■ FACT SHEET

DRY SALINE LAND

Symptoms and Management

Figure 1: Bare patch dry saline land at Robertstown South Australia in 2022 (highly saline see Table 1 for chemical analysis results).

Dry saline land or often called transient salinity or 'magnesia patches' is salinity that occurs in the absence of a water table. It occurs where there is a high amount of natural salt within the upper part of the soil profile.

The natural salts in the soil will move up and down the profile according to seasonal conditions. During wet periods the salts are leached down the profile and during hot and dry periods the salts are brought to the surface by capillary rise.

Dry saline land generally occurs in the low to medium rainfall areas of South Australia.

Symptoms

The concentration of salt on the surface affects germination of salt-sensitive plants and without plant growth these areas are often left bare. On the bare areas further evaporation occurs and more salt is drawn to the surface. Often only salt tolerant plants will grow on these areas.

This type of salinity can cover quite large to small areas and often occurs as a mosaic pattern and patchy growth in affected paddocks.

Due to the salt on the surface the soil on the surface is also often loose and powdery.

The soil at varying depths (for example 10 cm increments) can be sampled and then tested through a laboratory and is regarded saline when the soil/water 1:5 is greater than 0.4 dS/m or the ECe value is greater than 4 dS/m.

Management

Dry saline land can be managed by establishing and maintaining a permanent surface cover; by minimising soil disturbance by tillage and livestock; and by covering small bare patches with a layer (10-15 cm) of sand, old hay or manure that will reduce evaporation, help to improve water infiltration and allow some cover to re-establish.

Soil cover should be maintained by restricting grazing over the critical periods such as the summer and autumn period so that areas do not become bare when evaporation and capillary rise is at its highest. Some areas could be fenced off.

Opportunity cropping could be carried out in wet seasons when salts have been leached down the profile.

There could be an opportunity to use salt tolerant plants such salt bush on some of the larger bare areas that will help to provide a soil cover and improve productivity.

KEY POINTS

- Dry saline land occurs in patches in paddocks and is difficult to manage.
- Try and maintain a surface cover on these areas such as stubbles or old hay to reduce evaporation and help improve infiltration.
- Demonstration work examining different options for reclaiming these areas in different regions is occurring with a Future Drought Fund (FDF) extension grant through the Mallee Sustainable Farming (MSF) group.

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PATHWAY TO IMPROVEMENT

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A demonstration project evaluating 'best bet options' is being carried out through the Mallee Sustainable Farming (MSF) group led project titled: Saline Landscapes: Building resilience to drought with landscape scale remediation of saline land.

Other farmer groups are also evaluating different management practices across a range of dry saline sites in other regions.

The MSF project has shown the value of applying sand on saline areas, mixed results using composts and manures and highlighted improved salt tolerance of different cereal varieties and canola. A decision tool is being developed.

Areas at risk

Areas at risk to the development of dry saline land need careful management as well. These can be identified by soil testing results as per *Table 1*, which shows examples of an affected site and one identified 'at risk' as part of an Agricultural Bureau project funded through the Future Drought Fund.

At risk sites need careful management in drier years to avoid baring out by cultivation or livestock otherwise salt can move to the surface from evaporation.

Other techniques such as Electromagnetic mapping (EM38) or Electrical conductivity (EC) mapping can identify areas affected and areas at risk to dry saline land, see *Figure 2*. Normalised Difference Vegetation Index (NDVI) can be used to examine in season growth of vegetation.

Further Information

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Table 1: Soil test results

Site	Current Risk	Depth cm	EC1:5 dS/m	Chloride mg/kg	Management Options
Robertstown	Severely affected, mostly bare	0-10	2.1	2500	Cover with sand or compost to re-establish cover and stop evaporation.
		10-30	2.8	3300	
Robertstown	At risk, subsoil saline from 10 cm	0-10	0.23	88	Needs careful management in dry years to avoid baring out.
		10-20	0.86	1000	
		20-50	1.7	200	
Target			**<0.4**	**<200-300**	

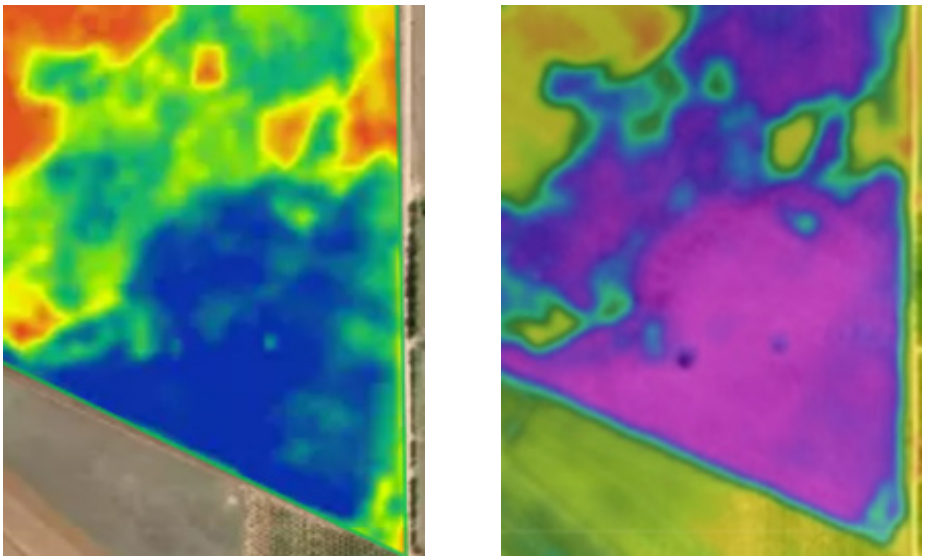

Figure 2: Example of (left) EC MAP (red is high, blue is low) and (right) NDVI map (red/yellow is low biomass, purple is high biomass) highlighting high salinity in the north west corner of the paddock.

Figure 3: Dry saline land - causing patchy growth.