

## UREA APPLIED TO PUCCINELLIA PASTURES INCREASES SHEEP PRODUCTION

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In the 1950's large areas of native vegetation in the Upper South East of South Australia were replaced with highly productive Hunter River lucerne. This maintained groundwater recharge at near pre-clearing levels. The area of lucerne was, however reduced dramatically in the late 1970's by a combination of lucerne aphids, drought and wingless grasshoppers. In 1981 severe flooding inundated large areas of the region, causing the saline groundwater to rise to the soil surface. Since that time dryland salinity has been a feature of the local farming system, with salt-tolerant pastures based on puccinellia (*Puccinellia ciliata*) widely established. Sustainable Grazing on Saline Land (SGSL) is a new national research program, with one of its research sites located on a saline area near Keith. The aim of this experiment was to compare animal and pasture production on volunteer saline pasture and improved saline pasture with and without fertilizer inputs.

One-hundred and twenty 15-month old Merino wethers were allocated to one of four treatment groups: 1) unimproved saline pasture (predominantly sea barley grass (*Hordeum marinum*), samphire (*Halosarcia* species) and salt scalds); 2) improved saline pasture (puccinellia-based) with no fertiliser inputs; 3) improved saline pasture with 75 kg/ha superphosphate (SP); and 4) improved saline pasture with 75kg/ha SP and 100 kg/ha urea (U). Each treatment was replicated three times, giving a total of 12 plots. The nine improved plots were 2 ha each and grazed at 5 DSE/ha. The unimproved plots were stocked at only 2 DSE/ha but were 5 ha each to maintain 10 animals per plot. Grazing began at the end of April 2003, however fertilizer was not applied until July after the season had broken. Liveweight, condition score, soil salinity and pH and pasture composition and mass were recorded monthly.

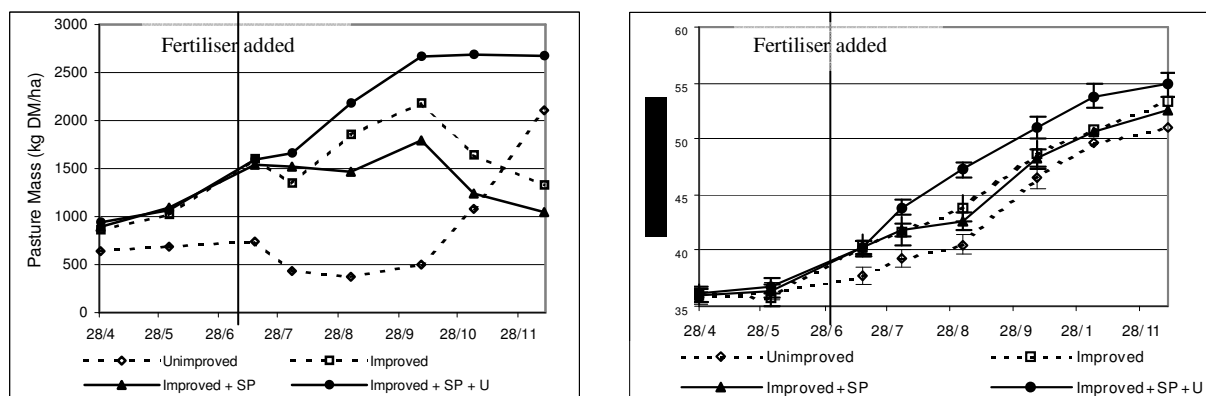


Figure 1. a) Pasture mass, and b) animal liveweight during the first year of grazing.

The three puccinellia-based pastures produced more dry matter than the unimproved pastures from mid-autumn to mid-spring (Fig 1b). Phosphorus did not limit pasture growth in the improved treatment, as there was no difference in pasture growth between this and the improved with SP treatment. This is explained by the fertiliser history of the paddock, which resulted in Colwell P levels of 25mg/kg at the start of the project. Consequently, the body weight and condition score of animals grazing the improved plus SP pasture was not different from those grazing the improved pasture with no fertiliser (Fig 1a). The addition of SP and U increased pasture mass (Fig. 1b) and resulted in sheep being about 8% heavier than those grazing the two other improved pastures (Fig. 1a). Further, during late spring/early summer, when feed availability was declining in other treatments, the pasture mass in the SP and U treatment was maintained. The full benefits of this treatment will be realized in the subsequent grazing year when this extra feed is utilised during the late summer/autumn period.

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