



# pork industry handbook

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## Mycoplasmal Diseases of Swine

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Swine producers are often confused by the complexity of the mycoplasmal infections. This fact sheet is an attempt to clarify the information currently available about these swine diseases. There are three recognized *Mycoplasma* spp. of bacteria that cause disease in pigs, *Mycoplasma hyopneumoniae*, *Mycoplasma hyorhinis*, and *Mycoplasma hyosynoviae*.

### Mycoplasmal Pneumonia

Mycoplasmal pneumonia (in the U.S.) or porcine enzootic pneumonia (England and other countries) is caused by *Mycoplasma hyopneumoniae*. Another synonym for this disease is swine enzootic pneumonia (SEP). Twenty years ago this disease was called virus pneumonia of pigs (VPP); since that time a mycoplasma, not a virus, was discovered as the cause.

Mycoplasmal pneumonia affects pigs of all ages, but it is generally not observed until pigs are at least 6 weeks of age. An estimated 90% or more of the swine herds in the midwestern United States are infected with mycoplasmal pneumonia.

Mycoplasmal pneumonia is a chronic disease. A high percentage of the pigs are affected, but the death loss is low. Pigs may show first signs of the disease as early as 3 weeks of age but more commonly at 6 to 10 weeks. The incubation period is 10 days or more after exposure to carrier swine. The pigs have a dry, nonproductive cough that is most noticeable after exercise. Pigs may cough for only 1-3 weeks, or the coughing may persist indefinitely. Other conditions such as influenza, *Bordetella* pneumonia, *Pasteurella* pneumonia, and lungworms also cause pigs to cough and should be considered in making a differential diagnosis. Coughing is never observed in some pigs affected by mycoplasmal pneumonia.

In general, pigs with mycoplasmal pneumonia continue to eat reasonably well, but some do not grow at a

normal rate if lesions (Fig. 1) are extensive or secondary bacterial pneumonias occur. Severe pneumonia also results when mycoplasmal pneumonia is complicated by large numbers of ascarid (roundworm) larvae passing through the lungs. Pigs are also more severely affected when lungworms are present. Growth retardation because of mycoplasmal pneumonia is variable. Generally, the more severe the lesions the greater the effect.

Transmission of *M. hyopneumoniae* occurs mainly from carrier sows or from older pigs. Evidence indicates that most young pigs do not become infected prior to 5 to 6 weeks of age. Spread of the infection is generally rather slow. By the time the pigs are 12 to 18 weeks of age, a high proportion are often infected. Prevalence of infection declines with age so that only about 10% of 2 year old swine are carriers. Direct contact with carrier swine is the major source of infection in most outbreaks.

Infections with other bacteria or parasites increase the severity of mycoplasmal pneumonia. Poor environment, especially inappropriate ventilation, and continuous production are also major contributing factors in severity of mycoplasmal pneumonia. Herds infected with *M. hyopneumoniae* may experience little economic loss when other respiratory infections are controlled and when the environment and management systems are optimal.

Diagnosis of mycoplasmal pneumonia is best achieved by a combination of procedures including clinical observation, postmortem and histological evaluations, and fluorescent antibody examination. Isolation of *M. hyopneumoniae* is occasionally used but is not routinely available. Serological tests such as the complement fixation (CF) or the Enzyme Linked Immuno-Sorbent Assay (ELISA) may be used on a herd basis to support a diagnosis or to screen groups of animals in special situations. Use of the CF and ELISA is limited because each test yields some low level cross reactions or nonspecific reactions.

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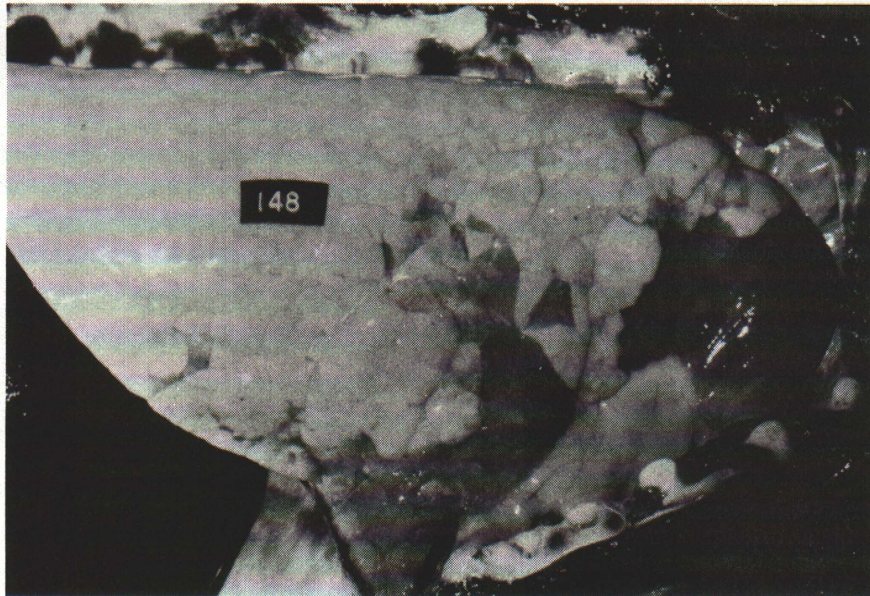
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**Figure 1. Pneumonia (darkened areas) in the anterior-lower part of a pig lung caused by *M. hyopneumoniae*.**

Tetracycline antibiotics have been shown to prevent development of mycoplasmal pneumonia if given to the pigs prior to exposure to the organism. Feeding lincomycin at 200 gm/ton of feed for 21 days has been reported to reduce severity of pneumonia and to improve the average daily gain and feed/gain ratio of pigs with the disease. Other antibiotics and sulfonamides are useful for control of secondary bacterial pneumonias. Adequate nutrition, a warm, dry, dust- and draft-free environment, and an all-in, all-out production system are useful in minimizing the effects of most respiratory diseases of pigs, including mycoplasmal pneumonia. Appropriate ascarid (roundworm) and lungworm control programs should be used. Uncomplicated lesions of mycoplasmal pneumonia may heal within 55-60 days without treatment.

### **Mycoplasma Polyserositis-Arthritis**

A second mycoplasma affecting pigs is *Mycoplasma hyorhinis*. This organism causes arthritis and inflammation of the lining of the chest and abdominal cavity and the membrane which covers the heart. In addition, the membranes around the testicles of male pigs are often affected, especially pigs weighing 15 to 60 lb. The producer may notice lameness and an unthrifty appearance, but no coughing. He may occasionally find a pig that has died suddenly. A veterinarian making a postmortem examination may find typical lesions around the lungs, the heart, or in the abdominal cavity.

There is no satisfactory treatment on an individual basis. Herd treatment with injectable tylosin or lincomycin may be beneficial in the early stages of the disease.

### **Mycoplasma Arthritis**

The third mycoplasma, *Mycoplasma hyosynoviae*, causes arthritis in larger pigs weighing 90-220 lb. This disease seems to affect pastured pigs more often than pigs raised on concrete. In a typical case, a wave of

arthritis goes through the group following a period of stress such as a regrouping of pigs or cold wet weather. Many of the pigs become very lame with swollen hock, elbow, shoulder, or stifle joints.

*Mycoplasma hyosynoviae* often affects new animals such as boars being introduced into an infected herd. New additions to the herd pick up the mycoplasma from apparently healthy carrier animals already in the herd. These animals often carry the organisms in their tonsils for many months with no apparent effects. Swine producers having herds known to be infected are often advised by veterinarians to inject tylosin or lincomycin into new animals being added to the herd to prevent infection and the lameness that follows.

Injectable tylosin or lincomycin given during the first 24 hours of the acute stage and repeated daily for 2-3 days usually gives a satisfactory response. In addition, a single injection of a corticosteroid reduces the pain and inflammation but should be given only one time as repeated injections lower resistance to infections. There is no evidence that feed and water forms of tylosin are well absorbed or that these forms of the drug are effective in treatment of mycoplasma diseases of swine.

### **Summary**

The only method of eliminating mycoplasma infections from a swine herd is through depopulation and restocking with animals known to be free of these diseases. Because the mycoplasma diseases are some of the major disease problems in U.S. swine, much additional research is needed in this area. A high priority should be given to developing reliable control programs for swine mycoplasma diseases.

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