

The nutritional needs of livestock grazing forage shrubs

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Introduction

There has been considerable interest in the establishment of forage shrubs, known to be well adapted to arid environments, in low rainfall environments. Partly interest has developed from a desire to develop more sustainable grazing systems, but in particular to provide a source of feed for livestock during dry seasons.

Atriplex nummularia (Oldman saltbush) and *Chamaecytisus proliferus* (Tagasaste) have been the more commonly established species in grazing plantations, but animal productivity from these stands has been largely disappointing. The reasons for this are wide ranging and some of these will be discussed in this paper.

While research programs continue to investigate limitations to the productivity of livestock grazing these species, the search continues for alternative species of higher nutritive value that will tolerate grazing pressure and survive under low rainfall conditions.

Productive Nutrition P/L has completed two projects in the southern rangelands and the arid lands of South Australia, investigating the nutritive value of a range of commonly grazed species prevalent in these areas, and this information will provide supporting evidence to the data provided to us by SARDI for this field day.

The nutritional strengths and weaknesses of forage shrubs

Many forage shrubs provide a resilient feed resource during prolonged dry periods provided they are rotationally grazed with high stocking rates for short periods, followed by long periods of recovery. Unfortunately this type of grazing management means a large area of land is required with a significant investment in fencing.

Most forage shrubs will keep dry (non-pregnant, mature) stock alive during prolonged periods of drought, but will seldom support high levels of production.

Many forage shrubs appear to be of high nutritive value (NV), but on many occasions this does not convert into an expected production response. There are many reasons for this which includes low levels of palatability at various stages of growth, high salt loads limiting intake, imbalances of crude protein and metabolisable energy, mineral toxicities and deficiencies and mineral interactions. In addition the presence of secondary plant compounds reduce palatability and inhibit uptake of particular minerals.

There are however, some species such as *Cullen australasicum* that appear to be resilient, palatable, tolerate prolonged dry periods and are relatively high in NV; this species warrants further investigation.

What is not clear as yet is how these species will tolerate establishment and grazing as a monoculture or what species will be the ideal complement. Many species that survive prolonged droughts in arid environments can be facultative accumulators and take up toxic amounts of trace elements from the soil. They can also be unpalatable at key stages of growth to ensure survival. Where the aim is to establish these species as a feed supply during summer and autumn, it will be essential to ensure they are palatable at this time.

Annual cycles in nutritive value

Interestingly many native species do not appear to change in nutritive value in response to a change in seasonal conditions as demonstrated in Figure 1 by *C. australasicum*.

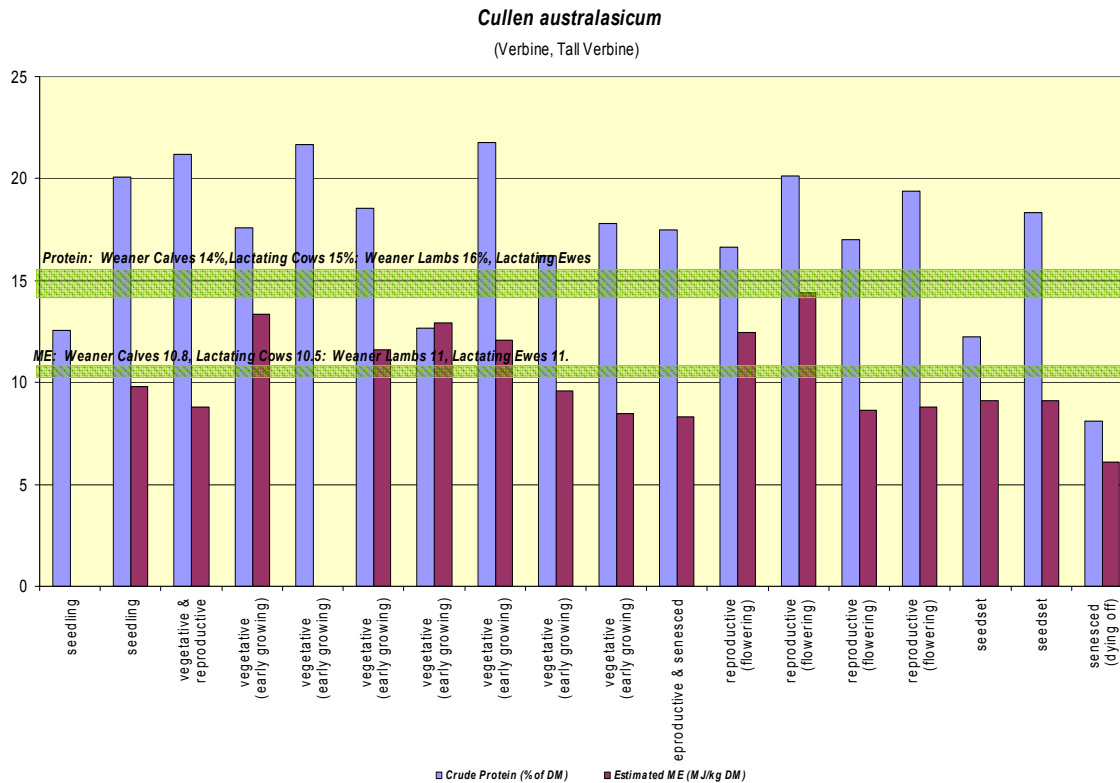


Figure 1 changes in nutritive value with stage of growth of *C australasicum* 2006-2008 Marree, SA

Challenges for productive classes of livestock

The challenges for productive classes of stock are many and varied and include:

- Palatability
- Low dry matter intakes
- Low metabolisable energy levels
- Questionable production of microbial protein
- Mineral deficiencies, toxicities and interactions
- Correct complementary strategies being employed by livestock managers

Tactics for optimising the nutritive value of shrubs to livestock

- Test for nutritive value
- Employ the correct complementary feeding strategies
- Don't rush in; more reliable information is coming

Conclusion

Livestock managers will need assistance to ensure supplementary nutrition is complementary to the feed on offer until a wider range of species become available.