

Productive Use of Saline Land in the Southern Tablelands of NSW (1991-1994)

It is possible to gain productive use of land affected by rising watertables and salinity. This has been demonstrated by an innovative and committed approach on a 305ha property near Yass, in the southern tablelands of New South Wales.

A large percentage of the dryland salinity that occurs within NSW is located in the area bounded by Yass, Boorowa, Crookwell, Goulburn, Braidwood and Canberra. The problem is also increasing on the central tablelands and the central western slopes, in the Hunter Valley, in the Quirindi and Breeza Plains areas, and on the northern tablelands and slopes.

As part of the Salt Action program, a landholder near Yass gained productive use of salt affected land by thorough planning, consultation with the Department of Conservation and Land Management and NSW Agriculture, and on-site experimentation. The saline area now has good vegetative cover all year which provides fodder for 'crash grazing' of stock during times of low pasture growth elsewhere on the property.

The planning process

A growing dryland salinity problem in the drainage lines of the property, 'Lyndfield Park', was becoming evident. To achieve sustainable productivity, the landholder began implementing an intensive farm plan in the early 1980s which addressed all environmental issues.

Farm plan implementation commenced with tree lot establishment at the rate of 1000 trees per year for five years, then 2000 trees per year in addition to five hectares of direct seeding. There are now more than 20 000 tube stock planted on the property. In addition, major erosion areas were treated to prevent loss of valuable topsoil.

The small size of the property led to intensive and diversified management practices. For instance, the dominant livestock enterprise moved from fine wool to beef cattle, with tree seed collection and a tree nursery now an integral part of the operation. Cropping is confined to one year of oats and three to five years of pasture, with more land each year going into permanent pasture.

Perennial pastures

Deep rooted perennial pastures have provided increased grazing ability, stabilised eroded areas and contributed to groundwater control over the property. Dominant pasture species are phalaris, cocksfoot, fescue and subclovers ("Mount Barker", "Woogenellup" and "Seaton Park" have gradually been replaced by newer recommended varieties such as "Karridale", "June", "Goulburn" and "Leura", with some red clovers also being planted). Lucerne has been planted in pure stands for hay.

On a 1.1 hectare saline site, saltbush and bluebush were planted in 1991 on 30cm high mounds constructed using a grader blade and mouldboard plough. A mixed pasture was sown between the mounds and the site was grazed in autumn 1992 with 65 young ewes for six weeks. This area now provides an opportunity for crash grazing equivalent to 10.2 dse/ha/year.

The pasture species sown in autumn 1991 were "Karridale" subclover (5kg/ha), "Trikkala" subclover (5kg/ha), "Palestine" strawberry clover (2kg/ha), red clover (2kg/ha), "Siroso" phalaris (5kg/ha), "Demeter" fescue (9kg/ha) and perennial ryegrass (5kg/ha). Tall wheat grass and *Puccinellia ciliata* were sown in autumn 1992. All these species were selected to study their respective survival rates in the saline conditions.



Seeds are collected from the tree seed nursery and other locations on 'Lyndfield Park' to be grown into tubestock on site. Tubestock are either planted on the property or sold to provide another source of income.

Trees and shrubs

Trees and shrubs of various species, both native and introduced, have been planted in strategic locations throughout the property to obtain wind protection, watertable management, nutrient uptake, wildlife enhancement, bushfire management, agroforestry, livestock fodder, a seed nursery and to add aesthetic value.

The species planted include eucalypts, acacias, casuarinas, grevilleas, banksias, hakeas, bursaria, robinia, honey locust, oaks and tree lucerne. An 18 hectare paddock, identified as a prime groundwater recharge area, has been converted from a native grass paddock to a tree seed nursery.

The results

Despite reduced stocking rates, productivity from the livestock enterprises has been maintained. According to the landholder, this is due to a combination of management factors including increased shelter for stock and improved fodder production.

The now-productive saline discharge site is continually under assessment, and serves as a demonstration site for Landcare groups, scientific agencies and the community generally. An adjacent area of the property is currently a site for the national program for the assessment of saltland agronomy species.

Piezometers (shallow bores) are regularly monitored and the quality of the groundwater sampled. The trend over three years indicates that the land management practices in the catchment are gradually lowering the watertable, even during several years of above average rainfall prior to the drought. Although the monitoring period is currently too short to make any general conclusions, the trend is very encouraging.

The tree seed nursery has shown one of the most surprising results. There is an increasing demand for such seed from seed merchants and other farmers, and the return from tree seed production three years after planting is greater than the return expected from fine wool on the same site.

On the saline demonstration site, although vegetative cover remains excellent and erosion has been prevented, the original pasture mix has changed to adapt to the saline conditions (surface water and groundwater measure between 6-10 deciSiemens per metre (dS/m)). The dominant species is now "Demeter" fescue, with some tall wheat grass. Weeds such as wireweed and couch are becoming evident.

Saltbush and bluebush planted in mounds in 1991 initially began strongly but gradually declined in vigour. The exceptionally cold winter of 1994, with temperatures down to -10°C , damaged or killed many of the bushes. (An information sheet specifically on this subject, *Saltbush and bluebush: Susceptibility to frost on the Southern Tablelands*, is also available.) However, production remains high on the site due to the vigorous pasture growth.

The rehabilitation of saline areas and the establishment of perennial pastures and tree lots have occurred over the short period of 12 years. The property attracts attention from Australian and overseas environmental management specialists and Landcare groups, with around 500 visitors a year viewing the importance of a whole farm planning approach.

The important issues which have emerged from the management of this property are:

- **planning as part of a larger catchment is essential**
- **diversification and niche market supply can complement conventional farming operations**
- **trees should form an integral part of farm design**
- **better management can lead to sustainable and improved production**

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The information for this sheet has come from Don Russell, former Yass District Soil Conservationist, and also from a paper, 'From the farm gate to the catchment', written for the Land Management for Dryland Salinity Control conference, Bendigo, October 1993, by Don Russell and John Weatherstone. Phil Graham, Yass District Livestock Officer, Sheep and Wool, NSW Agriculture, was consulted on the project.

Salt Action is a New South Wales Government salinity management program involving the community, [NSW Agriculture](#), [Environment Protection Authority](#), [Department of Land and Water Conservation](#).
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