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Pullorum Disease Control and Eradication

H. Van Roekel, D.V.M., Ph.D.

Pullorum disease is recognized as a major disease entity among poultry in this country. Since the discovery of the etiologic agent in 1899, our knowledge concerning the nature of the disease has increased greatly through scientific investigation. These scientific findings have formed a basis for the formulation and application of an effective control and eradication program.

Flock testing results and chick mortality records reveal that pullorum infection has been reduced appreciably during the past 20 years. However, all states have not made similar progress in reducing or eliminating pullorum disease from their flocks. In part this may be attributed to the fact that in some states a concerted organized effort to eliminate the disease has not been undertaken.

Pullorum disease is an infectious disease which will respond to effective control and eradication methods. Some of the salient features of the disease and their relationship to control and eradication will be discussed in this paper.

Transmission of the disease. Dissemination of Salmonella pullorum may occur through several avenues. Egg transmission of the organism appears to be the most common means of spread of the disease. This fact is not appreciated fully by some flock owners, hatcherymen, and even control agencies engaged in pullorum testing. Acute pullorum disease outbreaks in chick flocks have been traced to a single infected reactor in a breeding flock. Likewise, an acute outbreak of the disease in a pullet flock, which has just started to lay, may be traced to a single infected bird which lays infected eggs that are eaten by its pen mates.

The purchase of infected started chicks and semi or mature stock is frequently responsible for the introduction of infection onto a premise or into a flock. One should recognize that an inapparent infection may exist in chickens of all ages. In some instances inapparent infections have been responsible for rapid spread of the disease among clean flocks on the same premises. Acute outbreaks of the disease have resulted in pullorum clean flocks through the purchase of infected stock.

Contaminated incubators in hatcheries are a source of pullorum infection. Hatcheries selecting hatching eggs from infected flocks cannot be considered safe for the production of pullorum free chicks regardless of the hatchery sanitation program which may be instituted. Contaminated chick boxes and brooders are a source of infection for pullorum clean chicks. Equipment and supplies, sold by hatcherymen, may be contaminated if the infection prevails in the hatchery. Flock owners should not buy equipment, supplies, or feed from hatcherymen or dealers who sell pullorum infected stock.

*Editor's note: Dr. Van Roekel is an eminent poultry authority. He received his D.V.M. degree from Iowa State College in 1925. He presently is with the Department of Veterinary Science, Massachusetts Agricultural Experiment Station.
Testing of flocks: Pullorum infection can be eradicated from flocks through short interval testing with the agglutination test and by the application of effective sanitary procedures. Eradication of the disease is more difficult in heavily infected flocks, although in some instances a low level of infection may require several retests before complete eradication is obtained.

The objective of pullorum testing should be to completely remove all infection from the flock. If the value of the flock or the amount of infection do not warrant the expenditure of money for an intensive testing program, the flock should be replaced with stock from a pullorum clean flock. In some sections of this country greater recognition is given to flocks with an infection tolerance of less than 2 percent than to flocks without infection. It should be emphasized that complete eradication of the disease within a flock has not been attained until all infected birds have been detected and removed from the premises. Furthermore, the flock should pass at least three consecutive negative tests 30 days apart before it may be considered eligible for the pullorum clean grade. However, a flock which passes two consecutive negative tests, not less than six months nor more than one year apart, may be considered free of pullorum disease with a greater degree of certainty.

Once a nucleus of pullorum clean flocks has been established, infected flocks can be replaced with stock from the clean flocks. In the New England States the majority of clean flocks were established through such a procedure. The following summary gives data which show the progress which has been made during the past thirty-year period:

It is clearly evident that marked progress has been made in eradicating pullorum disease from Massachusetts flocks. Similar progress has been made in other New England States. No pullorum reactors have been detected in the State of Vermont during the past two years. These results show that pullorum clean flocks can be established and maintained through effective measures.

Once a flock is free of pullorum disease it can be re-infected. Through an effective educational program, sponsored by the different agencies concerned with poultry production, pullorum disease can be eradicated from flocks.

<table>
<thead>
<tr>
<th>Season</th>
<th>Flocks</th>
<th>Birds</th>
<th>Total Tests</th>
<th>Pos. Tests Percent</th>
<th>Non-reacting Flocks</th>
<th>Birds in Non-reacting Flocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920-21</td>
<td>108</td>
<td>24,718</td>
<td>24,718</td>
<td>12.50</td>
<td>25</td>
<td>2,414</td>
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<tr>
<td>1929-30</td>
<td>460</td>
<td>331,314</td>
<td>386,098</td>
<td>2.17</td>
<td>309</td>
<td>203,038</td>
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<tr>
<td>1939-40</td>
<td>346</td>
<td>573,000</td>
<td>673,222</td>
<td>0.51</td>
<td>332</td>
<td>497,356</td>
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<tr>
<td>1949-50</td>
<td>475</td>
<td>1,360,865</td>
<td>1,444,364</td>
<td>0.06</td>
<td>465</td>
<td>1,344,860</td>
</tr>
</tbody>
</table>

Poultry Inspection

The Dressed Poultry Inspection Service of the United States Department of Agriculture is in need of qualified, graduate veterinarians to fill vacancies in its force. Due to increased interest in the evisceration of poultry under federal inspection, openings are available in various sections of the country. Entrance salary is $3,825.00 per annum based upon a 40 hour, 5 day work week.

The exceptional scenting power of Bloodhounds has recently been put to new use in detection of gas leaks in underground mains.

Cats differ from dogs in disposition in that they either like all people or none. They do not hold a grudge for abuse or injury, but forgive and forget in a few minutes.

Iowa State College Veterinarian