WOOL PRODUCTION RESPONSE TO GRAZING *MELILOTUS ALBA* ON SALT AFFECTED LAND IN SOUTH-WEST VICTORIA

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Seasonal variations in pasture supply and quality are a feature of most grazing areas of southern Australia. The summer/autumn feed-gap is a major constraint to increasing productivity and producing meat or wool to market specifications. Pastures adapted to saline discharge areas have the potential to produce high quality feed in summer/autumn. *Melilotus alba*, a legume native to temperate Europe and Asia, has produced more than 10 tonnes dry matter/ha per year on moderately saline land in south-west Victoria, with 60-70% of the total dry matter being produced between December and the end of February. This paper reports on the liveweight and wool production responses for sheep grazing *M. alba*-based pastures compared to other salt tolerant pastures.

A demonstration site was established near Glenthompson in southwest Victoria (average annual rainfall 650 mm) to compare 'Control' salt-land pastures [tall wheatgrass (TWG) and barley grass dominant] with *M. alba* ± TWG pastures. There were two replicates of each pasture system, but the plots were not randomly positioned throughout the site. The 'Control' pastures were grazed with Merino ewes from early December until late March 2001 (average stocking rate 10 sheep/ha). The *M. alba*-based pastures were grazed from mid-October 2000 until late March 2001 (average stocking rate 25 sheep/ha). Sheep were weighed and condition-scored every 2 to 3 weeks, and dyebands to measure wool growth were applied every 4 weeks. Mid-side wool samples were removed prior to shearing to measure fleece wool characteristics, and fleece weights were recorded at shearing in mid-July.

Sheep grazing the 'Control' pastures maintained liveweight during summer/early autumn, whereas sheep grazing the *M. alba*-based pastures, at more than double the stocking rate, gained 6-7 kg during this period. At shearing, the sheep which grazed *M. alba*-based pastures were still 2 kg heavier than those which grazed the 'Control' pastures.

Table 1. Clean fleece weight (CFW), total clean wool production per hectare (TCW), staple length (SL), mean fibre diameter (MFD), along-staple variation in fibre diameter (FD var) and staple strength (SS) for sheep grazing different salt land pasture systems. Values represent treatment means ± standard errors.

Pasture system	CFW (kg)	TCW[1] (kg/ha)	SL (mm)	MFD (μm)	FD var (CV; %)	SS (N/ktex)
Control	4.0 ± 0.23	10.2 ± 1.42	112 ± 0.0	19.2 ± 0.41	6.0 ± 1.40	43 ± 3.2
M. alba + TWG	4.1 ± 0.03	23.1 ± 0.51	119 ± 0.6	19.4 ± 0.03	4.8 ± 0.57	44 ± 2.3
M. alba	4.1 ± 0.11	24.4 ± 0.72	116 ± 0.7	19.4 ± 0.18	4.4 ± 0.53	47 ± 2.3

[1]Total clean wool produced per hectare between 4th December and 31st March (117 days).

Sheep grazing the *M. alba*-based pastures produced almost 20% more wool per day than sheep grazing the 'Control' pastures between December and late March (10.2 *vs.* 8.6 g clean/day). The total amount of clean wool produced per hectare during this period for the *M. alba*-based systems was more than double that for the 'Controls' (Table 1). In contrast, under common grazing from the end of March until shearing in July, the 'Control' sheep made rapid compensatory growth and grew more wool than those which had previously grazed the *M. alba* pastures (10.2 *vs*. 9.3 g clean/day). There was no significant difference in clean fleece weight or mean fibre diameter of fleece wool between the different pasture systems. The fibre diameter of wool from sheep that grazed the *M. alba* pastures varied less throughout the year than that for sheep that grazed the 'Control' pastures, but the effects on staple strength were small. In all cases, the wool produced was sound (>40 N/ktex).

M. alba appears to have potential in the medium to high rainfall zones of southern Australia (>450 mm), both from the perspective of animal productivity and sustainability. Indeed, the production achieved from the *M. alba* pastures during summer-autumn in this study exceeded that achieved from non-saline land (data not shown). Salt land production systems based on suitably adapted pasture species will need to be integrated into the whole farm feed profile, and will need to demonstrate economic benefits in their own right if they are to be adopted at the scale required to prevent, stabilise and reverse trends in dryland salinity.

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