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‘SUMMER DRENCHING’ OF SHEEP:
new recommendations for high rainfall areas

By Brown Besier, Veterinary Parasitologist, and Jill Lyon, Technical Officer, Albany Regional Office

‘Summer drenching’ has been a highly successful strategy for controlling sheep worms in Western Australia’s winter rainfall regions for many years. Drenching to remove worm burdens in summer, when the risk of reinfection by worm larvae is low, is an efficient basis to year-round worm control.

The Department of Agriculture recently altered its recommendations for the timing of summer drenches to take account of new findings regarding the survival of worm larvae over summer. It now recommends that sheep farmers give the first summer drench when the pasture is beginning to dry off, in spring in most locations.

Experiments at Mt Barker Research Station have confirmed the effectiveness of the new recommendations, but have shown the need for additional control measures for barbers pole worm.

Background to summer drenching

The ‘summer drench’ strategy recommended as the basis of worm control in high (more than 600 mm average annual rainfall) and medium (400 to 600 mm) rainfall regions consists of two effective broad-spectrum drenches to break the worm life cycle during summer.

When worms are removed from sheep during summer, the larvae cannot survive on dry pastures. Both the sheep and the pasture become essentially worm-free by the end of summer.

Summer drenching controls the major scour worm species, the brown stomach worm (Ostertagia), and the black scour worm (Trichostrongylus) in particular, although it is less effective against barbers pole worm (Haemonchus contortus).

Timing of the summer drenches is critical. The Department originally recommended that farmers give the first drench only when the pasture had completely dried off, and the second in mid to late summer.

Recently, however, new information on the ability of worm larvae to survive during summer has suggested a more efficient timing of the first summer drench. CSIRO scientists have shown that some larvae which develop from worm eggs in spring can remain alive in sheep dung pellets until the following autumn. After heavy rain, the larvae move out from the pellets onto the pasture, ready to infect grazing sheep.

Observations in Western Australia support the need to reduce the number of larvae on pastures in spring, to reduce the carry-over of worm burdens into the following year.

The Department now recommends that farmers give the first summer drench when the pasture is beginning to dry off (‘haying off’ time). In inland areas, this will often be from mid to late October, while on the South Coast, the longer growing season may delay the timing of the first summer drench until late November or December.

Testing in a high rainfall area

Worm control is usually more difficult in high rainfall areas than elsewhere because moisture at ground level provides better conditions for development of the larval stages.

An additional problem is the presence of barbers pole worm. This worm frequently causes severe losses in sheep, and adequate control is essential. However, summer drenches do not control barbers pole worm as effectively as the scour worms because the egg and larval stages of the barbers pole worm develop during warm weather, provided there is enough moisture.

Two experiments were set up at Mt Barker Research Station, with an average annual rainfall of 750 mm and where barbers pole worm is a problem, to test the new control strategies. The aims of the experiments were to assess the degree of survival of scour worm larvae over summer, and to compare an ‘early’ with a ‘late’ time of administration of the first summer drench. Both experiments ran in tandem over the summers of 1988-89 and 1989-90.

In both years, there were several periods of summer rain, and some pasture had germinated by late February.
Can scour worm larvae survive over summer?
Sheep faeces containing eggs of the brown stomach worm and the black scour worm were put onto pasture plots from late spring to autumn in both years (Figure 1). Pasture and faecal samples were taken periodically to assess whether larvae had developed, and the proportion of eggs which yielded larvae was calculated.

Results
Some eggs deposited on pasture in October or November produced larvae which survived over summer, to be found on pasture by the time of the break of the season (Figure 1). Although well less than 1 per cent of eggs were recovered as larvae from some depositions, when multiplied by the enormous number of eggs deposited by a flock of sheep, this represents a significant source of infection for sheep on autumn pastures.

The very high larval development rates from the February and March depositions demonstrate a severe risk of worm infection if worms are not controlled in summer, especially in years of summer rain.

'Early' or 'late' first summer drench
In this experiment, newly-weaned lambs were given their first 'summer' drench either 'early' or 'late', and with or without closantel with each drench. Closantel (Seponver®) is a specific drench for barbers pole worm, which continues to kill larvae taken in from the pasture for several weeks after it is given.

The 'early' drench was given in late November each year, and the 'late' drench in early January (Year 1, 1988-89) and late December (Year 2, 1989-90). The second summer drench was given in mid February in both years. (See Table 1 for the design of the experiment.)

A new group of weaners joined the experiment in November of each year, and remained in the paddocks until the following September. Faecal samples for worm egg counts were taken each month, to monitor the effect on worm burdens of the various treatments.
Table 1. Design of sheep drenching experiment

<table>
<thead>
<tr>
<th>Group</th>
<th>1st summer drench</th>
<th>2nd summer drench</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'Early'</td>
<td>'Late'</td>
</tr>
<tr>
<td>1</td>
<td>late Nov</td>
<td>mid Feb (Years 1 &amp; 2)</td>
</tr>
<tr>
<td>2</td>
<td>early Jan (Year 1)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>or late Dec Year 2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th></th>
<th>B/S + CLO</th>
<th>B/S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
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</tr>
</tbody>
</table>

B/S: Broad-spectrum drench
CLO: Closantel (Seponver®)
N.B. No Group 4 treatment was incuded in Year 1 (1988-89)

Sheep worms are the hidden thieves of productivity as their presence is not always obvious.

Recommendations for summer drenches

First summer drench: When the pasture is beginning to dry off ('haying off' time)

Second summer drench: mid-summer (January to mid February)

<table>
<thead>
<tr>
<th>Highrainfall and barbers pole worm areas</th>
<th>Medium rainfall</th>
<th>Low rainfall</th>
</tr>
</thead>
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<tr>
<td>More than 600 mm</td>
<td>400 to 600 mm</td>
<td>Less than 400 mm</td>
</tr>
</tbody>
</table>

1st summer drench
- B/S + CLO
2nd summer drench
- B/S (when pasture is dry)

B/S: Broad-spectrum drench
CLO: Closantel (Seponver®)

• Have a drench resistance test done before planning to use a 'white' (benzimidazole), 'clear' (levamisole) or combination of these drenches.
Figure 2. Results of timing of first and second summer drenches on control of scour and barbers pole worms.
Results

The results showed a similar pattern in both years (Figure 2).

- The ‘early’ first summer drench (given in November), led to generally lower scour worm egg counts throughout the year than the ‘late’ (December) drench. However, barbers pole worm was not controlled by the ‘early’ treatment unless closantel was included with the first summer drench. Where only a broad-spectrum drench was given, high barbers pole worm burdens continued throughout the year, and two extra drenches were necessary to prevent losses of sheep.
- The ‘late’ first summer drench, either in early January or late December in the experiment, was given too late to prevent high egg counts of both the scour worms and barbers pole worm in early summer.

Implications for worm control

The two experiments demonstrated that scour worms can survive over summer in sheep dung on pastures in high rainfall areas. Enough eggs would have survived from spring depositions to cause significant infections in grazing sheep.

The very large numbers of larvae recovered from pasture following depositions in late February and March demonstrate that sheep worms should be controlled during summer. Failure of a second summer drench to reduce worm egg counts to the minimum would rapidly lead to dangerously contaminated pasture, and disease in sheep during autumn.

The timing of the two summer drenches resulted in little difference in the scour worm egg counts later in the year. This could be explained by the unusually wet summers experienced in both years.

It is likely that had pasture conditions not promoted continual reinfection of the early-drenched (late November) sheep, their pastures would have carried fewer worm larvae in autumn than the pastures of the late-drenched (early January or late December) groups.

It is also possible that the ‘early’ drench was given too late, as some eggs deposited in early November later yielded larvae in pasture samples.

The most successful treatment was the ‘early’ (late November) first summer drench with closantel and a broad-spectrum drench. This drench prevented sheep developing severe parasitism before the ‘late’ first summer drench was given, in either early January (Year 1) or late December (Year 2), and the closantel protected the sheep against barbers pole worm.

Conclusion

In high rainfall areas, the first ‘summer’ drench should be given as the pasture is drying off, usually in mid to late November. However, giving the drench this early increases the risk of barbers pole worm disease in these areas.

Closantel should be given at the same time as the first summer drench to eliminate the risk of barbers pole worm disease in summer, and to keep these worm burdens low for the following year. Failure to control barbers pole worm early in the season can lead to costly consequences, especially in years of heavy summer rainfall.

The second summer drench should be given in January or early February. Drenches given later than this time can fail if it rains in late summer or early autumn, because of the rapid development of scour worm larvae.

Sheep going onto a crop stubble need only one broad-spectrum drench, as they are moved onto the stubble.