

HY3: Sodosolic, Salic Hydrosol

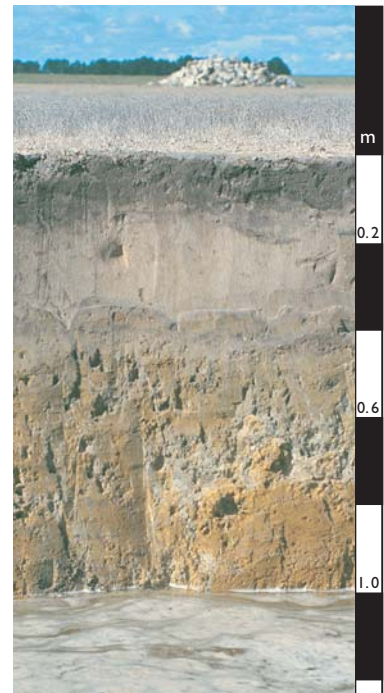
General description of the soil

A sodic texture-contrast soil that is seasonally wet with a saline water table at shallow depths.

Distribution:	A common soil occupying mostly small areas in the Southern Mallee region of South Australia.
Typical land use:	Nature conservation. Mostly bare salt pan or Sea Barley Grass – so agricultural potential is minimal.
Common variants:	Some areas of these soils may be underlaid by limestone.
World Reference Base:	Salic Solonetz.
Other names:	Saline Solodised-Solonetz and Solonchaks.

Environment and location of the example profile

Landform:	Saline flats within undulating plains. Lower parts of the landscape have been inundated with saline groundwater.
Parent material or substrate:	Quaternary sediments.
Drainage class:	Poorly drained.
Surface condition:	Saline crust.
Site disturbance:	No effective disturbance.
Native vegetation:	Probably halophytes.

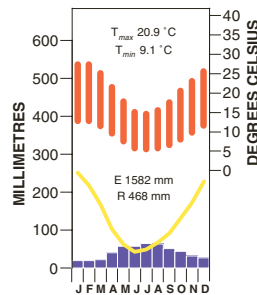


Keith district, south-east South Australia

Site location



Site climate



Soil morphology

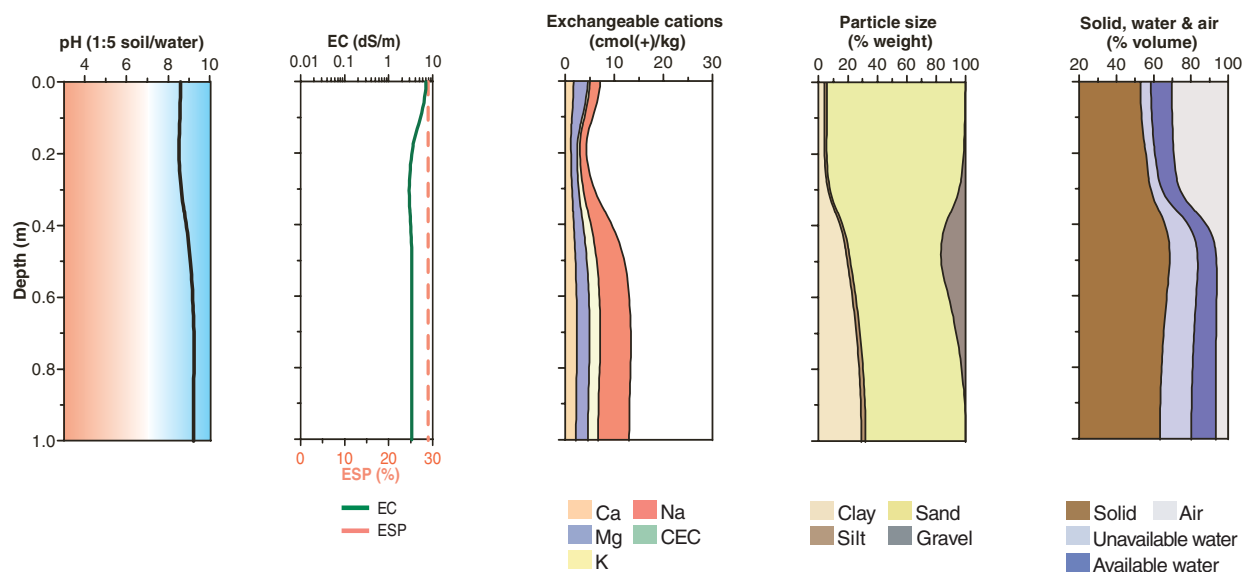
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A11p	0.00–0.12	very dark greyish brown (10YR 3/2)	–	loamy sand	single grain	–	–	very weak (moist)	–	–	abrupt
A12p	0.12–0.18	brown (10YR 5/3)	–	sand	single grain	–	–	very weak (moist)	–	–	clear
A2e	0.18–0.36	pale brown (10YR 6/3)	–	sand	single grain	–	–	very weak (moist)	–	–	sharp
B2t	0.36–0.55	dark greyish brown (2.5Y 4/2)	yellowish brown (10YR 5/8)	sandy clay	strong	columnar	100–200 mm	firm (moist)	–	*slightly calcareous	diffuse
C1k	0.55–0.80	light olive brown (2.5Y 5/4)	olive grey (5Y 5/2)	sandy clay	massive	–	–	firm (wet)	10–20% limestone (60–200 mm)	*moderately calcareous	diffuse
C2k	0.80–1.00	yellowish brown (10YR 5/8)	olive grey (5Y 5/2)	sandy clay	massive	–	–	firm (wet)	–	*moderately calcareous	diffuse
C3	1.00+	yellowish brown (10YR 5/8)	olive grey (5Y 5/2)	sandy clay	massive	–	–	–	–	–	water table at 1.00 m

* Fine earth fraction

Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H ₂ O ^A	pH CaCl ₂ ^B	Elect. Cond. dS/m ^A	CaCO ₃ % ^B	Org. C % ^D	Extr. P mg/kg ^A	Tot. P %	Tot. K %	Cation exchange properties ^G cmol(+)/kg						ESP % ^A	Bulk dens. Mg/m ³	Particle size % ^A			
										Ca	Mg	K	Na	H+Al	CEC			ECEC	CS	FS	Silt
A11p	0.00–0.12	8.6	8.2	7.08	2	1.1	28			1.7	2.9	0.5	2.1		4	48	65	29	2	4	
A12p	0.12–0.18	8.5	8.1	2.60	1	0.4	19			0.7	0.8	0.3	0.9		2	37					
A2e	0.18–0.36	8.4	8.1	2.16	1	0.1	20			1.0	0.7	0.4	0.5		2	25	51	45	1	3	
B2t	0.36–0.55	9.1	8.3	3.56	5	0.2	5			2.1	2.5	2.3	6.4		13	50	33	39	3	25	
C1k	0.55–0.80	9.3	8.5	3.30	22	0.1	< 2			2.6	2.7	2.3	6.4		12	51					
C2k	0.80–1.00	9.2	8.5	3.30	6	< 0.1	< 2			2.1	2.4	2.0	6.4		12	52	18	50	3	29	

Key profile properties



General qualities of the soil

Infiltration:	Slow or less when saturated.
Available water store:	Very small.
Permeability:	Probably low.
Physical root limitations:	Some areas are underlain by hard limestone at shallow depth and aeration is poor.
Erosion hazard:	Bare soil is often covered by water, salt or algal mat, but can be eroded by wind when dry.
Nutrient availability:	Phosphorus fertiliser is essential for pastures and nitrogen levels will depend on legume content. Copper and zinc are marginal requiring occasional additions.
Toxicities:	The profile is extremely saline. Only salt tolerant species are suitable due to the saline water table at 1.00 m.



Aerial view of saline flats near Keith, South Australia

Acknowledgements: Soil image, soil description and laboratory data: Department of Water, Land and Biodiversity Conservation, South Australia. Site MM104 from McCord (1995). Landscape image: MapLand, South Australia.