

CA6: Endohypersodic, Regolithic, Supracalcic Calcarosol

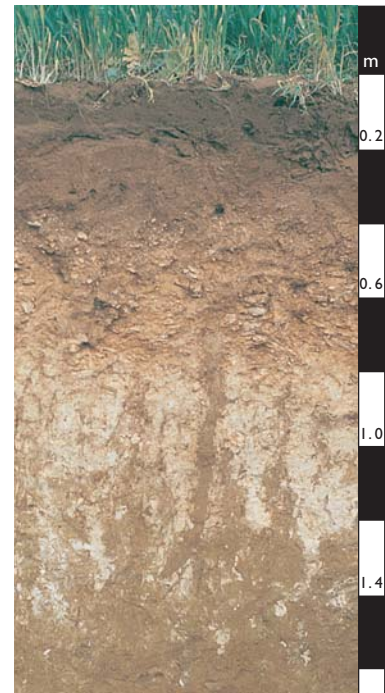
General description of the soil

A Supracalcic Calcarosol (20–50% hard carbonate) underlain by unconsolidated sedimentary materials. An ESP of 15 or greater occurs below 0.5 m.

Distribution:	These Calcarosols occur widely in the Mallee Region of South Australia, Victoria, New South Wales and southern Western Australia.
Typical land use:	Rotational cropping and grazing of annual pastures.
World Reference Base:	Luvic Calcisol.
Other names:	Solonised Brown Soils and Mallee Soils.

Environment and location of the example profile

Landform:	Gently undulating plain.
Parent material or substrate:	Cainozoic sediments with calcareous aeolian accession.
Drainage class:	Well-drained but the climate is generally dry.
Surface condition:	Soft (under crop) to firm (under pasture).
Site disturbance:	Cultivation – rainfed.
Native vegetation:	Mallee shrubland and woodland.

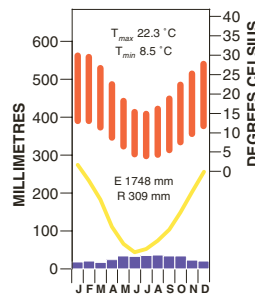


High levels of boron and sodium limit root growth below 0.5 m, 70 km north-east of Murray Bridge, South Australia

Site location



Site climate



Soil morphology

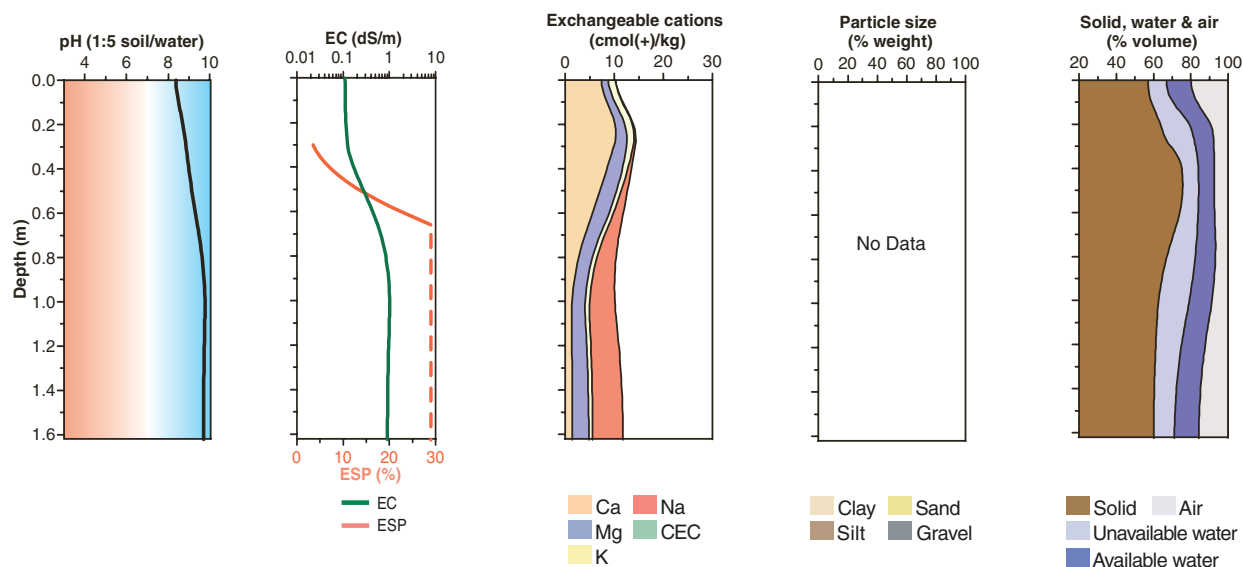
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1	0.00–0.14	dark reddish brown (5YR 3/4)	–	sandy loam	single grain	–	–	–	–	–	abrupt
B21t	0.14–0.30	dark reddish brown (2.5YR 3/4)	–	heavy sandy clay loam	weak	columnar	100–200 mm	–	–	highly calcareous*	clear
B21k	0.30–0.48	red (2.5YR 4/6)	–	sandy clay loam	massive	–	–	–	20–50% hard carbonate fragments (6–60 mm)	very highly calcareous*	gradual
B22k	0.48–0.68	red (2.5YR 4/8)	–	sandy clay loam	massive	–	–	–	20–50% hard carbonate fragments (6–60 mm)	very highly calcareous*	gradual
B23k	0.68–1.08	yellowish red (5YR 5/8)	yellowish brown (10YR 5/8)	light clay	massive	–	–	–	–	>50% soft carbonate very highly calcareous*	diffuse
C11	1.08–1.62	strong brown (7.5YR 5/8)	light reddish brown (5YR 6/3)	sandy clay loam	massive	–	–	–	–	20–50% soft carbonate	diffuse
C12	1.62–2.00	reddish yellow (7.5YR 6/6)	light reddish brown (5YR 6/3)	light sandy clay loam	massive	–	–	–	–	–	–

* 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 ^C cmol(±)/kg							ESP % ^A	Bulk dens. Mg/m ³	Particle size %			
										Ca	Mg	K	Na	H+Al	CEC	ECEC			CS	FS	Silt	Clay
A1	0.00–0.14	8.4	7.3	0.11	<1	1.1	16			7.6	1.4	1.5	0.1		11		–					
B21t	0.14–0.30	8.8	7.7	0.11	4	0.8	3			12.1	2.0	1.7	0.2		14		–					
B21k	0.30–0.48	9.1	7.9	0.16	18	0.4	4			7.2	3.9	0.8	0.9		11		8					
B23k	0.68–1.08	9.8	8.5	1.06	27	0.2	2			1.3	2.4	1.0	4.8		9		56					
C11	1.08–1.62	9.7	8.4	0.92	10	0.1	2			1.4	3.3	0.8	6.1		10		62					

Key profile properties



General qualities of the soil

Infiltration:	Moderate to slow depending on surface condition.
Available water store:	Small in the restricted root zone.
Permeability:	Decreases to low with depth.
Physical root limitations:	May be restricted by calcrete fragments. Dense clays at depth have poor aeration and possible strength limitations.
Erosion hazard:	Low to moderate when the soil surface is exposed. Greater on textures less than sandy loam.
Nutrient availability:	Low nutrient status and poor availability in calcareous horizons. Phosphorus fertiliser is essential.
Toxicities:	High boron and high sodium will affect root growth below 0.5 m. The example profile has very high salinity below 0.68 m.



Gently undulating plains used for cropping in the Mallee Region of South Australia

Acknowledgements: Soil image, soil description and laboratory data: Department of Water, Land and Biodiversity Conservation, South Australia. Site MM009 from McCord (1995). Landscape image: MapLand, South Australia.