

RUMEN AMMONIA CONCENTRATION IN SHEEP AND CATTLE GRAZING TOGETHER ON MATURE ANNUAL PASTURES AND CEREAL STUBBLES

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Measurement of the ammonia concentration in **rumen** fluid was identified by Stephenson *et al.* (1984) as a useful technique to help producers decide whether or not to provide urea supplements to ruminants grazing mature low quality pastures. Information on possible differences in **rumen** ammonia concentration between sheep and cattle grazing the same types of pastures is of practical interest and we examined this aspect since few direct comparative studies have been reported.

The study compared the **rumen** ammonia concentration of sheep and cattle grazing together at 4 sites on farms in the Lower and Mid North regions of South Australia during February-March 1994. At each site, the sheep and cattle grazed the same paddock for at least 10 days prior to being yarded at 0900 hours. **Rumen** fluid samples were then taken from 10 randomly selected animals of each species and strained and acidified for subsequent **colorimetric** analysis. Pasture samples taken from six 0.1 m² quadrats were analysed for *in vitro* dry matter digestibility (DMD) and nitrogen. The animals consisted of Merino wethers and dry mated ewes and British breed steers and dry mated cows. The 4 sites consisted of: (1) a mature grass dominant grass-clover annual pasture (49.4% DMD, 1.1% N), (2) a barley stubble (45.6% and 0.40%), (3) a wheat stubble (28.3% and 0.40%) and (4) a barley stubble (33.6% and 0.45%). Sites (1) and (2) were free of any form of green feed while sites (3) and (4) contained small areas of sparse prostrate summer growing weeds.

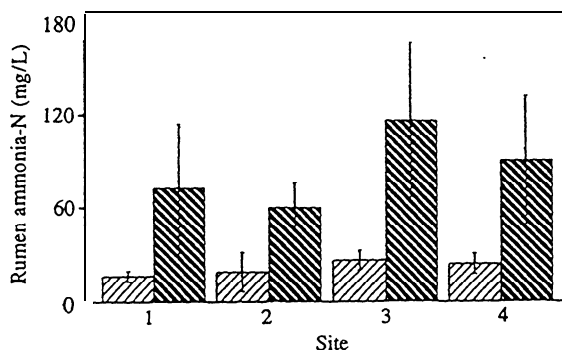


Figure 1. Mean **rumen** ammonia-N (mg/L) of sheep (light hatched bars) and cattle (dark hatched bars) grazing together at 4 sites. Vertical lines indicate standard deviations

Rumen ammonia concentration was significantly higher (Figure 1) in sheep than in cattle (84.2 v 20.9 mg ammonia-N/L, SEM = 7.13, Pc 0.01). This result is consistent with the findings of Dudzinski and Arnold (1973) that sheep can select a higher protein diet than cattle when the 2 species graze together. At sites (3) and (4) it is probable that cattle, unlike sheep, were obtaining no green-pick. While the **rumen** ammonia concentrations we recorded may have been elevated at the time of sampling which followed morning grazing, the studies of De Waal and Biel (1989) indicate that diurnal variation in **rumen** ammonia concentration in sheep grazing mature pastures is likely to be small. While the present study indicates that cattle grazing in this environment may respond to supplementary urea, economic responses have rarely been demonstrated.

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