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SHEEP UPDATES

Optimising the nutrition/grazing management of ewe flocks

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KEY MESSAGES

The results from the 2001 lambing in the Lifetime Wool Project strongly suggest that there is enormous potential, in medium-to-high rainfall areas, to increase pasture utilisation and wool production by breeding ewes without penalising lambing and weaning percentages, or lifetime performances of the resulting progeny.

INTRODUCTION

In Mediterranean climates in Australia, the seasonal fluctuations in available pastures generally mean that at some stage during pregnancy a grazing ewe will become undernourished. This is particularly true for autumn lambing where ewes are pregnant over summer.

The level of feed intake by ewes during mid and/or late pregnancy can influence wool production and quality, lamb birth weight and survival, the level of secondary follicle initiation and development in the fetus (fetal programming). Therefore, the lifetime quality and quantity of wool produced by the progeny can be influenced by the nutrition of the ewes.

The current recommended 'industry best practice' is to lamb in late winter/early spring so that early lactation coincides with the onset of the spring flush of pasture growth, and to manage ewes to maintain body condition score three throughout pregnancy. However, there is no information available describing the cost:benefit of different amounts of annual pastures, during late pregnancy and lactation, on the productivity of the ewe and its progeny. The Lifetime Wool Project jointly funded by the WA Department of Agriculture and DPI Victoria has set out to rectify this deficiency.

AIM

To develop, demonstrate and communicate practical grazing management guidelines that enable woolgrowers across southern Australia to increase lifetime production of wool per hectare from ewes and their progeny by 20 per cent, without compromising wool quality or the environment, by 2007.

METHODS

Plot-scale experiments were started during 2001 on specialist wool producing properties near Coleraine, Victoria and Kendenup, Western Australia. At each site, ewes were joined in condition score 2.5 to 3.0 and then were fed to either maintain condition or lose a condition score by day 90 of pregnancy. From day 90 of pregnancy until the lambs were weaned, the ewes were allocated to grazing treatments where Feed on Offer (FOO) was maintained at different amounts: 800, 1100, 1400, 2000, and 3000 kg DM/ha. The experiment was repeated over three years from 2001 to 2003, with the last year still in progress.

RESULTS AND DISCUSSION

The amounts of green FOO can be managed to achieve production targets by adjusting stock numbers based on regular assessments of FOO, anticipated pasture growth rates and estimates of pasture intake.

Preliminary results of the two experiments show there were significant differences in pasture growth rates between sites, seasons and years. Grazing to maintain FOO at 1000 kg DM/ha, or below, during winter-spring reduced pasture production by more than 20 per cent at both sites during 2001. However, significantly higher pasture utilisation occurred on the lower grazing treatments, ranging from 60% to 90% utilisation for the 3000 to 800 kg DM/ha treatments, respectively.

The preliminary results suggest that there is enormous potential, in med-high rainfall areas, to increase pasture utilisation and wool production from breeding ewes, without penalising lamb weaning percentages or lifetime performance of the progeny. The flexible grazing management used to maintain FOO at 2000 kg DM/ha during winter/spring more than doubled the district average stocking rates at both the Western Australian and Victorian sites. Below this level of FOO there are adverse effects on ewe and progeny performances, but these critical thresholds are still being defined.

The effect of FOO during late pregnancy or lactation on the performance of lambs is clear. At both sites, the highest level of nutrition increased the clean fleece weight of the 2001 progeny at their hogget shearing by about 300 g and decreased the fibre diameter by about 0.3 microns compared to the lowest level of nutrition. However, there were subtle variations in the levels of nutrition at which the detrimental effects on clean fleece weights and fibre diameter occurred.

Ewes grazing amounts of FOO less than 2000 kg DM/ha during late pregnancy and lactation had reduced liveweight at their next joining. This resulted in lower conception and twinning rates the following autumn, but the critical thresholds are still being defined. As expected, ewes fed to lose liveweight and condition during early and mid-pregnancy produced about 0.3 kg less fleece wool that was 0.5 to 0.9 micron finer. However, the level of ewe nutrition did not effect their faecal worm egg counts, or lamb birth weights, lamb mortality or progeny faecal worm egg counts at either site.

The different FOO treatments achieved significant differences in ewe liveweight changes during late pregnancy and lactation. However, there were differences in the responses of the ewes to the same quantity of FOO at the two sites. In Victoria, the ewes lost less weight on the low levels of FOO compared to Western Australia and the reverse appeared to happen at the highest levels of FOO. The current explanation for this difference is believed to involve two factors. The pastures in Victoria had a much higher proportion of grass compared to the sub-clover dominant pastures in Western Australia. Hence, the grassy pastures in Victoria may have been taller and more available at low levels of FOO compared with Western Australia. Conversely, at high levels of FOO the pasture height difference would not affect the ability of the ewes to eat but the higher digestibility of the clover dominant pastures may be responsible for the better response in liveweight. However, as the final recommendations from the Lifetime Wool Project must be able to be applied to all pastures across the Mediterranean environment of Australia, direct measurements of feed intake by the ewes have been made in late pregnancy and twice during lactation. These measurements will be used to adjust for estimated intake in grazing management support systems such as GrazFeed®.

CONCLUSION

The preliminary results from this work suggest that there is enormous potential, in med-high rainfall areas, to increase pasture utilisation and the subsequent wool production from breeding ewes, without penalising lamb weaning percentages or the lifetime performance of their progeny.

KEY WORDS

life time, optimal nutrition, ewes, wool production, fetal programming, feed on offer

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