



Pass the saltbush please

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Sheep may not be the only species that can benefit from grazing saltbush – flying in the face of popular belief, recent research findings suggest saltbush could also supply valuable feed for cattle during the autumn feed gap.

Identifying the species and breed of animal best suited to the grazing of saltland pastures is one way to optimise animal production from saline landscapes according to CSIRO Livestock Industries researcher and *Sustainable Grazing on Saline Lands (SGSL)* project leader, Dr Hayley Norman.

“While a number of studies have measured performance of sheep grazing saltbush-based pastures, there have been limited attempts to identify the species or breed of livestock best suited to grazing this unique fodder source,” Dr Norman said.

In mediterranean-type climates, saltbush offers livestock a valuable source of feed during the autumn feed gap. Saltbush has high crude protein, moderate energy and accumulates high levels of soluble salt.

However, ruminants such as sheep and cattle cannot store significant quantities of salt and intake of saltbush is limited by an individual animal’s ability to excrete salt. This influences the relative performance between livestock species grazing saltbush.

Research suggests that sheep can tolerate a maximum sodium chloride (NaCl) daily intake

in feed of up to 200 grams providing there is a good supply of fresh drinking water.

The ability of animals to concentrate urine, with excess salt, and consume fresh drinking water is therefore integral to their ability to consume with a high salt diet.

“It is generally thought that sheep are better able to tolerate high salt diets than cattle due to an increased renal secretory power,” Dr Norman said. “Sheep turn over about half the amount of water compared with cattle.”

Rates of water turnover are inversely related to the concentrating power of the kidney, so that animals with high rates of water turnover, such as cattle, have a low ability to concentrate urine and hence excrete salt.

Testing the hypothesis

A team of CSIRO researchers and a UWA honours student Chelsea Sancote tested the hypothesis that sheep could better maintain liveweight than cattle when grazing a saltland pasture consisting of river saltbush and understorey species. This was expected because (a) sheep are likely to select a diet containing proportionally less salt and higher energy than cattle and (b) sheep are better able to concentrate their urine than cattle, therefore excreting salt faster and allowing greater intake of saltbush.

Surprising results

Researchers measured liveweight and condition score of 30 mature Merino wethers and 15 mature Hereford cross cows grazing the same saltbush stand with a volunteer understorey over six weeks (see Table 1).

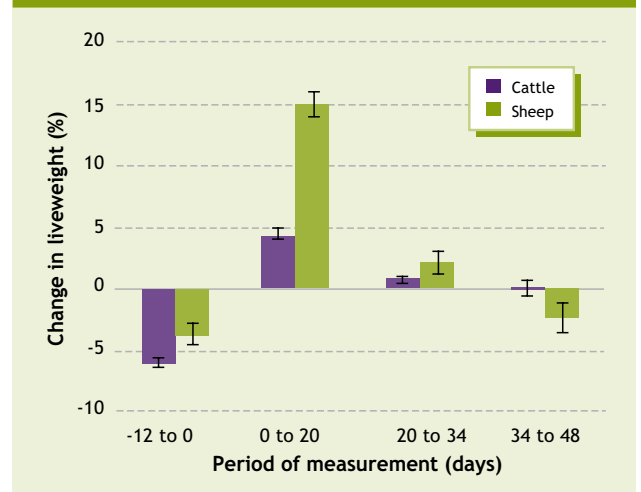
In the early stages of grazing, the cattle significantly outperformed the sheep with a 15 per cent increase in cattle liveweight

LEFT: Where feed on offer does not limit dry matter intake and fresh water is available, cattle can utilise saltbush to the same extent as sheep. (Photo: H Norman)

TABLE 1. Feed on offer during the grazing period.

	Days during grazing of the saltbush plot		
	0	34	48
Saltbush (DM kg/ha)	798	347	277
Understorey (DM kg/ha)	936	329	171

FIGURE 1. Percentage changes in liveweight within grazing periods for sheep and cattle grazing in the same the senesced pasture (days -12 to 0) and river saltbush-based pasture (days 1 to 48).



compared with sheep, who managed an average increase of 4% (see Figure 1).

“An additional surprise was that we found no differences between the proportion of plants with a C4 photosynthetic pathway (saltbushes) in the diets selected by sheep and cattle for most of the grazing,” Dr Norman said.

Analysis of the specific gravity and sodium concentration of urine also yielded no significant differences in urine concentration between sheep and cattle.

“Historically it has been thought that cattle would not perform as well as sheep when grazing saltbush. This study indicates that when the amount of feed on offer is not limiting dry matter intake, and fresh water is available, cattle can use this out-of-season feed source as well as, if not better than, sheep,” Dr Norman said. 🌱

More information

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key points

- Saltbush could offer valuable feed during the autumn feed gap to both sheep and cattle
- Where feed on offer does not limit dry matter intake and fresh water is available, cattle can utilise saltbush to the same extent as sheep.