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Controlling sheep meat disorders

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Department of
Agriculture

CONTROLLING SHEEP MEAT DISORDERS





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Arthritis



CAUSE

Nearly all bacteria isolated from infected joints in Western Australian sheep are *Erysipelothrix rhusiopathie*. This bacterium also causes Erysipelas in pigs. Bacteria enter the blood stream through wounds, usually at marking or shearing, and travel to the joints where they cause inflammation.



WHAT IT LOOKS LIKE

Animals with acute arthritis show severe lameness, swollen and hot joint(s), and often loss of condition. Chronic arthritis is seen as lameness but no swelling or heat. Lambs are more commonly affected than older sheep.



COST

Losses due to arthritis include culling of affected animals, poor growth rate, possible death and rejection at saleyards of affected sheep and downgrading or condemnation of carcasses at abattoirs.

The prevalence of arthritis varies between properties. Western Australian abattoirs report an average level of about 1 per cent but some lines have shown up to 27 per cent of lambs affected.



HOW TO PREVENT IT

Don't mules lambs. Groups of mulesed lambs have more than ten times the risk of high arthritis. Avoid shearing lambs if possible. If they must be shorn, then get them out of the shearing shed and yards as soon as possible. Mulesing in portable yards seems to have little effect on decreasing arthritis. Vaccinating lambs or ewes and lambs against Erysipelas may be economic if prevalence of arthritis is high. Consult your veterinarian.

Bladder worm/False hydatid

THE BLADDER WORM IS SO-CALLED, NOT BECAUSE IT IS FOUND IN THE BLADDER OF SHEEP, BUT BECAUSE THE WORM FORMS A FLUID-FILLED CYST THAT LOOKS LIKE A BLADDER WHEN FOUND AT SLAUGHTER. THESE CYSTS ALSO LOOK A LITTLE LIKE HYDATID CYSTS.



CAUSE

The bladder worm, *Cystercercus tenuicollis*, is the larval stage of the dog tapeworm *Taenia hydatigena*. The adult tapeworm lives in the intestines of dogs, foxes and dingoes, and can be up to 50 cm long. Pastures become contaminated with egg-containing segments of the tapeworm – these resemble grains of rice in the dog's faeces.

After grazing animals ingest the segments, released eggs hatch into larval stages of the tapeworm. These burrow through the intestinal wall into the bloodstream and pass to the liver where they form fluid-filled cysts. Occasionally, the worms pass through the liver and lodge in other parts of the body including the lungs. The life cycle of the worm is completed when a dog ingests living cysts from the liver or abdominal cavity of a sheep.



WHAT IT LOOKS LIKE

Generally, infested sheep do not show signs of ill health. In the early stages, heavy infestations may produce serious liver damage and ill health as the parasites burrow through the liver. Some cysts do not develop fully and only result in a small, pale area on the liver. Others degenerate producing small, soft or hard lumps in the liver. Bladder worm cysts, which can measure 5 cm in diameter and are filled with a watery fluid, contain the worm head.

The adult tapeworm causes no harm to the dog, fox or dingo.



COST

Organs containing cysts will be condemned at abattoirs. Production losses are possible if a high proportion of lambs are affected.



HOW TO PREVENT IT

Several measures will prevent sheep becoming infected:

- Treat dogs every two months with an approved tapeworm treatment, such as those which contain the drug praziquantel.
- Do not feed liver, lungs or intestines of sheep to dogs.
- Boil all sheep meat fed to dogs for 40 minutes or freeze for seven days at -10°C .
- Control foxes and dingoes to reduce paddock contamination with worm eggs.
- Burn sheep carcasses as soon after death as possible.

Bruising

A BRUISE IS THE RESULT OF BLEEDING IN THE SKIN OR DEEPER TISSUES, ESPECIALLY IN MUSCLES OF ANIMALS. BRUISES ARE RARELY SEEN IN LIVE SHEEP BUT THEY ARE USUALLY VISIBLE WHEN SHEEP ARE KILLED AND DRESSED.



CAUSE

A bruise develops when blood vessels are ruptured and blood escapes into surrounding tissues. It is usually caused from hitting or being hit by a hard object on the farm during yarding or transport.



COST

In time, most bruises heal without permanent damage to the animal. Carcasses with bruises that have occurred within a few days of slaughter must be trimmed and are often downgraded. These costs are reflected in lower producer returns.



HOW TO PREVENT IT

Prevent bruising by good management and handling of sheep during the few days before slaughter. Likely causes of bruising on the farm are aggressive yard dogs, misuse of goads (sticks, cattle prods or polypipe) and yards or races with protruding bolts or rails. Grabbing sheep by the wool also causes bruising.

If sheep appear to have bruised during transport, consider using a different stock transporter. Use a direct selling system such as on-farm or direct consignment to an abattoir to reduce handling of sheep.

For more information on preparation for slaughter see Farmnote No. 86/96.

Cheesy gland

(caseous lymphadenitis, CLA, yolk or shearer's boils)

ALTHOUGH CHEESY GLAND IS A COMMON DISEASE OF SHEEP IN WESTERN AUSTRALIA, FEW SYMPTOMS OF THE DISEASE ARE SEEN BY FARMERS. OCCASIONALLY, AN ABSCESS MAY BE CUT AT SHEARING OR IS SEEN IN SHEEP KILLED ON THE FARM.



CAUSE

Cheesy gland affects sheep and goats and is caused by the bacterium *Corynebacterium pseudotuberculosis*. The bacteria cause abscesses in the internal organs and lymph nodes.

Cheesy gland spreads after shearing when sheep cough infected material from lung abscesses onto the cut skin of other sheep. It also spreads in dips to sheep with or without shearing cuts.



WHAT IT LOOKS LIKE

Cheesy gland abscesses are most commonly seen in the lymph nodes in the shoulder and flank. Abscesses are also found in the lungs and occasionally in other organs such as the kidneys, liver or testes.



COST

In an average unvaccinated flock 25 to 30 per cent of sheep over two-years-old will have cheesy gland, causing about \$15 to \$20 million in lost wool production in Australia each year. It also causes losses to the Australian sheep meat industry of \$10 million in inspection costs, \$4 million in condemned carcasses and trimming.



HOW TO PREVENT IT

Vaccination is the most effective way to decrease the incidence of cheesy gland. An effective vaccination program starts with two doses given to lambs, ideally six weeks apart. The most convenient way is to give one dose at marking and a second at weaning.

Yearly boosters for mature sheep are essential for protection against cheesy gland. Research has shown that 85 per cent of the spread of the disease occurs following the second and third shearings. Time yearly boosters to provide peak protection at shearing. In general, vaccinate sheep shorn in autumn at the summer drenching. Give spring-shorn sheep a booster when lambs are marked or weaned, or at crutching, depending on the protection against pulpy kidney that needs to be passed from ewes to lambs.

For more detailed information on cheesy gland, see Farmnote No. 30/97 'Cheesy gland in sheep and goats' Agdex 400/653.



Grass seed infestation

GRASS SEED INFESTATION DEVELOPS WHEN GRASS SEEDS LODGE ON THE SHEEP AND PENETRATE THE SKIN, RESULTING IN IRRITATION AND INFECTION.



CAUSE

Barley, corkscrew, spear, silver and wire grasses can cause severe infestations in sheep, especially in lambs and weaners.



WHAT IT LOOKS LIKE

As well as accumulating in the fleece and penetrating the skin, seeds may cause damage to eyes, ears, mouth, nostrils, vulva and the skin between the toes. High density of seeds in the fleece irritates the skin and sheep are reluctant to walk. Skin penetration allows bacteria to enter, particularly after dipping, and this may result in infections of tetanus and arthritis.



COST

Although heavy grass seed infestations may cause sheep deaths, grass seeds more commonly cause losses arising from ill thrift and reduced wool, skin and carcase values. Whether skins are downgraded or carcasses trimmed because of seed in muscle or abscess caused by seed, it can substantially reduce the returns of lambs or adult sheep.



HOW TO PREVENT IT

Control of grass seed infestation requires forward planning. Prepare pastures with low seed numbers, at least for young sheep, by heavy grazing or herbicide use before seed set in spring. Late lambing will also help control this problem because of the greater grazing pressure in September and October. If producers detect grass seeds in the wool of sheep or lambs that will be slaughtered, then they should be shorn to minimise any grass seed penetration.

Hydatid disease

HYDATID DISEASE AFFECTS SHEEP, CATTLE, GOATS, PIGS, KANGAROOS, WALLABIES AND HUMANS, AND PART OF ITS LIFE CYCLE TAKES PLACE IN DOGS, FOXES AND DINGOES. SHEEP ARE THE MOST COMMON SPECIES AFFECTED. THIS DISEASE IS A SERIOUS HUMAN HEALTH RISK IN RURAL COMMUNITIES, ESPECIALLY IN CHILDREN.



CAUSE

Hydatid disease is caused by the tapeworm, *Echinococcus granulosus*, which lives in the small intestines of dogs, foxes and dingoes. The adult tapeworm produces eggs which contaminate pastures through the dog's faeces. Grazing animals may ingest the eggs, which later develop into cysts.



WHAT IT LOOKS LIKE

Infected animals show no external signs of infection. Hydatid cysts are found in the liver, although they can also develop in the lungs. The fluid-filled, bladder-like cysts can grow to the size of a golf ball. The fluid contains many thousands of immature tape worms.



COST

The human health risk is a major concern with this disease because it can cause death if the cysts are not surgically removed. Hydatid cysts also result in rejection of whole carcasses at abattoirs.



HOW TO PREVENT IT

Treat dogs every two months with an approved tape worm treatment. Boil meat and offal fed to dogs for at least 40 minutes or freeze at -10°C for seven days. Commercial heat-sterilised dog foods (canned or biscuits) are safer than meat. Do not let dogs have access to any raw part of a carcass killed on-farm, including kangaroo and feral pig. Tie up or pen dogs when they are not working. Control foxes and dingoes to reduce paddock contamination with tape worm eggs. Burn carcasses as soon after death as possible.

For further information, see Farmnote No. 4/92 'Hydatid disease' Agdex 633.

Kidney damage

(Nephritis)

NEPHRITIS IS A TERM USED TO DESCRIBE INFLAMMATION OF THE KIDNEY,
CAUSING KIDNEY DYSFUNCTION.



CAUSE

Kidney damage can be caused by sheep not having adequate access to water. Nephritis may be caused by bacteria such as leptospira, or by poisonous plants, chemicals, fungal toxins, and oestrogenic clovers.

As well as being associated with liver damage, abortion, still births and lamb deaths, leptospira bacteria occasionally cause nephritis. Cattle and pigs can pass the leptospira bacteria onto sheep through their urine. If leptospira nephritis is suspected, avoid grazing sheep in paddocks where cattle and pigs have had access.

Iceplant, sorrel, dock, doublegee and saltbush often cause nephritis. These plants contain high amounts of oxalate, which binds to calcium and forms crystals in the kidney.

Sheep or lambs, especially wethers, when grazing cereal or lupin stubbles or in feedlots, are prone to developing crystals in the kidney. The crystals can block the passage of urine and lead to kidney damage. Sometimes, when the passage of urine from the bladder is blocked, it can eventually cause the bladder to burst, resulting in death. This condition is referred to as 'water belly'.



WHAT IT LOOKS LIKE

There may be no obvious signs of nephritis in a mob of sheep. Some severely affected animals may develop ill thrift, show a lack of appetite or die suddenly. Water belly, seen as a distended abdomen, may be evident in wethers.



COST

A 2 per cent incidence of nephritis is considered high and the cause should be investigated. Usually, affected kidneys will be condemned but price penalties and carcase condemnation are unlikely. There may be small, but unnoticed production losses in affected animals.



HOW TO PREVENT IT

Investigate the cause of the problem. Introduce sheep gradually to paddocks with plants that contain oxalate. A supply of fresh water is also important.

Provision of a calcium lick can help because the calcium will bind the oxalate in the rumen before it reaches the kidney. Calcium also helps to balance the usual high phosphorus content of cereal grain, thus reducing the incidence of phosphorus crystals.

When sheep graze cereal stubbles a salt lick may encourage them to drink and flush out crystals that may develop. An easily prepared homemade mix is of 40 per cent salt and 60 per cent finely ground limestone.

Pneumonia and Pleurisy

PNEUMONIA AND/OR PLEURISY AFFECT INDIVIDUAL ANIMALS OCCASIONALLY, BUT OUTBREAKS INVOLVING LARGE NUMBERS HAVE OCCURRED IN FEEDLOTS. PNEUMONIA IS AN INFLAMMATION OF THE LUNGS. PLEURISY IS THE MORE SEVERE FORM OF LUNG DISEASE CAUSING INFLAMMATION OF THE MEMBRANES THAT SURROUND THE LUNGS AND LINE THE CHEST CAVITY.



CAUSE

Pneumonia and pleurisy may result from viruses, bacteria, fungi, worms, grass seeds, allergic reactions, injuries and poisons. Most cases develop from organisms that are either breathed into the lungs or that are moving in the blood-stream.

Stress will increase the likelihood of an animal developing pneumonia or pleurisy. Lambs, particularly in feedlots or after severe weather events, are more susceptible than adult sheep.



WHAT IT LOOKS LIKE

Symptoms include coughing, open-mouthed breathing, nasal discharge, loss of appetite and fever. Mildly affected animals may show only slightly lowered body weight gains and lowered wool production. Some animals may die if more than 70 per cent of the lungs are diseased and non-functional.



COST

Pneumonia and pleurisy will reduce wool and meat production, and increase the flock's susceptibility to other diseases. Carcasses are not usually condemned for this condition, but with pleurisy the chest cavity usually has to be boned out causing severe loss of value.



HOW TO PREVENT IT

Reducing stress will decrease the risk of pneumonia or pleurisy. Maintaining good hygiene, good nutrition, avoiding over-crowding, exposure to extremes of weather or dust and mixing of different lines of sheep will also help.

Sheep measles

(*Cystercercus ovis*)

SHEEP MEASLES ARE SMALL CYSTS, ABOUT 5 MM LONG.



CAUSE

Sheep measles cysts are the intermediate stage of a large tapeworm called *Taenia ovis*, found in the intestine of dogs or foxes. Eggs from the tapeworm are passed by the dog onto pasture and if conditions are moist and mild, the eggs may survive for up to a year.

Sheep become infected as they graze pasture containing worm eggs. The eggs then hatch in the intestine to release immature worms that penetrate the wall of the gut and enter the blood stream. The tiny worms develop in muscles, forming small cysts (measles), each one containing the head of one tapeworm.

Dogs or foxes become infested with the tapeworm by eating sheep meat containing live measles cysts. If an animal dies in the paddock and the carcass remains intact, the cyst will also die after three days.



WHAT IT LOOKS LIKE

Sheep infected with sheep measles will not show any abnormal signs. Most of the cysts break down after three or four months but they leave thick, fibrous lumps that often become calcified and gritty. These lumps are known as measles when scattered through the heart (as seen here), diaphragm or the meat.



Dogs infested with the sheep measles tapeworm will usually show no outward signs of ill health. The tapeworm segments look like grains of rice and may be seen in the dog's faeces. Other types of tapeworms that are spread by fleas, also have eggs that look like grains of rice.



COST

Sheep measles results in rejection of meat for export. Severe infections may cause production losses. If a person ate a measles cyst, he or she would not develop sheep measles. If four or more cysts are detected at an export abattoir the entire carcass is condemned.



HOW TO PREVENT IT

Several measures can be taken to prevent sheep measles from being transferred to sheep.

- Treat dogs every two months with an approved worm treatment containing the drug praziquantel.
- Boil meat and offal fed to dogs for at least 40 minutes or freeze at -10°C for seven days. Do not let dogs have access to any raw part of a carcass butchered on-farm.
- Tie up or pen dogs when they are not being worked to prevent scavenging.
- Control foxes and dingoes to reduce paddock contamination with tapeworm eggs.
- Burn sheep carcasses as soon after death as possible.

Chronic Liver Damage/Jaundice

CHRONIC LIVER DAMAGE CAUSES THE LIVER TO BE SMALLER AND FIRMER THAN NORMAL, WHICH INDICATES THE LIVER HAS BEEN DAMAGED – USUALLY FROM POISONING. IN THE ACTIVE OR EARLY STAGE OF THIS CONDITION SHEEP MAY SHOW JAUNDICE.



CAUSE

The most common cause of liver damage in Western Australia is lupinosis. This disease is most common in summer and autumn.

Lupinosis is caused by a toxin produced by a fungus (*Phomopsis* spp.) which colonises the dead lupin plant. Toxin produced by the fungus increases during warm moist conditions, therefore summer rain may make the lupin stubble more toxic.

In flocks severely affected by lupinosis a large proportion of the sheep may die and there may be a significant production loss in those that survive.

Another less common cause of chronic liver damage is facial eczema, which most often occurs in autumn. This disease is also caused by a fungal toxin and occurs sporadically south of Wongan Hills. Major outbreaks with large stock losses can occur in southern coastal areas. Moist and humid weather followed by warm nights and mild days favour growth of the fungus and production of the toxin. The fungus grows on dead pasture litter of a wide range of grasses and legumes. Lambs and breeding ewes are more commonly affected than wethers or rams.



WHAT IT LOOKS LIKE

Often animals suffering these conditions will show no symptoms or just mild weight loss as if feed was running out. Some animals suffering lupinosis may show weakness, loss of condition, and jaundice (yellowing of the gums and eyes). Affected animals may die within a period of two days to several weeks after being put into paddocks containing *Phomopsis*-infected lupin stubble, and may continue to die after being removed from stubbles.



Facial eczema can also cause jaundice. Affected animals will show a swelling of the head, and skin damage with many scabs may occur. These are signs that the animal has become highly sensitive to sunlight.



COST

Liver damage may lead to losses by culling of affected animals, poor growth rate, possible death and rejection of affected livers at abattoirs.



HOW TO PREVENT IT

Lupinosis

- Graze stock on *Phomopsis*-resistant lupins and check stock for signs of lupinosis as the disease may still occur. If the disease occurs, remove the mob onto cereal stubble.
- Do not graze lupin stubbles for long periods. If the amount of seed is low, remove the sheep.

For further information, see Farmnote No. 109/88 'Grazing management to minimise lupinosis' Agdex 430/652.

Vaccination abscess

(inoculation abscess)

VACCINATION ABSCESS IS A LUMP OR ABSCESS, USUALLY AT THE SITE OF VACCINATION.



CAUSE

Vaccination in the wrong site on the animal or with a dirty needle can cause an abscess. Common sites are muscle of the leg or back.



WHAT IT LOOKS LIKE

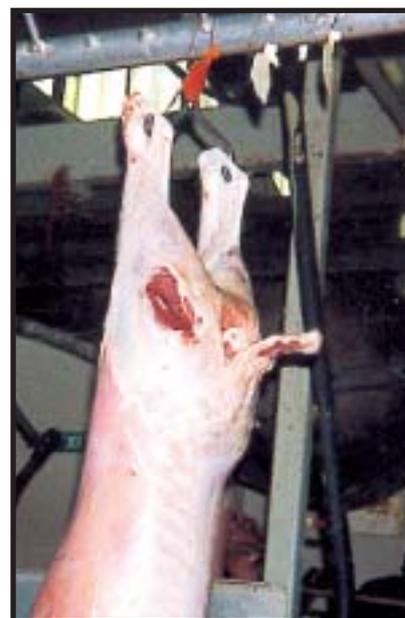
Most lumps or abscesses will only be seen in carcasses and few, if any signs, will be seen by farmers. Occasionally, the lump may be cut at shearing. Sometimes sheep become lame when injected into muscle.



COST

This condition often affects the most valuable parts of the carcass. The affected carcass is trimmed and downgraded, and may lose a quarter to a half of its value, particularly for lambs. In lambs, this is a direct loss to the producer. Abscesses on heads are not downgraded.

About a fifth of lamb lines killed in Western Australia have some vaccination abscesses. Within these lines about 7 per cent of lambs are affected. Up to 80 per cent of some lines may require trimming.



HOW TO PREVENT IT

Vaccinate sheep in the loose skin behind the ear or in the cheek. Change needles used for vaccination after every 100 to 200 sheep. Sterilise needles in disinfectant or methylated spirits after every 40 to 60 sheep.

