

# POULTRY SCIENCE AND TECHNOLOGY **GUIDE**

from North Carolina State University at Raleigh / Extension Poultry Science

## MYCOPLASMA GALLISEPTICUM (M.G.)

*Mycoplasma gallisepticum* (M.G.), one of the so-called pleuropneumonia like organisms (PPLO), causes disease in poultry. It kills chicks and poults and results in poor feed conversion, high condemnations, lowered egg production, and high drug costs. Economic losses can be severe in infected flocks; therefore, the ultimate goal of the poultry industry should be to eradicate this Mycoplasma from poultry.

### What is Mycoplasma?

Mycoplasma is a scientific generic name for a group of microscopic organisms smaller than common bacteria but larger than viruses. There are species that may infect man (*Mycoplasma pneumoniae*), livestock (*Mycoplasma hyorhinis*), and poultry (*Mycoplasma gallisepticum*). The disease organism has an extremely thin cell wall and is easily killed outside its host by commonly used disinfectants.

The S6 strain of M.G. causes chronic respiratory disease in chickens and infectious sinusitis in turkeys.

### Course of the Disease

Experimentally produced infections of M.G. under controlled conditions indicate that birds may show signs of the disease from one to several weeks after becoming infected. This depends on (1) virulence of the strain, (2) the amount of organism present, and (3) route of exposure.

The spread of the disease within a naturally infected flock may vary from a few days to several weeks, depending upon management factors such as space per bird, low or fluctuating temperatures, other diseases, and air circulation in the house.

Infections may spread through a flock without noticeable clinical signs of the disease unless other diseases, particularly of a respiratory nature, occur which markedly increase the signs such as snicking, rattling, and labored breathing.

Servicemen often see the signs develop in one area and gradually move to other areas of the house.

### How M.G. Spreads

Although it has never been demonstrated scientifically, it is logical that M.G. can be transmitted in an incubator; therefore: (1) hatching M.G. infected eggs along with non-infected eggs should not be done, and (2) mixing chicks from different age supply flocks with unknown history should be avoided.

Other ways M.G. can spread include:

1. Contact with contaminated equipment such as used chick boxes, crates, feed bags, and bulk feed trucks.
2. People such as servicemen, truck drivers, vaccinating crews, and others can bring in the infection.
3. Home flock of older birds that are carriers.
4. Wild birds are possible sources of infection. Trapped starlings have shown antibodies denoting they have been exposed to the infection.

### Factors that Complicate or Aggravate Mycoplasma Gallisepticum Infection

1. Vaccinations against Newcastle disease and Infectious Bronchitis cause a reaction in the bird during the process of developing immunity. This reaction can "trigger" or increase the spread and severity of *Mycoplasma gallisepticum* infection.

2. The respiratory and intestinal tract of normal birds have a certain number of Coliform organisms (*E. coli*) present. The litter has large numbers. Research at Wisconsin has shown 100,000 Coliform bacteria per cubic foot of air in chicken houses. Other research in England has found Coliforms to remain in dry dust in chicken houses for at least 32 weeks.

Coliforms have been found in fish meal, meat scraps, and alfalfa meal. Fortunately, when the feed is pelleted the heat destroys the organisms.

These bacteria as complicating agents are the pus formers that cause the severe infections of the heart, liver, and air sacs.

It has been demonstrated that the active phase of *E. coli* infection lasts for only 4 to 6 days. This, and finding pericarditis 12 hours after infection, suggests that effective drugs would have to be given early in the course of the disease in order to be beneficial. The presence of M.G. makes the birds more susceptible to *E. coli*.

3. Extreme or widely varying housing conditions can predispose or contribute to the severity of the disease.

Overcrowding, chilling, poor ventilation, ammonia fumes, stale dusty air, and other management factors aggravate M.G. infection.

### **Diagnostic Tests for Mycoplasma Gallisepticum**

If M. G. is present or has been present in poultry, the defense system of the body produces immune substances or antibodies in the blood. These antibodies will agglutinate or clump a preparation (antigen) containing the organism.

There are three agglutination tests that are useful in determining whether the infection with M.G. is present or has taken place. These are the whole blood plate, serum plate, and tube agglutination tests.

The serum plate test employing a standardized antigen is the most commonly used. This test detects antibodies, which means the birds have been exposed to the organism at some time.

### **Eradicating Mycoplasma Gallisepticum from an Infected Poultry House**

The first step when eradicating M.G. from a poultry house is to dispose of all fowl on the premises.

Next wash down the building with a disinfectant and let stand for 5-7 days. Then remove the litter to the ground and clean up all dust and debris. Finally, wash down the building with disinfectant and take rodent and fly control measures. Chicks and poults can be placed back in the houses in 14 days.

### **Producing Negative Off-Spring from M.G. Positive Parents**

Almost all commercial primary breeders have stock available that is M.G. clean, but much interest has been shown by exhibit bird breeders and owners of other valuable genetic stock in producing M.G. negative off-spring. The following are steps in accomplishing negative off-spring:

1. Administer various antibiotics to breeder birds at certain intervals to decrease chances of egg transmission of the organism.

2. The hatching eggs should be dipped in antibiotic solutions which again decrease chances of egg transmission.

3. Eggs must be hatched in an incubator which does not allow contamination from other M.G. positive chicks.

4. Chicks are kept in isolated facility and tested to assure M.G. clean status.

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