Australian Wool Innovation Limited

DEALING WITH DAG

Scouring and dags are common, widespread and costly on Australian sheep properties. While often attributed to worm infection, there are many causes of scouring and consequent dag formation. Producers and advisors seeking more detail than provided here should consult the AWI-funded review of scouring and dags on Australian sheep properties (Dealing with Dag - Advisor Manual), which provides extensive information about diagnosing and dealing with the problem.

How widespread is the problem?

Dag severity varies across Australia, largely depending on local climate and seasonal factors. Worm-induced scouring is especially common in lambs, but on many farms in the high winter and uniform rainfall areas of south-eastern Australia, up to 40% of ewes have persistent scouring and severe dag from July to October, and over 60% have a substantial amount of soiled breech wool removed at crutching. In areas with pronounced Mediterranean climates, scouring and dag is less predictable. In the medium to high rainfall areas in southern Western Australia, typically, 5% of adult ewes are affected, but on some farms, up to 20% of ewes (and occasionally more) may scour.

What causes dag?

Dag forms when loose faeces sticks to the wool around the breech area. The consistency of sheep faeces varies from faecal pellets through to pasty or liquid diarrhoea (scouring). Pelleted faeces do not adhere to wool, and dag only accumulates when faeces are not in pelleted form. However, the factors that affect faecal consistency are complex and therefore not always easy to control.

FACTORS TO CONSIDER IN SCOURING SHEEP

- Region of Australia (environmental factors, especially rainfall)
- Age of the sheep
- Time of year
- Type of pasture
- Proportion of the flock affected

Why do dag and scouring matter?

Scouring and dag are a major risk factor for breech flystrike. Dag also imposes significant costs on producers through increased costs of crutching and decreased income from soiled wool. Based on January 2019 wool prices and 2018/19 recommended wages, these costs are estimated to be at least $1.39 - $2.46 per head in sheep with severe dag (a score of 3 or more on a scale of 0-5).

These costs may increase by at least 30-50% if producers stop mulesing in the absence of genetic selection for less breech wrinkle and decreased scouring, because unmulesed sheep can have up to twice as much dag and take from 30-100% longer to crutch. However, many producers in high rainfall regions have ceased mulesing, so this is not a reason to continue mulesing.

Crutching costs, reduced fleece value and treatment costs associated with dag impact farm profitability. Preventing scouring and dag formation is also vital to sheep health and well-being, including decreasing their susceptibility to breech flystrike. (Source: J Larsen).

Post farm-gate, faecal soiling of fleeces can lead to microbial contamination of carcasses. This is associated with reduced productivity for sheep meat processors and reduced shelf life for meat products. Contaminated meat products are a risk to valuable export markets, and have potential public health impacts such as food poisoning outbreaks.

Won't drenching stop sheep scouring and getting dags?

High worm burdens are a risk factor for scouring and dag, but are not the only cause. While good on-farm worm treatment programs are an important aspect of dealing with dag and scouring, they are not the whole story.

What is the first step in dealing with daggy sheep?

The cause of scouring and dag formation needs to be identified. The first step in this process is to conduct a faecal worm egg count (WEC).

Worm egg counts often provide an immediate answer to the role of parasites in scouring. Low counts (typically less than 100 eggs per gram of non-Barber's Pole worm) usually indicate that primary parasitism is not the cause, although 'hypersensitivity scouring' remains a possibility in sheep that are old enough to have developed strong immunity to worms (see below). Moderate counts (200 – 300 eggs per gram) and counts over 500 eggs per gram in association with scouring usually indicate parasitism, though other causal factors should be considered. Consult a veterinarian or other animal health advisor to help interpret faecal worm egg count results and provide appropriate advice on management.

What is the link between worms and scouring?

The relationship between worm infection and scouring is complex. Scouring arises from a combination of both direct effects of the worms in the gut and the immune response of the sheep to the worms. The severity of scouring is not well correlated with adult worm burdens. However, results showing high counts (typically more than 500 eggs per gram of non-Barber's Pole worm) indicate that intestinal worms are likely contributing to scouring and dag. Barber's Pole worm is not associated with scouring. Where egg counts are high and sheep are not scouring, specialised laboratory tests will help identify the worms involved and determine whether Barber's Pole worm is contributing to counts.

Scouring associated with heavy adult worm burdens is most common in sheep less than one-year-old and lambing ewes.

What is hypersensitivity scouring?

Hypersensitivity scouring (sometimes called 'low worm egg count scouring') is a heightened inflammatory response that occurs in some sheep. It affects age classes of sheep differently, and also differs in south-eastern Australia and Western Australia.

Interactions between seasonal exposure to worm larvae and the degree of worm immunity developed by sheep are believed to largely explain the different patterns of hypersensitivity scouring seen in different age classes of sheep. This condition is highly repeatable - the same sheep scour each year - and has a genetic basis. This means genetic selection against daggy sheep is the best way to reduce this form of scouring. Hypersensitivity scouring is generally diagnosed when other causes of scouring have been excluded (e.g. high worm burdens, bacterial enteritis, protozoal disease, acidosis) in scouring sheep that have low worm egg counts.

What else causes scouring and dag?

Some other microscopic parasites cause scouring and consequent dag formation. Protozoan parasites and bacterial infections can cause scouring. Such cases may require veterinary treatments, or changes to management routines and plans for paddock use.

Diet, and especially pasture, is commonly considered to be a cause of scouring. However, the specific nutritional components of pasture that may induce scouring, and interaction between nutrition and other causes of scouring, remain poorly understood. A diagnosis of 'nutritional scouring' tends to be a non-specific diagnosis of last resort, that is, when all other possible causes have been ruled out.

However, there are some specific associations between pasture and/or feed intake and scouring. Forages that have been anecdotally associated with scouring include capeweed, forage oats and various brassica crops. *Phalaris aquatica*, in particular older stands of Australian phalaris, is often associated with severe scouring and breech soiling in south-eastern Australia. Toxins produced by fungal endophytes on perennial ryegrass have been reported to increase the incidence of diarrhoea in lambs. Acidosis may also cause scouring. Acidosis can be observed after rapid introduction to diets that are rich in starch and sugars, and is a widely recognised risk when feeding grain to sheep.

What about long-term strategies?

In the longer term, genetic selection of Merino sheep will reduce the risk of breech strike and reliance on mulesing. Traits that will reduce dag include increased bare breech area, less breech wrinkle, decreased dag and decreased scouring (based on faecal consistency measures). These traits are heritable and can be included in breeding programs.

Severe dag in a Merino hogget with a low worm egg count (<150 eggs per gram). The diarrhoea was attributed to hypersensitivity scouring exacerbated by exposure to an old stand of Victorian Perennial Ryegrass (Source: J Larsen).

Unfortunately, selecting for increased worm resistance using the WEC Australian Sheep Breeding Value (ASBV) is not related to decreased dag formation. Dag formation and breech wrinkle must be included as separate traits along side the WEC ASBV in breeding programs to reduce the risk of breech strike and reliance on mulesing.

Concurrent selection for low WEC and low dag scores is important for managing susceptibility to dag in worm-resistant sheep (Source: WA Department of Primary Industries and Regional Development).

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The Dealing with Dag Advisor Manual is available at **www.wool.com/flystrikelatest.**