2016 USAHA US Layer

Health Report

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Diamond V
Greensboro NC
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Outline

- AVEP Pullet and Layer Health Survey
- AVEP Survey on Veterinary Related Issues
- AVEP Survey on Research Needs
- Layer Industry Economics
- Summary
Conducted in early October 2016
Veterinarians from 13 states returned survey
18 members of the total of 100 92 responded
AVEP Survey Questions

- **Prevalence**
  - 0 = not seen
  - 1 = seen in a few flocks
  - 2 = commonly observed
  - 3 = seen in a majority of flocks

- **Importance**
  - 0 = no importance to flock health or profitability
  - 1 = some importance
  - 2 = moderate importance
  - 3 = very high importance
## Chick Issues

<table>
<thead>
<tr>
<th>Year</th>
<th>Issue</th>
<th>Caged Pullets</th>
<th>Cagefree Pullets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prevalence</td>
<td>Importance</td>
<td>Prevalence</td>
</tr>
<tr>
<td>2015 Yolk Infection</td>
<td>1.39</td>
<td>1.35</td>
<td>1.50</td>
</tr>
<tr>
<td>2016 Yolk Infection</td>
<td>1.59</td>
<td>1.24</td>
<td>1.19</td>
</tr>
<tr>
<td>2015 Starveouts</td>
<td>1.61</td>
<td>1.24</td>
<td>1.31</td>
</tr>
<tr>
<td>2016 Starveouts</td>
<td>1.53</td>
<td>1.29</td>
<td>1.38</td>
</tr>
</tbody>
</table>
Yolk Infections

1. Hatch egg cleanliness
2. Hatcher tray contamination
3. Hatcher C&D
Starveouts

- Egg holding time
- Incubation conditions
- Chick holding conditions
- Time between hatch and chick placement
- Brooding conditions; Temp and RH%
# Top 3 Caged and Cagefree Pullet Diseases – Prevalence and Importance

<table>
<thead>
<tr>
<th>Rank</th>
<th>Caged Pullets</th>
<th>Cagefree Pullets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prevalence</td>
<td>Importance</td>
</tr>
<tr>
<td>1</td>
<td>Coccidiosis/1.41</td>
<td>Cocci/1.88</td>
</tr>
<tr>
<td>2</td>
<td>Post SE Bacterin Hepatitis/1.24</td>
<td>SE Bac Hepatitis/1.71</td>
</tr>
<tr>
<td>3</td>
<td>Necrotic enteritis/1.12</td>
<td>ILT/1.65</td>
</tr>
</tbody>
</table>
Caged Pullet Diseases

- Cocci/necrotic enteritis
  - Medication programs
  - Vaccination
- ILT
  - Problems in enzootic areas
  - Too weak a program used
  - Recombinant vaccines not administered properly
- SE Bacterin Induced Hepatitis
Coccidiosis Vaccination
Caged Pullet Coccidiosis Vaccination

KEYS TO SUCCESS

- Extra lighting post application to promote preening
- Fecal exposure for cycling of oocysts to at least 21 days
- Proper relative humidity to promote sporulation

PAPER REMAINING AT 14 DAYS
SE Bacterin Induced Hepatitis
<table>
<thead>
<tr>
<th>SE Bacterin Induced Hepatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Seen in a scant number of flocks 14 to 21 days post SE bacterin application</td>
</tr>
<tr>
<td>- Up to 7% mortality, normal being 0.3 to 0.6%</td>
</tr>
<tr>
<td>- Unknown cause at this time</td>
</tr>
<tr>
<td>- Extraneous sources of endotoxins?</td>
</tr>
<tr>
<td>- Definite bird strain relationship</td>
</tr>
</tbody>
</table>
### Top 3 Caged and Cagefree Layer Diseases – Prevalence and Importance

<table>
<thead>
<tr>
<th>Rank</th>
<th>Caged Layers</th>
<th>Cagefree Layers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prevalence</td>
<td>Importance</td>
</tr>
<tr>
<td>1</td>
<td>E. coli / 2.17</td>
<td>E. coli / 2.33</td>
</tr>
<tr>
<td>2</td>
<td>Tie - M. Synoviae / 1.67</td>
<td>Tie - Calcium Depletion / 2.00</td>
</tr>
<tr>
<td>3</td>
<td>Tie – Cannibalism / 1.67</td>
<td>Tie – Cannibalism / 2.00</td>
</tr>
</tbody>
</table>
Caged Layer Diseases

- E. coli still important – vaccine effective for early problems
  - Late E. coli mostly due to reproductive origin problems
- Calcium depletion
  - Calcium feeding transition from grow to lay
  - Calcium, phosphorus, and vitamin D levels esp. early
### Caged Layer Diseases

- *M. synoviae* is quite common in multiple aged facilities (90%+) but is not pathogenic so importance is minimal
- Cannibalism continues as a problem with some aggressive strains of birds even with 67 sq. in. cage floor space
- An emerging disease in caged layers
  - *Gallibacterium anatis* (will discuss in cagefree section)
Cage-Free Layer Diseases

- Cannibalism – large groups, poor beak trimming, high light intensity, strain differences, equipment differences
- E. coli
  - Access to litter dust bathing increases contamination on feathers and vent area
  - Water contamination of cups under nipples may be an issue
  - Increased use of vaccine should decrease this
Cannibalism in Cagefree Layers
E. coli in Cagefree Layers
Cagefree Layer Diseases

- **Roundworms**
  - An excessive amount can result in a worm in an egg
  - No treatments cleared for use in layers
- **Piling** – A consistent problem in some systems and some strains
Roundworms in Cagefree Layers
<table>
<thead>
<tr>
<th>Emerging Layer Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ <em>Gallibacterium anatis</em> septicemia</td>
</tr>
<tr>
<td>▪ Ulcerative dermatitis with secondary E. coli</td>
</tr>
<tr>
<td>▪ Variant Reovirus</td>
</tr>
</tbody>
</table>
**Gallibacterium anatis** Septicemia

- Seen mostly in the southeast
- Affect layers of all ages and strains
- Typical septicemic disease
  - Acute death
  - Petechial hemorrhages
- Mortality can be high, over 1% per week
- Oviduct infections also seen
- Liver lesions common – miliary hepatic nodules
Gallibacterium anatis of Layers
## Ulcerative Dermatitis of Brown Cagefree Layers

- A problem in western OH area since 2014
- 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

[Bar chart showing the percentage of Ohio case mortality per week for various weeks.]
<table>
<thead>
<tr>
<th>Reovirus in Cagefree Layers</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Seen in PA brown cagefree and southeast caged browns</td>
</tr>
<tr>
<td>- Poor peaks in production or low peak then drop with slow recovery</td>
</tr>
<tr>
<td>- Very high ELISA titers, over 20,000 GMTs</td>
</tr>
<tr>
<td>- Variant Reovirus vaccines being tried</td>
</tr>
</tbody>
</table>
Suspected Reovirus in Brown Caged Layers
Diseases and Issues of Concern

- Rating system
  - 0 = little continued importance, concern, or effort to prevent
  - 1 = some importance
  - 2 = moderate importance
  - 3 = very high importance
<table>
<thead>
<tr>
<th>Disease or Issue</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avian Influenza</td>
<td>2.00</td>
<td>2.19</td>
<td>3.00+</td>
<td>2.50</td>
</tr>
<tr>
<td>Lack of approved, effective treatments/antibiotics</td>
<td>2.43</td>
<td>2.56</td>
<td>2.14</td>
<td>2.56</td>
</tr>
<tr>
<td>Lack of effective vaccines</td>
<td>1.05</td>
<td>1.56</td>
<td>1.45</td>
<td>1.19</td>
</tr>
<tr>
<td>Salmonella enteritidis (SE) FDA Egg Safety Rule</td>
<td>2.29</td>
<td>2.31</td>
<td>2.29</td>
<td>1.88</td>
</tr>
<tr>
<td>Salmonella heidelberg (SH) incorporation into FDA Egg Rule</td>
<td>1.90</td>
<td>2.13</td>
<td>2.05</td>
<td>1.81</td>
</tr>
</tbody>
</table>
Diseases or Issues of Concern

- AI
  - Recurrence of HPAI is on everyone’s minds
- Lack of Treatments
  - Ascarids in layers
  - E. coli
  - Cholera
  - Coccidiosis
  - Blackhead
  - Spirochetes
### Diseases or Issues of Concern

- **Vaccine availability and effectiveness**
  - Overall satisfactory
- **FDA SE Egg Plan**
  - Very few problems being found
- **S. heidelberg incorporation into Plan**
  - Past chicken and turkey meat problems drew attention
  - No egg associated problems
PA SE Manure Positive Flocks

PEQAP Data
Ohio SE Manure Positive Flocks

Egg-Cite Data
S. Heidelberg Reduction in Human Cases

CDC Foodnet Data
<table>
<thead>
<tr>
<th>Disease or Issue</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welfare issues overall</td>
<td>2.15</td>
<td>2.31</td>
<td>2.21</td>
<td>2.31</td>
</tr>
<tr>
<td>Beak Trimming</td>
<td>1.50</td>
<td>1.88</td>
<td>1.91</td>
<td>1.88</td>
</tr>
<tr>
<td>Disposal of male chicks</td>
<td>1.25</td>
<td>2.00</td>
<td>1.64</td>
<td>2.13</td>
</tr>
<tr>
<td>On-farm euthanasia of spent fowl</td>
<td>1.80</td>
<td>1.88</td>
<td>1.73</td>
<td>1.88</td>
</tr>
<tr>
<td>Molting of layers</td>
<td>1.35</td>
<td>1.31</td>
<td>1.27</td>
<td>1.25</td>
</tr>
<tr>
<td>Banning cages in some states</td>
<td>2.35</td>
<td>2.69</td>
<td>2.27</td>
<td>N/A</td>
</tr>
<tr>
<td>Adoption of enriched cages for all layers</td>
<td>2.11</td>
<td>2.44</td>
<td>1.86</td>
<td>N/A</td>
</tr>
<tr>
<td>Move to cagefree</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>2.56</td>
</tr>
</tbody>
</table>
## Top 10 Layer Research Needs

- The membership of the Association of Veterinarians in Egg Production (AVEP) were asked to rank their top 10 research needs out of a list of 22 diseases or categories
- 19 members responded
# Top 10 Layer Research Needs

<table>
<thead>
<tr>
<th>1.</th>
<th>Colibacillosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Infectious bronchitis</td>
</tr>
<tr>
<td>3.</td>
<td>Improved vaccines/adjuvants</td>
</tr>
<tr>
<td>4.</td>
<td>Avian Influenza</td>
</tr>
<tr>
<td>5.</td>
<td>Focal Duodenal Necrosis (FDN)</td>
</tr>
<tr>
<td>6.</td>
<td>Mycoplasmosis</td>
</tr>
<tr>
<td>7.</td>
<td>Coccidiosis</td>
</tr>
<tr>
<td>8.</td>
<td>Salmonellosis</td>
</tr>
<tr>
<td>9.</td>
<td>Animal Welfare</td>
</tr>
<tr>
<td>10.</td>
<td>Vaccine Delivery Systems</td>
</tr>
</tbody>
</table>
US Egg Industry

- Extremely Profitable 2015
  - Egg prices up
  - Bird numbers down due to AI
  - Feed costs down

- Extreme losses in 2016
  - Continue imports of egg products due to contracts signed in 2015
  - Increased cagefree production not replacing caged production
Egg Prices – Price to Store; processed and cartoned

Cost even = $1.00
## US Egg Industry

- 291 million layers (Aug16)
- Top 6 states
  1. Iowa – 51.2 million (was 31.2 last year)
  2. Ohio – 30.2
  3. Indiana – 27.7
  4. Pennsylvania – 24.5
  5. Texas – 16.3
  6. California – 11.4
Layer health of the US flock is quite good
- Oversight by veterinarians from industry, diagnostic labs, consultants, academia, government
- Flock supervision by professional service technicians
- Continued high quality supply of vaccines
- High quality nutrition provided by professional nutritionists
- Use of good biosecurity plans
- Housing a majority of layers in cages
- Continued surveillance programs for ND and AI
Questions???