tips&tools

ANIMAL HEALTH AND WELFARE

Improving internal parasite control in sheep with nutrition

Internal parasites are a major health and production problem for Australian sheep flocks in the higher rainfall areas. A recent report estimates that internal parasites cost the Australian sheep industry $369m per annum.

Parasite control has traditionally been based on the use of anthelmintic drenches, however now that resistance has emerged to all the currently available chemical families the focus has shifted to alternative options for worm parasite control, including nutritional management.

Key benefits

- Good ewe condition will help control parasites and promote lamb survival and growth
- Good lamb nutrition will optimise production and reduce the impact of parasites
- Good nutrition can reduce the use of anthelmintic drenches

Immunity and resilience to parasites

Sheep less than 12 months of age are most susceptible to the harmful effects of internal parasites. As they age, sheep gradually develop both **immunity** and **resilience** to gastrointestinal worms.

- **Immunity** is the animal's ability to prevent or limit establishment and development of new worm infections.
- **Resilience** is the animal's ability to maintain good productivity despite the presence of internal parasites.

Adult sheep usually have lower worm burdens in their gut and shed significantly fewer worm eggs in their faeces compared to lambs and weaners. They are also much less likely to suffer production losses due to internal parasite infection because of greater immunity and resilience.

Good nutrition is one factor that helps promote immunity and resilience to parasite infections.

Ewes and lambs

Loss of immunity in pregnant and lactating ewes

Pregnant ewes often suffer a breakdown in immunity to parasites around the time of lambing. This breakdown usually begins about two weeks before lambing and continues for up to eight weeks after lambing. The problem is most pronounced in Merino ewes, and leads to a steep rise in the number of worm eggs passed in the ewe's faeces. Ewes become a potent source of worm infection for their lambs and may also experience a reduction in milk production of up to 10-20%. Studies have demonstrated that the worm egg output from these ewes is the major source of infective worms on pasture.

Nutrition and immunity

Research has shown that the nutritional status of pregnant ewes can influence their ability to maintain immunity to worms around the time of lambing. Maintaining ewe bodyweight, particularly during the last third of pregnancy, when the unborn lamb is growing rapidly, appears to be a critical factor in maintaining immunity to parasites. Increasing the protein intake of ewes during the six weeks prior to lambing is particularly effective in preventing an increase in worm egg counts in pregnant ewes.

Lamb parasite-nutrition study property - lamb weighing

Recent field trials in WA and SA have confirmed that nutritional management of pregnant ewes to maintain a condition score of 3 rather than 2, may lower worm egg counts during late pregnancy and more so during lactation. In the summer rainfall zone of NSW, field trials have also shown that protein supplementation for six weeks before lambing can have similar benefits, although outcomes depend on the availability and quality of pasture during late pregnancy. These trials are ongoing and will be extended to a larger number of commercial farms if results provide definite evidence of a beneficial, cost-effective response to ewe supplementation.

A trial in the Northern Tablelands of NSW also studied the effect of protein supplementation of pregnant ewes grazing ample but low quality pasture. Protein supplementation (as 200g of cottonseed meal pellets per day) was provided during the last six weeks of pregnancy. Supplementation was found to increase the rearing success of single-born lambs by 3.5% and twin-born lambs by 20%, although these benefits were only seen in ewes with a pre-lambing condition score less than 3 (for single-born lambs) and less than 3+ (for twin-born lambs). This improvement in lamb rearing success is most probably due to better milk production in supplemented ewes.

What about improving lamb nutrition?

A number of field trials have shown a beneficial response when young weaners are provided with a high-protein supplement as a strategy to manage parasitism and reduce production losses. However, the cost-effectiveness of this strategy appears to depend on the level of parasite infection encountered in each flock and the price of available protein supplements. Environmental factors in a particular region will also play a role due to impacts on forage availability and parasite levels on pastures.

Field trials carried out in WA over two successive years showed a good liveweight and wool growth response to short-term protein supplementation of weaners as pastures diminished in quality in late spring/early summer. Improvements in liveweight gain continued through to the following winter. This effect appeared to be due to an improvement in the 'resilience' of weaners to parasite infections rather than to a reduction in parasite burdens.

In a SA trial, short-term high protein supplementation of weaners when pasture quality was decreasing and worm larvae levels on pasture were moderately high resulted in a substantial liveweight and wool growth response and significant reductions in worm egg counts.

In northern NSW, supplementation of weaners in late autumn, as pasture quality diminished, significantly improved liveweight and wool growth but had no effect on worm egg count. However, this was a particularly dry year when pasture conditions would have produced very low levels of infective worm larvae.

Field trials on a number of prime lamb properties have shown that where protein and energy levels in irrigated pasture meet the requirements for optimal growth rates, there are only marginal production benefits to be gained from suppressive worm control.

Likely benefits

Nutritional management of pregnant ewes and weaner lambs to maximise immunity to parasites and minimise associated productivity losses should be considered on an individual property basis.

Points to consider include:

- the quality and quantity of available pasture,
- the cost of available high protein supplements, and
- climatic and environmental conditions that may influence worm larvae levels on pasture.

Nutritional supplementation is most likely to be beneficial when pregnant ewes and lambs are below optimal body condition at a time when pasture quality and/or quantity is limited.

The level of nutrition needed for more effective management of worms in susceptible sheep, may not differ markedly from that usually considered optimal for production. Generally accepted benchmarks for growth in weaners or weight gain over the last trimester in pregnant ewes in a 'good' production system are also likely to assist in parasite control.

A major benefit of using nutrition to limit the effects of parasites is the reduced need for anthelmintic treatment, thereby slowing the development of worm resistance to drench chemicals.

Recommendations for nutrition and parasite control

Appropriate nutrition is the cornerstone of efficient production. By maintaining sheep in adequate body condition you are more likely to achieve your production targets. Good nutrition of ewes and weaners will maximise immunity and resilience to internal parasites, however this is only one component of a preventative worm control program.

Detailed information on sheep nutrition and parasite control can be found in the following publications:

- The 'Healthy and Contented Sheep' module of the *Making More from Sheep* manual.
- The AWI WormBoss website - www.wormboss.com.au
- The AWI Integrated Parasite Management – Sheep (IPM-s) webpage - www.wool.com.au/ipm

Key nutritional recommendations are to:

- **Always ensure that sheep are maintained in appropriate body condition**

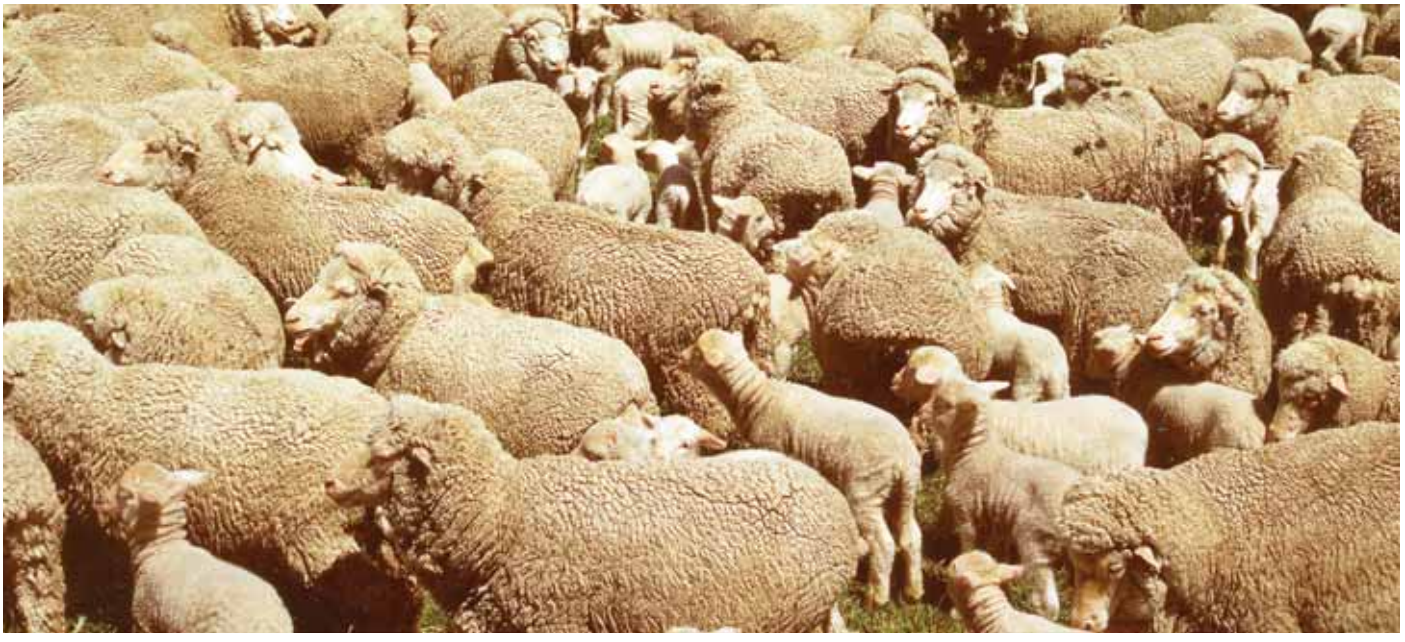
  If sheep fall below critical body condition or graze poor quality or too little pasture, production and financial targets will not be met.

- **Select appropriate supplementary feed**

  Protein is important for lactating ewes and growing young stock. If available pastures are green, protein will usually be adequate; if not, protein supplements will be required to satisfy the protein requirement of stock.

- **Preferentially feed weaners and young ewes**

  Ewes should ideally have a condition score of 3 at lambing and should graze pastures with at least 1,200 kg DM/ha during lactation. Lambs should be weaned at 12-13 weeks after the start of lambing



Ewes with lambs at foot

onto high quality pasture, preferably containing improved perennial species. If lambs are below target weights begin supplementary feeding before pastures start to dry off and quality deteriorates below 65% digestibility.

Key parasite control recommendations are to:

- **Know the important worm parasites that regularly occur on your property.**
- **Monitor specific conditions on your farm, such as worm egg count, pasture quality and quantity and animal performance, to allow you to decide when drench treatments are required.** This is particularly relevant when seasonal conditions are ideal for development of worms on pasture, or alternatively, when drought conditions reduce the need for normal strategic drenches.
- **Develop a preventive health program, including both anthelmintics and non-chemical management to minimise disease and production losses due to parasites.** Producers should aim to:
  - Give strategic drenches only as required to minimise the total number of drenches needed. This will help to slow the development of drench resistance.
  - Monitor the drench resistance status of your property to ensure that only effective drenches are used.
  - Adopt a management system which minimises the risk of parasitic disease, such as:
    - o grazing management to provide weaners with low worm risk paddocks, and
    - o ensuring weaners and lambing ewes are maintained at or above condition score targets. Provide supplements if they fall below critical limits for both energy and protein
  - Regularly evaluate your program and update as required in consultation with your veterinary practitioner or sheep health consultant.

The bottom line

Good nutritional management of ewes and lambs will help to control parasites and promote lamb survival and growth.

When used as part of a preventative worm control program, good nutritional management should also help reduce the need for anthelmintic treatment, thereby slowing the development of worm resistance to these chemicals.

Ewes with lambs at foot

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