



PNEUMONIA IN SHEEP

RESEARCH UPDATE



Pneumonia in Sheep

COMMON AND COSTLY

Sheep and other ruminants are anatomically predisposed to pneumonia through the rumen pressing on the diaphragm, resulting in shallow breathing.

Pneumonia and pleurisy in sheep are referred to as Ovine Respiratory Complex or ORC for short.

Pathogens commonly involved in ORC include the bacteria *Mycoplasma ovipneumoniae*, *Mannheimia haemolytica* and *Pasteurella multocida*, and two viruses, Parainfluenza-3 Virus and Respiratory Syncytial Virus.

In Australia, ORC is often called Summer Pneumonia. Marking, weaning, hot dry weather, raised dust, summer storms, the first shearing and grain feeding can be stressful for lambs, contributing to outbreaks of the disease.

KEY POINTS

- PNEUMONIA IS COMMON IN AUSTRALIAN SHEEP.
- THE ABATTOIR SURVEY OF SHEEP PNEUMONIA PATHOGENS IS NOW COMPLETE.
- THE ABATTOIR SURVEY HAS REVEALED WIDESPREAD INFECTION WITH *MYCOPLASMA OVIPNEUMONIAE* IN AUSTRALIAN SHEEP.



Abattoir Survey

The abattoir survey of ORC pathogens funded by Animal Health Australia and Meat & Livestock Australia is now complete.

Twenty-four abattoir visits were completed between October 2020 and December 2021, with 1095 samples collected from diseased ovine lungs. The samples represented 253 abattoir lots, including 182 lots of lambs and 71 lots of adult sheep.

Sample collection and polymerase chain reaction (PCR) testing confirmed the findings of my previous research on ORC in Australian sheep, with widespread detection of *Mycoplasma ovipneumoniae* in lungs from lamb and sheep carcasses sourced from around Australia.

Mycoplasma ovipneumoniae was detected in sampled lots at each abattoir visit (range 28.6% – 100% of sampled abattoir lots). Across all the abattoir visits, 64.4% of sampled abattoir lots tested positive for *Mycoplasma ovipneumoniae*.

Abattoir lots positive for *Mycoplasma ovipneumoniae* came from New South Wales, Queensland, South Australia, Tasmania, Victoria, and Western Australia. No sheep from the Australian Capital Territory were sampled as part of the survey.



PCR testing for ORC pathogens is cost-effective & fast!

Mycoplasma ovipneumoniae

Mycoplasma ovipneumoniae was first isolated from two large sheep flocks in southern Queensland in the 1960s that had shown poor growth rates and reduced exercise tolerance for some years.

Mycoplasmas are a type of bacteria. Infection with *Mycoplasma ovipneumoniae* predisposes sheep to secondary lung infection with other bacteria such as *Mannheimia haemolytica* and *Pasteurella multocida* that normally live in the nose and throat of sheep without causing any harm. Once in the lung these bacteria grow and secrete toxins that cause inflammation and lung tissue destruction.

All breeds of sheep are susceptible to infection with *Mycoplasma ovipneumoniae*. Infection persists in a flock in chronic carrier ewes and rams, with infection passing from ewes to lambs soon after birth. Ewes shed the bacteria from their nose and throat, as well as in their milk.

Infected ewes and rams may show no outward signs of infection, or may be coughing, wheezing, have runny eyes, breathe heavily after exertion or simply be found dead.

Lambs may begin showing signs of infection (wheezing, coughing, runny nose, runny eyes, difficulty suckling) from one to two months of age. Some lambs may develop swelling of the carpal (knee) joints.

Sheep Respiratory Viruses

Infection with *Mycoplasma ovipneumoniae* makes it more difficult for sheep to fight off infection with respiratory viruses.

During the abattoir survey of ORC pathogens small numbers of abattoir lots (less than 5%) tested positive for Ovine Parainfluenza-3 Virus or Ovine Respiratory Syncytial Virus.

Abattoir lots positive for Ovine Parainfluenza-3 Virus came from New South Wales, Tasmania and Western Australia.

Ovine Respiratory Syncytial Virus positive lots came from New South Wales, South Australia and Western Australia.

Parainfluenza-3 Virus is one of the most common viral infections of the respiratory tract of domestic ruminants (cattle, sheep, and goats).

Historically it was thought that the bovine strain of Parainfluenza-3 Virus was responsible for infections and disease in sheep and goats. However, new molecular techniques indicate that sheep and goats have their own strains of the virus.

The virus infects calves, lambs and kids when grouped together for any reason, i.e., weaning, husbandry procedures, transport. Transmission is by aerosol droplets or by fomites contaminated with respiratory secretions from infected animals.

Infection spreads rapidly and within a few days many or most animals have fever, clear nasal and ocular discharge, heavy breathing and may be coughing. Usually, infection runs a brief clinical course of three to four days, followed by complete recovery.

Outbreaks can be so mild that no clinical signs are evident.

However, serious disease and pneumonia can occur, particularly if the animals have underlying disease such as chronic respiratory *Mycoplasma* infection, co-infection with other viruses or are stressed due to poor weather, inadequate nutrition, transport, crowding or unhygienic conditions.

Respiratory Syncytial Virus causes lower respiratory tract disease in humans (children and adults) and cattle.

The bovine strain of Respiratory Syncytial Virus causes respiratory disease in cattle worldwide and plays an important role in enzootic pneumonia in young dairy calves and summer pneumonia in nursing beef calves.

Clinical disease from Respiratory Syncytial Virus infection in sheep is not well defined. However, it is quite likely that the disease in lambs' mirrors that in humans and cattle. Further research is needed to understand the role of Ovine Respiratory Syncytial Virus in ORC in Australian sheep.



Pleurisy in Sheep

The pleura is a thin membrane that covers the outside of the lungs and the inside of the chest cavity.

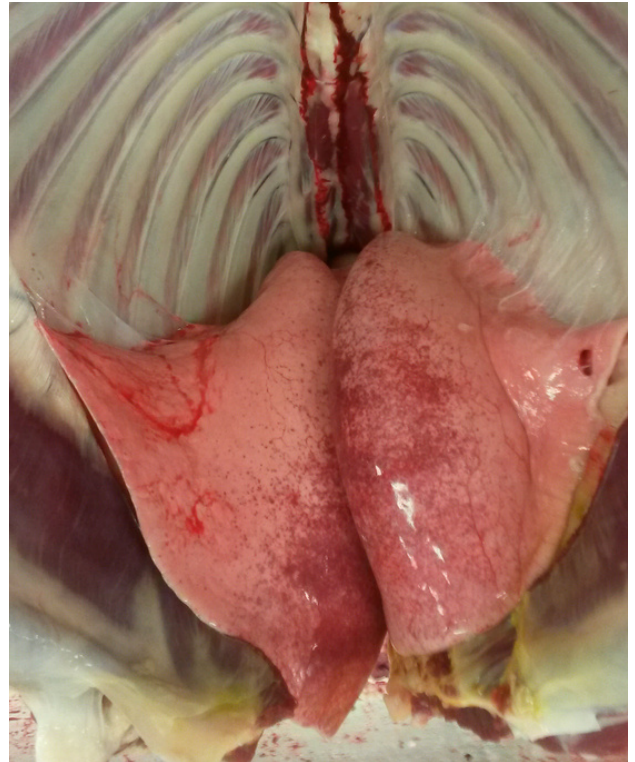
When animals have pneumonia, the pleura can become inflamed. Approximately 20% (1 in 5) sheep that have pneumonia from *Mycoplasma ovipneumoniae* infection will develop pleurisy.

Pleurisy is a problem in sheep processing plants because it makes it difficult to eviscerate the carcase.

My research has shown that trimming for pleurisy results in an average 1 kg per carcase loss to producers.

In addition to lost carcase weight will be the financial penalty to some producers from the trimmed carcase no longer being within specification.

Losses are highly leveraged to the processor as high value cuts and the on-floor costs incurred by the abattoir in handling affected carcases.



**Average 1 kg trim
from pleurisy**

PCR testing for ORC pathogens

In the 1970s researchers in Victoria suggested that nasal swabs could be a useful way to monitor sheep for respiratory pathogens. Today, PCR tests and new sample collection technology makes nasal swab monitoring even more useful.

When detected early, infection with *Mycoplasma ovipneumoniae* can be treated.

I offer Sheep Pneumonia Testing Packages that can be used on nasal swabs from live animals or on bronchial swabs collected at post-mortem.

The Sheep Pneumonia Testing Packages include the PCR tests developed for the abattoir survey and the innovative Genotube Livestock Swab for collecting PCR samples from livestock.

Please get in touch to arrange testing of your sheep.

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