

## A comparison of the nutritive value of chenopods from New South Wales and Western Australia

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As grazing plants chenopods are relatively palatable to livestock, have recognised protein value, are reasonably high in digestibility, and persist well in semi-arid areas if well managed with grazing livestock (Wilson 1966). This project examined nutritive value of three chenopods throughout a year, and compared plants collected in Western Australia with the same species from eastern Australia.

### Materials and Methods

The study was designed as a monthly sampling of 1 kg of leaf and small twig material from the same 6 to 10 shrubs each month from November 1993 until October 1994. The samples were from *Atriplex amnicola* (river saltbush) and *A. nummularia* (old-man saltbush) growing near Katanning, WA (450 mm rainfall) and *A. nummularia* (two sites) and *Chenopodium nitrariaceum* (one site) growing near Hay, NSW (363 mm rainfall). Leaves and small twigs were stripped from the cut samples and dried (80°C) and ground to 1 mm in a laboratory mill. The ground samples were analysed for organic matter (ashing at 500°C), nitrogen (Kjeldahl) and acid detergent fibre (van Soest 1963). Dry matter digestibility (DMD) was estimated from a relationship between nitrogen and ADF (Oddy *et al.* 1983).

### Results

Mineral content averaging 15.9% for *C. nitrariaceum* was lower ( $P < 0.05$ ) than the *Atriplex* species (28.8 to 30.2%). Crude protein (CP) varied ( $P < 0.05$ ) between sites: 19.8% at Hay to 10.6% at Katanning, and between months with higher values for June to November (17.7 to 24.1%) than from December to May (16.5 to 19.1%). *C. nitrariaceum* was a further 3-5% units lower in CP content during summer and early autumn than *Atriplex*. The ADF content was relatively uniform between sites and months, but *C. nitrariaceum* had a significantly ( $P < 0.05$ ) higher average (21.5%) than the *Atriplex* species (12.8 to 16.7%), and the largest variation between months (from 15% in November to 30% in

February). The estimated DMD and ME for *C. nitrariaceum* was lowest ( $P < 0.05$ ) and there was little difference between *Atriplex* species over months or within sites, although there was a significantly higher DMD (78.0 versus 74.9%) and ME estimate (11.7 versus 11.2 MJ/kg DM) for Hay than Katanning.

### Discussion

The mineral values (23 to 34%) were within the range (15 to 38%) expected for chenopods and notably higher than the 10 to 14% expected for grasses and legumes (Weston and Hogan 1986). The climatic and soil differences between Hay and Katanning are most strongly reflected in the crude protein values. The Hay samples had CP values each month which would be comparable with clovers and some grasses at the peak of their growing season (Weston and Hogan 1986). However, the Western Australian values were similar to those reported by Warren *et al.* (1990) and only half the level for the Hay samples, reflecting the Western Australian perception of *Atriplex* as plants for reclamation rather than forage.

### References

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