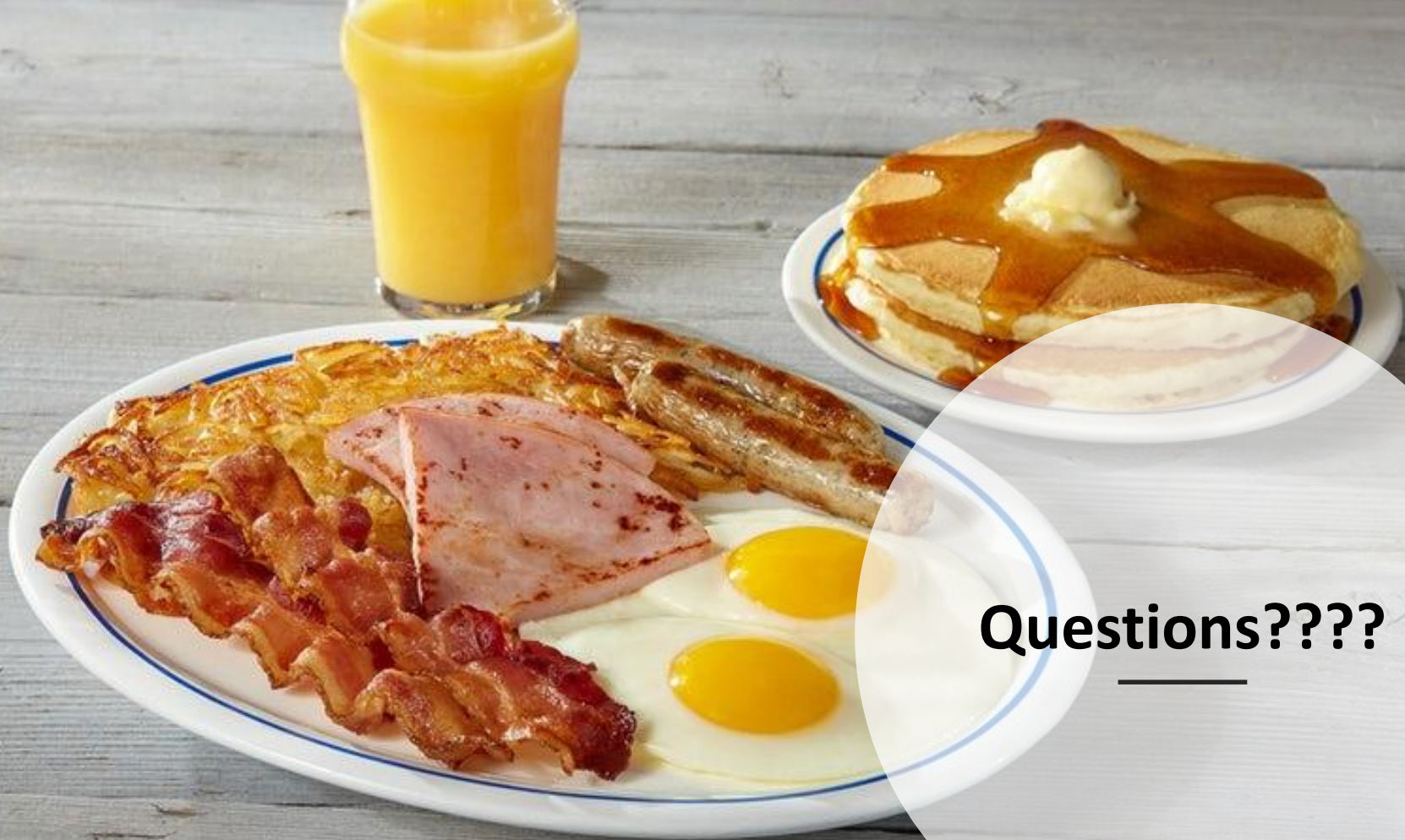
- **Treatment**
  - ✓ None (viral disease)
- **Prevention**
  - ✓ Biosecurity
    - Special emphasis on eggs and egg handling materials from other farms
  - ✓ Vaccination
    - Autogenous vaccine being produced as EDS commercial vaccine not allowed in US



# Summary

- **Layer health managers continue to have numerous challenges**
- **There is much to learn in regard to prevention**
  - Biosecurity
  - Vaccinology
- **Group C Salmonella human egg associated outbreaks are a concern due to poor understanding of their epizootiology**





**Questions????**

---