

THE EFFECT OF PHYSIOLOGICAL STATE ON THE DIGESTION OF OATS BY SHEEP

R.W. HODGE*, B. BOGDANOVIC* and C. .KAT*

The metabolizable energy (ME) system for calculating feed requirements of stock was adopted by this society in 1978 but the question arises as to the accuracy of the estimates of ME of the various feeds. Oats is often fed to sheep during drought in Victoria and Oddy (1978) quotes a mean ME value of 12.5 MJ/kg dm. This value suggests that approximately 530 g dm/hd/d of oats is required to maintain a 45 kg sheep or about 800 g dm/hd/d for a 45 kg sheep in late pregnancy (1.5 x maintenance).

We measured the apparent organic matter digestibility of oats (8.6% crude protein) when fed to Merino or crossbred ewes during late pregnancy (c week 18), early lactation (week 2 - 3) and when dry. The same 6 Merino ewes were used on each occasion and all were fed 797 g dm/hd/d throughout. The study with the dry Merino ewes was conducted 4 weeks after weaning. The oats were offered (1127 g dm/hd/d) to the pregnant and lactating crossbred ewes with or without the addition of 1.4% urea. The same 6 crossbred ewes were used during pregnancy and lactation. The digestibility of the oat + urea ration was estimated with 6 dry but different crossbred ewes to those used during pregnancy and lactation. The dry crossbred ewes would not consume 1127 g dm/hd/d and digestibility was measured at 825 g dm/hd/d. The results are set out in Table 1.

TABLE 1 The apparent organic matter digestibility (\pm SE) of oats fed to ewes in late pregnancy, early lactation and when dry

| Experiment | Breed | Ration | Apparent organic matter digestibility (%) | | |
|------------|-----------|-------------|---|------------|------------|
| | | | Pregnancy | Lactation | Dry |
| 1 | Merino | Oats | 63.7 (1.4) | 68.2 (0.9) | 69.9 (0.6) |
| 2 | Crossbred | Oats | 61.8 (1.1) | 69.0 (1.4) | - |
| | | Oats + Urea | 64.3 (0.9) | 70.7 (0.8) | 71.5 (1.5) |

The results confirm that the digestibility of feed by ewes during late pregnancy is less than that observed during lactation or when dry and non-pregnant (Thompson *et al.* 1978) and the effect is due, presumably to a decrease in the mean residence time of feed within the rumen (Weston 1979).

The ME of the oats fed to our sheep can be estimated from the relationship $MEF = 0.16 \text{ DOMD}$ where $MEF = \text{ME of the feed (MJ/kg)}$ and $\text{DOMD} = \% \text{ digestible organic matter in the dry matter (MAFF 1975)}$. Such calculations suggest that the ME of the oats varied from a mean of 9.6 when fed during pregnancy to 10.6 when fed to dry ewes. This indicates that a 45 kg ewe would require approximately 1 kg of oats /d during late pregnancy - an increase of 25% compared to that calculated from the mean ME value of oats quoted by Oddy (1978). We suggest that estimates of the amount of oats fed during drought to ewes in late pregnancy, particularly to those bearing twin lambs, should take into account that the ME content is likely to be about 10% lower than that recorded with dry or lactating sheep and could be 15 - 30% lower than that indicated in feed tables.

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* Animal Research Institute, Department of Agriculture, Werribee, Vic. 3030.