

## THE VALUE OF SEAWEED AS A FEED FOR SHEEP DURING DROUGHT

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There is a long history of the use of seaweed as a feed for livestock (Chapman and Chapman 1970), but its use during drought has been restricted to isolated cases and is not well documented. The aim of this study was to determine the value of seaweed as a major component of drought rations for sheep.

The brown seaweed *Seirococcus axillaris*, collected at Cape Jaffa, S.A. in January 1987 was left unwashed and was sun-dried and coarsely hammermilled. The unwashed seaweed DM contained 36.5% ADF, 0.7% N and 25.4% ash; washed seaweed DM contained 21.0% ash, 3.0% Ca, 0.04% P, 1.7% Na, 0.7% K and 1.1% S and its in vitro DM digestibility was 47.0%. Twelve adult Merino wethers were harnessed for faeces collection and were individually fed rations containing lupins and either seaweed or milled oaten hay for 72 days. During days 1-24, the wethers were offered 500g of the roughages (hay or seaweed) and lupins were offered at 40% of the previous day's intake of roughage, hence wethers which ate all of the roughage received 200g lupins/day. Faeces was collected and water intakes were recorded over the last eight days of this period (days 17-24). The digestibility (DMD) of the roughages was determined by difference assuming a value for lupins of 91.6% (J.B. Mackintosh, undated). On days 25-72, the wethers were fed 200g lupins/day and 500g of either seaweed or hay except that two wethers fed seaweed and consuming the complete ration were fed ad libitum seaweed from day 45. DM intakes were recorded on days 54-72 (19 days). Jugular blood was sampled twice to assess the copper and iodine status of the sheep.

Wethers ate all of the lupins offered during the experiment, and wethers fed the hay diet ate all of the hay (445g DM/day). Wethers fed seaweed ate (mean  $\pm$  s.e.)  $345 \pm 44$ g DM/day during days 1-26 and  $253 \pm 64$ g DM/day during days 54-72 when the DM % of the seaweed was 87.4 and 89.1% respectively. Only one wether ate more than 500g seaweed (466g DM/day). Wethers fed the hay and seaweed diets lost (mean  $\pm$  s.e.)  $0.2 \pm 0.3$ kg and  $7.7 \pm 1.0$ kg respectively ( $P < .001$ ) over the whole experiment. The DMD of the hay and seaweed were 63.1 and 44.9 respectively (s.e. = 1.6,  $P < 0.001$ ) and the DMD of the respective whole diets were 71.2 and 57.9 (s.e. = 1.2,  $P < 0.001$ ). During the balance period, wethers fed hay and seaweed drank 4.9 vs 6.2g water/g roughage DM intake respectively (s.e. = 0.9,  $P < 0.07$ ). In sheep fed the hay and seaweed diets respectively, plasma Cu levels (day 36) were 19.4 and 15.7  $\mu$ mol (s.e. = 1.1, n.s.) and serum free T4 levels were 10.5 vs 8.2 pmol (s.e. = 1.1, n.s.) on day 36 and 9.8 vs 8.9 pmol (s.e. = 0.8, n.s.) on day 72.

The relatively low feeding value of seaweed, its initial high water content (>80%) and associated high handling costs and in particular, its low and decreasing intake by a proportion of sheep over several weeks of feeding make it of doubtful use as an alternative feed for sheep during drought.

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