UREA APPLIED TO PUCCINELLIA PASTURES INCREASES SHEEP PRODUCTION

M.L. FENTON[A], *N.J. EDWARDS*[A], *J.D. MCFARLANE*[B], *A.D. CRAIG*[A], *E.A. ABRAHAM*[A] *and J.E. HOCKING EDWARDS*[A]

[A] South Australian Research and Development Institute, Struan Agricultural Centre, Naracoorte, SA 5271
[B] Rural Solutions SA, Struan Agricultural Centre, Naracoorte, SA 5271

In the 1950s, 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 1970s by a combination of lucerne aphids, wingless grasshoppers and drought. 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 scene, with salt-tolerant pastures based on puccinellia (*Puccinellia ciliata*) widely established. The aim of this experiment was to compare animal and pasture production on volunteer saline pasture and improved saline pasture, with and without fertiliser inputs.

One-hundred and twenty 15-month old Merino wethers were allocated to 1 of 4 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 75 kg/ha SP and 100 kg/ha urea (U). Each treatment was replicated 3 times, giving a total of 12 plots. The 9 improved plots were 2 ha each, and grazed at 5 dse/ha. The unimproved plots were stocked at 2 dse/ha, but were 5 ha each to maintain 10 animals per plot. Grazing began at the end of April 2003, and fertiliser was applied in July, after the season had broken. Liveweight, condition score, soil salinity and pH, and pasture composition and mass, were recorded monthly.

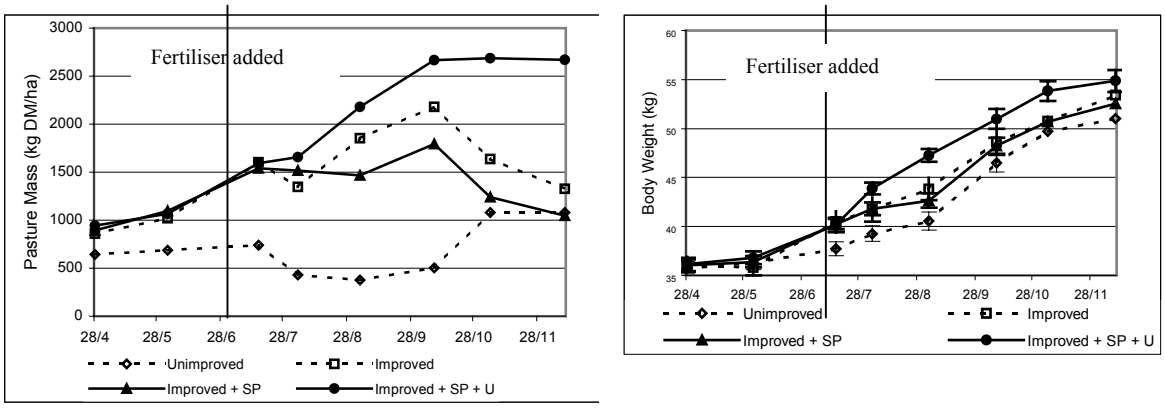

Figure 1. a) Pasture mass, and b) animal liveweight during the first year of grazing (see the text for details).

The three puccinellia-based pastures produced more DM than the unimproved pastures from mid-autumn to mid-spring (Figure 1a). Phosphorus did not limit pasture growth in the improved treatment, as there was no difference in pasture growth between the improved pasture and the improved pasture with SP. However, the Colwell P levels at the start of the project were 25 mg/kg. 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 (Figure 1b). The addition of SP and U increased pasture mass and resulted in sheep being about 8% heavier than those grazing the other 2 improved pastures. Furthermore, 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 realised in the subsequent grazing year when this extra feed is utilised during the late summer/autumn period.

This work was supported by Land, Water and Wool, Salinity CRC, SARDI and Rural Solutions SA.

Email: fenton.michelle@saugov.sa.gov.au