

INCORPORATING BALANSA CLOVER IN A PUCCINELLIA SWARD INCREASES PASTURE AND ANIMAL PRODUCTION

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Dryland salinity affects up to 2.1 million ha in Australia (NLWRA 2001), including at least 8,000 wool producers (LWA 2005) and a large number of other livestock producers. The Sustainable Grazing on Saline Land (SGSL) program has focused on improving livestock production on saline areas. This paper reports on work undertaken in the Upper South East of South Australia in areas with moderately saline sandy soils that become waterlogged during winter. Puccinellia (*Puccinellia ciliata*) and balansa clover (*Trifolium michelianum*) are seen as the best pasture options for such land. This experiment evaluated animal and plant production from unimproved saline pasture, improved saline pastures with and without fertiliser and an improved saline pasture with balansa clover included in the sward.

In 2005, 180 15-month old Merino wethers were allocated to 1 of 5 treatment groups: 1) unimproved (Un) saline pasture (predominantly sea barley grass (*Hordeum marinum*), samphire (*Halosarcia* species) and salt scalds; 2) improved (I) saline pasture (predominantly puccinellia); 3) improved saline pasture with 75 kg/ha superphosphate (I+SP) applied annually; 4) improved saline pasture with 75 kg/ha SP and 150 kg/ha urea applied annually (I+SP+U); and 5) improved saline pasture with 75 kg/ha SP applied annually and balansa clover (I+SP+BC) sown in 2003. Each treatment was replicated 3 times resulting in 15 plots. The 12 improved plots were 2 ha each and were grazed at a minimum of 5 DSE/ha and this stocking rate was increased if surplus pasture was present. The 3 unimproved plots were 5 ha each and grazed at 3 DSE/ha. Grazing began in early January and concluded in early December. Superphosphate was applied in May and urea in July, after the break of season. Liveweight and pasture accumulation were measured monthly and analysed by analysis of variance (ANOVA).

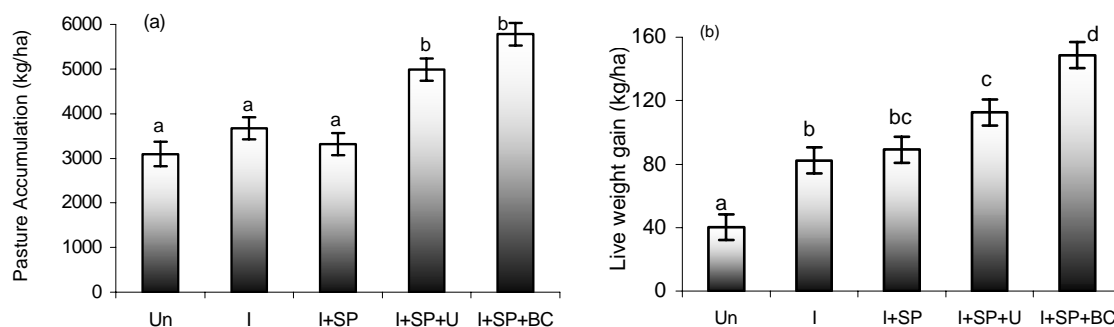


Figure 1. Pasture accumulation (a) and liveweight gain (b) during 2005 grazing of unimproved (Un), improved (I), with superphosphate (SP), urea (U) and balansa clover (BC) pastures.

Improving the pasture type from one based on barley grass to one based on puccinellia significantly increased the liveweight gained by Merino wethers without substantially changing the amount of pasture produced. However, adding super alone to puccinellia pastures (I+SP) did not further increase pasture or animal production. This is most likely because the initial phosphorous levels (Colwell P of 25 mg/kg) in the experimental area were high due to previous fertiliser application. Adding urea to puccinellia pastures (I+SP+U) produced a significant increase in both animal and pasture production, and balansa clover (I+SP+BC) increased both even further. Some questions remain over the long-term persistence of balansa clover in a moderately saline environment but the results from this experiment are encouraging for producers looking to increase both pasture and animal production from land often considered to be of low value.

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