

CA3: Ceteric, Petrocalcic, Hypocalcic Calcarosol

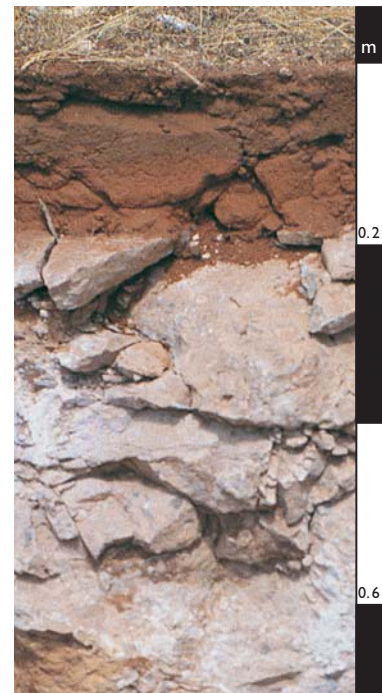
General description of the soil

A Hypocalcic Calcarosol (<20% hard and <2% soft carbonate) underlain by a massive, strongly cemented calcrete pan. The upper part of the profile has no definitive properties at the subgroup level.

Distribution:	A common soil in the Southern Mallee Region of South Australia and adjacent Victoria.
Typical land use:	Annual pastures grazed by sheep.
Common variants:	Depth to hard calcrete is variable.
World Reference Base:	Epipetric Calcisol.
Other names:	Mallee Soils and Grey-brown and Red Calcareous Soils.

Environment and location of the example profile

Landform:	Undulating stony calcrete rise.
Parent material or substrate:	Calcrete.
Drainage class:	Moderately well-drained.
Surface condition:	Firm.
Site disturbance:	Cultivation – rainfed.
Native vegetation:	Tall mallee shrubland.

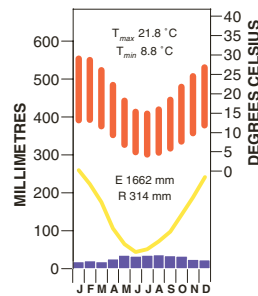


Shallow A and B horizon overlying a cemented calcrete pan, Murray Mallee, South Australia.

Site location



Site climate



Soil morphology

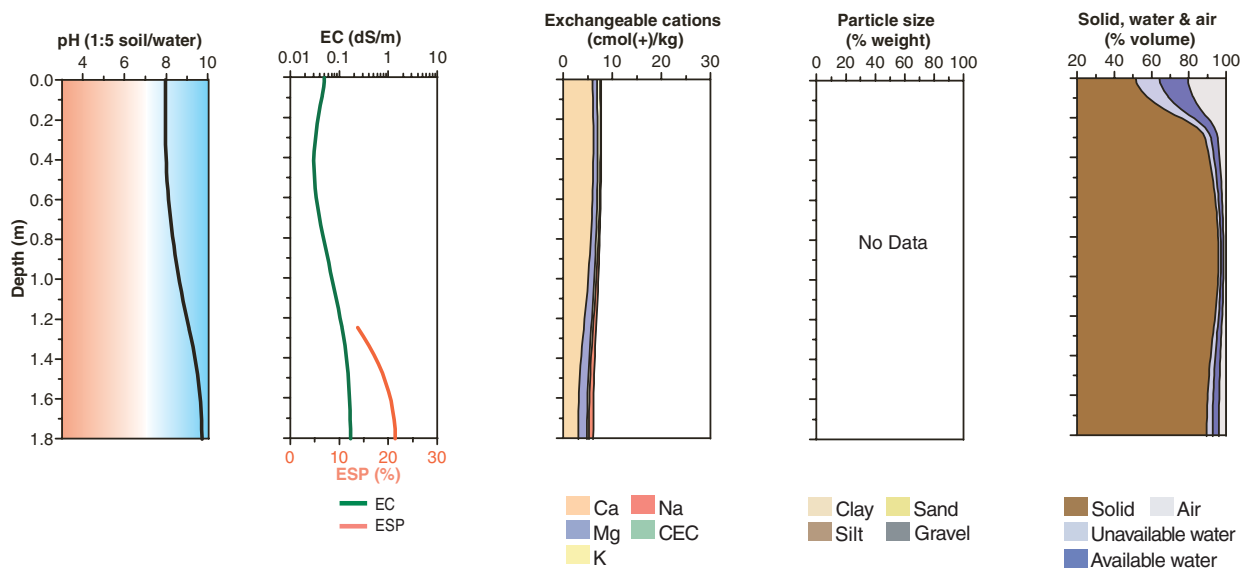
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1p	0.00–0.09	dark reddish brown (SYR 3/4)	–	sandy loam	weak	granular	5–10 mm		–	2–10% carbonate nodules (20–60 mm)	abrupt
B2t	0.09–0.20	dark red (2.5YR 3/6)	–	light sandy clay loam	massive	–	–		–	<2% carbonate nodules (20–60 mm)	sharp
2B2km	0.20–1.25			calcrete	massive	–	–		very strongly cemented nodular calcrete pan	>90% carbonate nodules (>60 mm) very highly calcareous*	diffuse
2Ckm	1.25–1.80			sandy clay loam	massive	–	–		–	50–90% carbonate nodules (>60 mm) very highly calcareous*	

* 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						ESP % ^A	Bulk dens. Mg/m ³	Particle size %			
										cmol(+)/kg								CS	FS	Silt	Clay
										Ca	Mg	K	Na	H+Al	CEC						
A1p	0.00–0.09	8.0	7.5	0.05	1	0.7	8			5.9	0.9	0.7	0.2		8		–				
B2t	0.09–0.20	8.2	7.6	0.04	1	0.3	3			5.8	1.0	0.5	0.2		8		–				
2Ckm	1.25–1.80	9.6	8.2	0.16	70	0.1	<2			3.2	1.8	0.4	0.8		4		20				

Key profile properties



General qualities of the soil

Infiltration:	Rapid.
Available water store:	Very small in the root zone for pastures.
Permeability:	Moderately permeable along cracks between sheet and boulder calcrete.
Physical root limitations:	Restricted by sheet and boulder calcrete.
Erosion hazard:	Nil to low erosion hazard.
Nutrient availability:	Low phosphorus (fertiliser essential) and nitrogen (depends on pasture legume). Cu and Zn marginal.
Toxicities:	None likely.



Landscapes underlain by massive calcrete are widespread in the Murray Mallee, near Murray Bridge, South Australia.

Acknowledgements: Soil image, soil description and laboratory data: Department of Water, Land and Biodiversity Conservation, South Australia. Site MM021 from McCord (1995). Landscape image: CSIRO.