

## DIGESTION IN SHEEP DURING PREGNANCY AND LACTATION

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Few data are available on changes in digestive function of herbage-fed sheep during pregnancy and lactation. Such information is basic to an understanding of the nutrition of the sheep at those times and accordingly the studies reported herein were conducted.

The Border Leicester x Merino crossbred ewes had fistulae in the rumen and abomasum and were subjected to management practices described by Weston & Hogan (1968). The daily ration of chopped hay provided 885 g organic matter (OM) and 20.8 g N; precautions were taken to ensure that the chemical composition of the diet did not vary between experiments. Conventional digestion studies were conducted to provide overall digestibility data and radioactive markers were used in the estimation of digestion in the stomach. The markers and all experimental and analytical procedures employed, have been described earlier (e.g. Weston 1971). The digestion studies were conducted with the same 12 ewes during early pregnancy (c. week 8), mid pregnancy (c. week 13) and late pregnancy (c. week 18); the lambs were weaned at week 4 of lactation and the study during the non-pregnant, non-lactating (NPNL) state was conducted 6 weeks later. Values for total flow of OM and N from the stomach during lactation are not yet available.

Six ewes produced twin lambs and six produced singles but the number of foetuses did not significantly affect the value of any variable. Significant changes ( $p < 0.05$ ) due to pregnancy were observed in several variables. Thus during late pregnancy values were lower, relative to the NPNL state, for (i) rumen liquor volume (-31%), (ii) mean residence time of marker ( $^{51}\text{Cr-EDTA}$ ) in the rumen (-36%) and in the alimentary tract distal to the rumen (-15%) and (iii) the amount of OM digested in the stomach (-11%) and in the alimentary tract as a whole (-5%). On the other hand values were higher for (i) rate of liquor flow from the rumen (+10%), (ii) the amount of non-ammonia nitrogen (NAN) leaving the stomach in digesta (+10%) and (iii) the amount of NAN digested in the intestines expressed either in absolute terms (+16%) or per unit of digestible OM intake (+22%).

During lactation values were lower, relative to NPNL state, for (i) marker residence time in the rumen (-21%), the amount of OM digested in the alimentary tract as a whole (-3%), (iii) time spent in ruminating (-18%) and (iv) the amounts of ammonia and volatile fatty acids in the rumen (-13%, -20%). Higher values were observed for (i) the rate of liquor flow from the rumen (+20%) and (ii) the amounts of OM and NAN leaving the stomach in the fine particle fraction of the digesta (+14%, +15%).

It is concluded that pregnancy and lactation have significant effects on digestive function which could influence nutrient supply to the tissues.

WESTON, R.H. (1971). *Aust. J. agric. Res.* 22: 469.

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