Findings in Broiler Respiratory Disease in North East Georgia

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Georgia Poultry Laboratory Network

During the winter of 1998 and spring of 1999, the Georgia Poultry Laboratory Network, along with the Poultry Diagnostic and Research Center were presented with several cases of broiler respiratory disease coming from NE Georgia. They were characterized by respiratory signs in the houses varying from down feverish birds ("silent airsacculitis") to mild to severe respiratory signs. On necropsy, the birds had pneumonia, and in more advanced cases, colisepticemia. The most outstanding consequences of the field problem were increased medication costs and condemnations. Most broilers in the area were vaccinated twice against IBV and NDV, using B1, Massachusetts and Arkansas IBV serotypes.

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The ages for the vaccination were 1 day and 14-18 days.

The broilers, as most birds in the state, seroconverted to infectious bronchitis by processing age. The HI test, performed at the University of Georgia for all cases, showed that the titers were highest to Ark and Del 072 viruses for many of the problem flocks.

Virus isolation results of acutely sick birds revealed mostly Ark type viruses, along with its Ark like “cousins”. Delaware 072 virus has been isolated on occasion also.

Fig. 1 shows the most relevant laboratory findings for random submissions made by Company A to the Laboratory from 15 farms. Fifteen birds were submitted at 4 weeks, and fifteen at 6 weeks (close to processing age). The birds were not necessarily taken from sick birds: they were from randomly picked farms.

At 4 weeks of age, most of the groups had at least one bird with purulent airsacculitis (60%). At that age, virus isolation revealed Newcastle and/or Ark DPI viruses. The antigen capture ELISA test on bursae was positive for classic type virus in 50% of the groups of birds submitted. At processing age, Delaware 072 virus was isolated in only one of the cases. The titer percentages shown are the cases with significant seroconversion (KPL ELISA: NDV >1500, IBV > 3000, IBD > 5000, RED > 2000 and AE > 4000). In this study, most flocks (75%) seroconverted to ARK virus more than to other serotypes (HI test).

Broiler Performance Data (Company)

<table>
<thead>
<tr>
<th>Live Production Cost</th>
<th>Average Co.</th>
<th>Top 25%</th>
<th>Top 5 Cos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed cost/ton w/o color ($)</td>
<td>123.64</td>
<td>117.45</td>
<td>115.22</td>
</tr>
<tr>
<td>Feed cost/lb meat (¢)</td>
<td>11.81</td>
<td>10.88</td>
<td>10.91</td>
</tr>
<tr>
<td>Days to 4.6 lbs</td>
<td>45</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>Med. cost/ton (¢)</td>
<td>2.75</td>
<td>2.13</td>
<td>2.16</td>
</tr>
<tr>
<td>Chick cost/lb (¢)</td>
<td>3.79</td>
<td>3.77</td>
<td>3.32</td>
</tr>
<tr>
<td>Vac-Med cost/lb (¢)</td>
<td>0.07</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>WB &amp; 1/2 parts condemn. cost/lb</td>
<td>0.24</td>
<td>0.16</td>
<td>0.16</td>
</tr>
<tr>
<td>% mortality</td>
<td>4.24</td>
<td>3.35</td>
<td>3.55</td>
</tr>
<tr>
<td>Sq. Ft. @ placement</td>
<td>0.80</td>
<td>0.79</td>
<td>0.74</td>
</tr>
<tr>
<td>Lbs./Sq. Ft.</td>
<td>6.49</td>
<td>6.08</td>
<td>7.08</td>
</tr>
<tr>
<td>Down time (days)</td>
<td>14</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

Data for week ending 10/23/99

Broiler Whole Bird Condemnation (Region)

<table>
<thead>
<tr>
<th>% Septox</th>
<th>SW</th>
<th>Mid-West</th>
<th>S. East</th>
<th>Mid-Atlantic</th>
<th>S. Central</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.279</td>
<td>0.389</td>
<td>0.220</td>
<td>0.326</td>
<td>0.234</td>
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<tr>
<td>0.082</td>
<td>0.086</td>
<td>0.241</td>
<td>0.106</td>
<td>0.244</td>
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</tr>
<tr>
<td>0.058</td>
<td>0.115</td>
<td>0.216</td>
<td>0.101</td>
<td>0.147</td>
<td></td>
</tr>
<tr>
<td>0.005</td>
<td>0.005</td>
<td>0.008</td>
<td>0.014</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>0.009</td>
<td>0.008</td>
<td>0.018</td>
<td>0.012</td>
<td>0.013</td>
<td></td>
</tr>
<tr>
<td>0.015</td>
<td>0.008</td>
<td>0.018</td>
<td>0.012</td>
<td>0.018</td>
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</tr>
<tr>
<td>0.446</td>
<td>0.611</td>
<td>0.722</td>
<td>0.571</td>
<td>0.661</td>
<td></td>
</tr>
<tr>
<td>0.400</td>
<td>0.362</td>
<td>0.353</td>
<td>0.297</td>
<td>0.386</td>
<td></td>
</tr>
</tbody>
</table>

Data for week ending 10/23/99
In another short study, ten (10) to fifteen (15) groups of broiler flock serum were collected at processing age from 2 companies that were not as severely affected by the respiratory disease syndrome (C small birds and D large birds) as the two others (A and B). Companies C and D farms are intermingled with those of Companies A and B. We found that the HI titers were highest for Del 072 virus in the small birds and highest for Arkansas serotype in the large birds (FIG. 2). Are we dealing with dual infections, one earlier in the life of the birds (3-4 week range), and the second later (6-7 week range)? This could suggest that the virus actually causing late problems would be the one infecting the birds shortly before processing. The virus to which the birds have had time to seroconvert (processing age titers) may not be the main culprit.

Fig. 3 shows that the most frequently isolated viruses are Newcastle and ARK IBV, possibly all of vaccine origin. This represents more NDV isolations than in previous years.

Two sentinel bird studies were carried out at Company B, probably the company experiencing the most broiler respiratory problems during this period of time. In the first trial, the 3 week old SPF sentinels were vaccinated with B1, Ark and Delaware 072 and kept in isolation for 2 weeks before being placed in the field for one week with 3-5 week old broilers. The virus recovered from these groups were a collection of different serotypes (Mass, ARK DPI, ARK LIKE, 95 VAR), making it impossible to draw a useful trend from the trial.
Findings in Broiler Respiratory Disease in North East Georgia

*Continued from page 2*

For the second placement, the SPF birds were vaccinated with B1 and Ark vaccines only. The results from this trial revealed that in at least 50% of the groups placed (4/8), an ARK like virus (4257) was isolated from the sentinels. The 4257 virus is very close to Ark as evidenced by genome analysis and virus neutralization tests. Are we recovering vaccine virus, or is it that the field challenge is such that protected SPF chickens are overwhelmed in the field and successfully infected?

Several questions are emerging:

We do not know what role, if any, Avian Encephalomyelitis Virus (A.E.) is playing in the disease syndrome. Although no clinical signs of AE are observed, the seroconversion of the broilers, especially for the companies severely affected by the respiratory problems, is impressive. Enteroviruses are ubiquitous... are these results relevant? This is currently under investigation.

We have recently isolated reovirus from the respiratory tract of sick birds. We do not know what role, if any, reovirus is playing in this syndrome, or if these isolations represent incidental findings.

We feel that immunosuppression is probably a large part of this, and we have isolated IBD viruses that seem to be able to infect birds with high levels of maternal antibodies. This aspect of the problem is also under investigation. Immunosuppression would explain the possible failure of the birds to quickly eliminate vaccine viruses from the respiratory system 2-3 weeks after vaccination. The most severely affected companies have had to place birds on built up litter after short down times (less than 14 days). There does not seem to be a relationship between J virus infected flocks and this problem.

Because there was some evidence of the presence of Delaware 072 virus through this winter and spring season, two companies tried the vaccine on a limited basis and found it only marginally efficacious in reducing the number of sick flocks, the condemnations rates, or the medication costs.

### Broiler Whole Bird Condemnation (Company)

<table>
<thead>
<tr>
<th></th>
<th>Average Co.</th>
<th>Top 25%</th>
<th>Top 5 Co.'s</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Septox</td>
<td>0.291</td>
<td>0.239</td>
<td>0.269</td>
</tr>
<tr>
<td>% Airsac</td>
<td>0.152</td>
<td>0.066</td>
<td>0.040</td>
</tr>
<tr>
<td>% I.P.</td>
<td>0.116</td>
<td>0.055</td>
<td>0.102</td>
</tr>
<tr>
<td>% Leukosis</td>
<td>0.008</td>
<td>0.004</td>
<td>0.005</td>
</tr>
<tr>
<td>% Bruise</td>
<td>0.013</td>
<td>0.012</td>
<td>0.020</td>
</tr>
<tr>
<td>% Other</td>
<td>0.019</td>
<td>0.006</td>
<td>0.006</td>
</tr>
<tr>
<td>% Total</td>
<td>0.600</td>
<td>0.382</td>
<td>0.442</td>
</tr>
<tr>
<td>% 1/2 parts condemnations</td>
<td>0.359</td>
<td>0.254</td>
<td>0.201</td>
</tr>
</tbody>
</table>

Data for week ending 10/23/99
New Millennium Update on Eradication and Diagnosis of ALV-J

Dr. Robert Owen of Hubbard Farms reported that progress continues to be made with the reduction/eradication of Avian Leukosis Virus — Subgroup J (ALV-J). Millions of dollars have been spent to accomplish this and the work is beginning to pay off. Comparing flocks placed in 1998 to 1999, improvement can be seen in fourteen-day mortality, cumulative pullet mortality, and productivity.

One of the limiting factors in the reduction/eradication effort is the lack of a single reliable, rapid, cost-effective test to accurately diagnose birds carrying the virus. However, advances in testing continue to be realized. Previously, direct ELISA and virus isolation were the only two screening methods available for large scale testing. With the addition of Polymerase Chain Reaction (PCR) and antibody testing in the last two years, more tools are now available to assist in the eradication effort. No single method is 100% accurate therefore, multiple tests on multiple occasions must continue to be implemented to further the reduction/eradication of ALV-J.

If the poultry industry is to continue the success it has experienced in the past, we must continue to strive for improvements in biosecurity, bird husbandry, and control of immunosuppressive diseases to reduce the probability of disease development and meet the inevitable challenges that will face our industry in the years to come.

Summary by:
William A. Stanley, DVM
Master of Avian Medicine student
The University of Georgia

Mark Your Calendar
and Plan to Attend

The International Poultry Scientific Forum
Sponsored by the
Southern Poultry Science Society
and
The Southern Conference on Avian Diseases

will be held January 17 and 18, 2000
in the Georgia World Congress Center,
Atlanta, Georgia

The meetings are held the two days
before the International Poultry Exposition at the
Georgia World Congress Center.
According to the most recent National Agricultural Statistics Service (NASS) reports, commercial hatcheries in the 15-State weekly program set incubators 164 million eggs during the week ending October 16, 1999. This was down 2 percent from the eggs set the corresponding week a year earlier. Average hatchability for chicks hatched during the week was 81 percent. Average hatchability is calculated by dividing chicks hatched during the week by eggs set three weeks earlier.

Broiler growers in the 15-State weekly program placed 132 million chicks for meat production during the week ending October 16, 1999. Placements were up 1 percent from the comparable week in 1998. Cumulative placements from January 3, 1999, through October 16, 1999, were 5.88 billion, up 3 percent from the same period a year earlier.

July egg production totaled 6.85 billion during September 1999, up 6 percent from the 6.48 billion produced in 1998. Production included 5.79 billion table eggs and 1.06 billion hatching eggs, of which 999 million were broiler-type and 61.0 million were egg-type. The total number of layers during September 1999 averaged 322 million, up 4 percent from the total average number of layers during September 1998. September egg production per 100 layers was 2,126 eggs, up 2 percent from 2,082 eggs in September 1998.

Broiler hatch up 1 percent

Broiler growers in the 15-State weekly program placed 132 million chicks for meat production during the week ending October 16, 1999. Placements were up 1 percent from the comparable week in 1998. Cumulative placements from January 3, 1999, through October 16, 1999, were 5.88 billion, up 3 percent from the same period a year earlier.

September Egg Production Up 6 Percent

U.S. egg production totaled 6.85 billion during September 1999, up 6 percent from the 6.48 billion produced in 1998. Production included 5.79 billion table eggs and 1.06 billion hatching eggs, of which 999 million were broiler-type and 61.0 million were egg-type. The total number of layers during September 1999 averaged 322 million, up 4 percent from the total average number of layers during September 1998. September egg production per 100 layers was 2,126 eggs, up 2 percent from 2,082 eggs in September 1998.

All layers in the U.S. on October 1, 1999, totaled 323 million, up 3 percent from a year ago. The 323 million layers consisted of 265 million layers producing table or commercial type eggs, 55.3 million layers producing broiler-type hatching eggs, and 2.7 million layers producing egg-type hatching eggs. Rate of lay per day on October 1, 1999, averaged 70.2 eggs per 100 layers, up 1 percent from the 69.3 a year ago.

Laying flocks in the 30 major egg producing states produced 6.44 billion eggs during September, up 5 percent from September 1998. The average number of layers during September, at 303 million was up 3 percent from a year earlier.

Egg-Type Chicks Hatched Up 2 Percent

Egg-type chicks hatched during September totaled 38.8 million, up 2 percent from September 1998. Eggs in incubators totaled 35.3 million on October 1, 1999, up 10 percent from a year ago.

Domestic placements of egg-type pullet chicks for future hatchery supply flocks by leading breeders totaled 227,000 during September 1999, down 30 percent from September 1998.

Broiler Hatch Up 1 Percent

The September 1999 hatch of broiler-type chicks, at 700 million, was up 1 percent from September of the previous year. There were 587 million eggs in incubators on October 1, 1999, up 1 percent from a year earlier.

Leading breeders placed 6.87 million broiler-type chicks for future domestic hatchery supply flocks during September 1999, down 6 percent from September 1998.

Turkey Eggs in Incubators on October 1 Up 1 Percent From Last Year

Turkey eggs in incubators on October 1, 1999, in the United States totaled 28.3 million, up 1 percent from October 1 a year ago. Eggs in incubators were down slightly from the September 1 total of 28.4 million. Regional changes from the previous year were: East North Central, down 5 percent; West North Central, up 10 percent; North and South Atlantic, down 4 percent; South Central, unchanged; and West, down 2 percent.

Poults Placed During September Up 3 Percent

The 21.8 million poults placed during September 1999 in the United States were up 3 percent from the number placed during the same month a year ago. Placements were down 12 percent from the August total of 24.8 million. Regional changes from the previous year were: East North Central, down 4 percent; West North Central, up 7 percent; North and South Atlantic, up 3 percent; South Central, unchanged; and West, up 7 percent.
Meetings, Seminars and Conventions

1999

November

Nov. 7-10: Expoaviga, International Poultry & Livestock Technology Show, Montjuic Trade Fair Center, Fira de Barcelona, Spain. Contact: F. Xavier Castells, Manager, Expoaviga, Avda. Reina Mo. Christina, s/n 08004, Barcelona, Spain. Fax: +34 93 2332802

Nov. 9-10: Carolina Poultry Nutrition Conference and Soya Symposium, Sheraton Imperial Hotel, Research Triangle Park, N.C. Details from Mr. Owen Robertson, 2116 Northshoreline Drive, Sanford, NC 27330. Phone: (919) 776-3054.


Nov. 16-17: Alabama Breeder/Hatchery Workshop, Auburn University Hotel & Conference Center, Auburn, AL. Details from Alabama Poultry & Egg Association, P.O. Box 240, Montgomery, AL 36101-0240. Phone: (334) 265-2732; Fax: (334) 265-0008.

Nov. 24-27: International Conference on Sustainable Animal Production, Health & Environment, CCS Haryana Agricultural University, Hisar, India. Contact: Prof. Dr. R.A. Singh, College of Animal Sciences, CCS Haryana, Agricultural University, Hisar 125004, India. Fax: +91 1662 34952

Nov. 28-December 1: EUROTIER International Exhibition for Livestock & Poultry Production, Hannover, Germany. Contact: Daniel M. Koning, DLG, Eschborner Landstrasse 122, D-60489 Frankfurt, Germany. Fax: +49 69 24788-113

December

Dec. 9-10: Risk Assessment Wkshp., DoubleTree Hotel, Rockville, Md. Contact: U.S. Food & Drug Administration, Center for Veterinary Medicine, Office of Management and Communications, HFV-12, 7500 Standish Place, Rockville, Md. 20855.

1999

Ph: 301-594-1755.

2000

January

Jan. 6-8: National Turkey Federation Annual Convention, Hilton Walt Disney World Hotel, Orlando, FL. Contact NTF at (202) 898-0100.

Jan. 16-21: Feed Tour 2000 — Watt USA Feed Tour 2000, visiting top feed mills in southeastern states plus IPE 2000 in Atlanta, Georgia USA. Contact: Cindy Ditzler, Feed Tour 2000, 122 South Wesley Ave., Mt. Morris, IL 61054-1497, USA. Fax: +1 815-734-4201; e-mail: wattfeedtour@hotmail.com; website: www.wattnet.com

Jan. 17-18: Southern Poultry Science Society Annual Meeting, Atlanta, Georgia. Contact: Dr. Gene Pesti, Department of Poultry Science, Livestock and Poultry Building, University of Georgia, Athens, GA 30602 USA. Phone: +1 706-542-1321; Fax: +1 706-542-1827.

Jan. 19-21: 2000 International Poultry Exposition, Georgia World Congress Centre, Atlanta, Georgia, USA. Contact: US Poultry & Egg Association, 1530 Cooledale Road, Tucker, Georgia 30084, USA. Fax: +1 770 493-9257

February


Feb. 22-23: Antimicrobial Resistance Wkshp., DoubleTree Hotel, Rockville, Md. Contact: U.S. Food & Drug Administration, Center for Veterinary Medicine, Office of Management and Communications, HFV-12, 7500 Standish Place, Rockville, Md. 20855. Phone: 301-594-1755.


March

March 5-7: 49th Western Poultry Disease Conference, Capitol Plaza Holiday Inn, Sacramento, CA. Contact: Lina Laykietz at 530-757-3331; e-mail: events@ucdavis.edu.

Web site: conferences.ucdavis.edu


March 15-16: 29th Annual Midwest Poultry Federation Convention, RiverCentre, St. Paul, MN. Contact: Laura Ginsburg at 651-646-4553; Fax: 651-646-4554.

March 29-30: Nebraska Poultry Industries Annual Convention, New World Inn, Highway 30 and 81 South, Columbus, NE. Contact: Nebraska Poultry Industries, Inc., A103 Animal Sciences, University of Nebraska, PO. Box 830908, Lincoln, NE 68583-0908. Phone: 403-472-2051.

April


May

May 4-5: National Breeders Roundtable, St. Louis, Mo. Contact: U.S. Poultry & Egg Assoc., 1530 Coolealde Road, Tucker, GA 30094. Phone: 770-493-9401.