

Selection of a triplex species for salt pan rehabilitation and fodder production in the Lockyer valley

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Secondary salinisation of areas of the Lockyer Valley is widespread. The conventional approaches of extensive tree planting in the catchment and drainage of the salt pan to control salinisation have significant immediate costs with returns not apparent before several decades. There is a need for the development of a management solution to provide short term returns as well as long term saltpan rehabilitation. The salt tolerant *Atriplex* species may be useful for this rehabilitation as well as provide fodder. Consequently, a species selection trial was conducted in a saltpan at the outfall of the Narda gully in the Lockyer valley of South-eastern Queensland

Methods

The species *Atriplex cinerea*, *A. undulata* and *A. amnicola* were selected on the basis of high salt and grazing tolerance, poor seed set to minimise the risk of the plant becoming a woody weed, low spreading habit to aid erosion control, disease resistance, spreading and adventitious roots, plant longevity and large biomass production (1). The site was saline (E.C. > 10.0 dS/m) and sock (exchangeable sodium up to 40%) with a water table at 0.3 m. A randomised complete block design with three replicates (to detect only large differences) was used to examine plant survival. The seedlings were planted in February using a two metre triangular grid spacing in 20 m x 20 m plots (106 seedlings per plot). The plants were placed directly into a 0.1m hole (depth and diameter) and packed with low salinity soil. After planting, the seedlings were watered daily for two weeks. A check was made of the plants' survival and growth on a monthly interval with the survival rate determined by a count of the plants after six months.

Results and discussion

It was found that *A. cinerea* significantly out-performed *A. undulata* and *A. amnicola* (85%, 25%, 10% survival respectively) with no difference between the survival of *A. undulata* and *A. amnicola*. In the next year *A. cinerea* was the only survivor (40e/n). The success of *A. cinerea* using this low input planting method was important as there was no requirement for mounding or mulching of the soil surface with plastics or organic matter. The effort involved in establishing *A. cinerea* is viable only when stock are excluded from the site. Observations of animal behaviour during the trial indicated that cattle graze the *Atriplex* species in preference to the other pasture species (e.g. *Chloris gayana*) in the same paddock. The reduced survival of the *A. cinerea* in the second year was attributed to uncontrolled grazing of the trial.

In conclusion, *Atriplex cinerea* is a potentially useful species to use in the Lockyer valley to enhance economic viability of farming units suffering from secondary salinisation. Further research is needed to determine the optimal planting rates for removal of salts, watcrtable control and rehabilitation of the salt pan. Stock management recommendations are needed to increase the economic and biological sustainability of the pasture.

References

1. Barrett-Lenard. E.G., Malcolm. C.V., Stem. W.R. and Wilkins. S.M. 1986. (Elsevier. Amsterdam).