

MANAGEMENT RECOMMENDATIONS

DRYLAND SALINITY NOW SERIES PRODUCED BY THE COORONG TATIARA LOCAL ACTION PLAN

Background

Since 2016, the Coorong District Council area has seen a growing increase in areas affected by dryland salinity. In response to this, the Coorong Tatiara Local Action Plan (CTLAP) have been working with farmers and industry across the region to further understand the issues and develop solutions to assist farmers in managing areas of dryland salinity; both in the areas of remediation of scalds, identifying 'at risk areas' and prevention of new scalds forming. The following recommendations have been developed as part of this process. Further information is available on each of these recommendations as part of the Dryland Salinity NOW package.

Know your soil salinity levels

Soil salinity can vary greatly within a small area of the paddock and it can also vary greatly during the season with soil salinity generally the lowest from July to September where winter rainfall events have flushed and diluted the soil, and highest from January to March where the concentration of salts in the surface is likely to occur due to soil evaporation. There is also likely to be quite a bit of seasonal variability.

Measuring salinity levels:

- This should be done during the autumn months to determine the appropriate species mix for the site (identifying the maximum salinity level that the site will get to).
- Recommend measuring slightly elevated areas in the landscape as well as those areas that are lower to get an indication of the variability.
- $EC_{1:5}$ is adequate as a guide (utilize a hand held salinity meter similar to that shown in Figure 1), but should be converted to EC_e^{21} prior to making decisions.

Understanding the hydrology/movement of water in your system

There appears to be two main processes across the Coorong region resulting in salinity issues;

- Discharge – where the water table intercepts with the ground surface creating an area that becomes waterlogged over a period of time
- Capillary action ('wicking') – where evaporation at the soil surface draws the water up through the soils. Capillary action is strongly influenced by soil type with water moving most easily through clay soils and less so through sandy soils making clay soils with a similar water table level more prone to salinity scalding.

PROJECT DETAILS

Responding to Dryland Salinity NOW Recommendations for a new audience

Funding Body

This project is supported by the National Landcare Program – Smart Farms Program, an Australian Government Initiative



Fig.1: Hand held salinity meter

Knowing the process will assist with various management decisions including;

- Species selection when remediating / managing these soils
- Grazing management
 - o to reduce pugging if prone to waterlogging due to large movement of groundwater
 - o to maintain groundcover during the summer months if capillary action is the cause
- Capacity to “flush” water through the profile during the winter months
 - o Waiting for water to move through the profile to 20-30cms to flush and dilute salts at the start of the season has been found to be a critical factor in remediating soils / establishing crops on transient saline areas. Knowing your system and where the water table is located will be an important consideration in determining sowing time for maximum establishment.

Maintain groundcover

The maintenance or presence of groundcover; particularly on those soils where capillary action (wicking) over summer appears to be the process that is bringing salts to the surface, has been shown to reduce the soil surface salinity levels (as measured in Autumn prior to opening rainfall events).

Surface soil sampling areas that now have groundcover showed reductions of 25-60% in soil salinity when compared to those areas that were still exposed²². This indicates the effectiveness of groundcover in reducing evaporation by providing both shade and a barrier from wind resulting in a subsequent reduction in the level of evaporation and movement of salts up to the surface.



Fig 2. Pasture cages to ensure groundcover retained over summer for sampling prior to autumn break

Diversity of species

Within saline soils, there is incredible diversity in the salt ranges and also in the expression of waterlogging. These changes can be quite great and sometimes within millimetres of each other. Often small mounds or areas that have old plant stem may have soil that deposits around the base of the stem and these areas are often lower in salinity than areas that may only be 1cm lower in the landscape.

By sowing a blend of species across saline areas, the most adapted species will establish in the micro-climate / part of the landscape that they are best suited to. Over time – if allowed to set seed, species will start to spread across the area, often through the process of colonisation.