

CA5: Hypervescent, Petrocalcic, Supracalcic Calcarosol

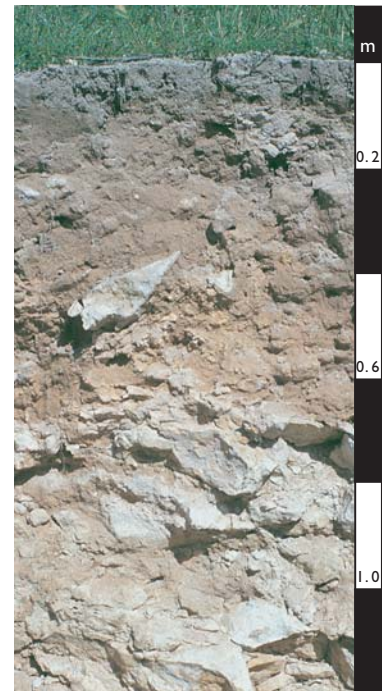
General description of the soil

A Supracalcic Calcarosol (20–50% hard carbonate) underlain by a hard calcrete pan. The A1 horizon is strongly effervescent and contains more than 8% (by analysis) of soft, fine carbonate.

Distribution:	Best known from the Southern Mallee Region of South Australia.
Typical land use:	Cereal cropping and grazing of annual pastures.
Common variants:	Depth to the hard calcrete pan is variable.
World Reference Base:	Endopetric Calcisol.
Other names:	Soloned Brown Soils and Mallee Soils.

Environment and location of the example profile

Landform:	Undulating plain.
Parent material or substrate:	Soil is underlain by a hard calcrete pan.
Drainage class:	Well-drained.
Surface condition:	Soft.
Site disturbance:	Cultivation.
Native vegetation:	Mid-dense mallee woodland.

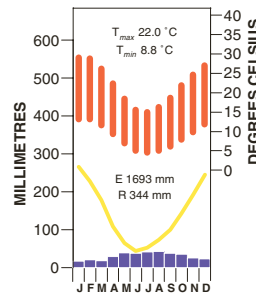


Sixty kilometres east of Murray Bridge, South Australia

Site location



Site climate



Soil morphology

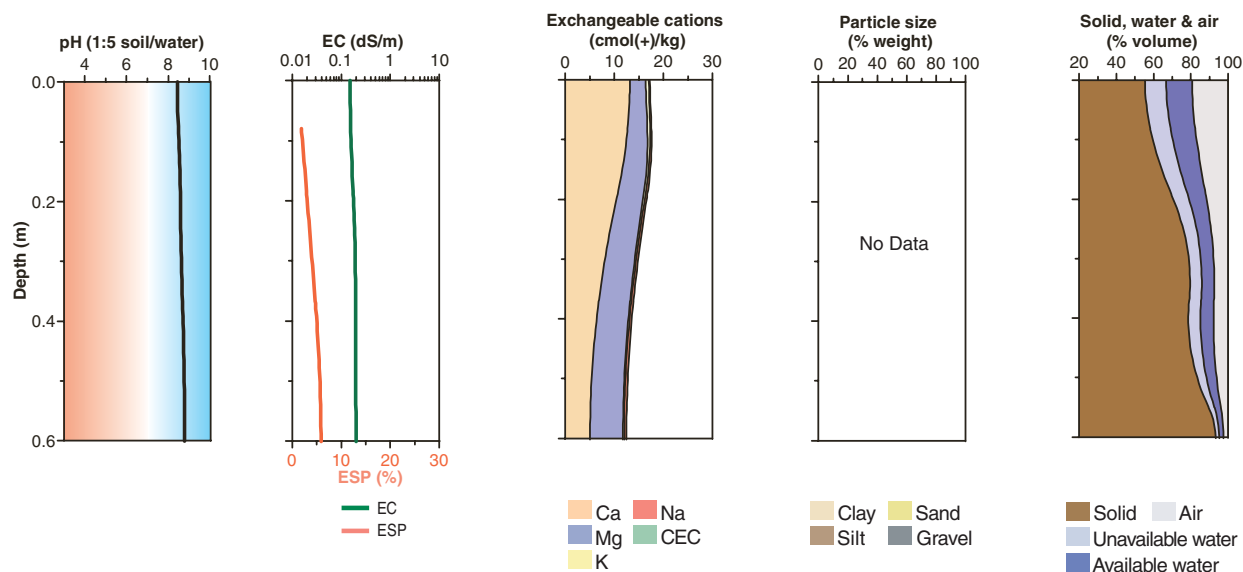
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1pk	0.00–0.08	dark brown (7.5YR 4/2)	–	sandy clay loam	massive	–	–	very weak (moderately moist)	–	2–10% carbonate nodules (20–60 mm) very highly calcareous*	abrupt
B21k	0.08–0.19	brown (7.5YR 5/2)	–	sandy clay loam	massive	–	–	very weak (moist)	–	2–10% carbonate nodules (20–60 mm) very highly calcareous*	abrupt
B22k	0.19–0.37	brown (7.5YR 5/2)	–	sandy clay loam	massive	–	–	weak (moist)	–	20–50% carbonate nodules (>60 mm) very highly calcareous*	diffuse
B23k	0.37–0.60	light reddish brown (5YR 6/3)	–	sandy clay loam	massive	–	–	very strong (moist)	–	20–50% carbonate nodules (>60 mm) very highly calcareous*	sharp
2B2km	0.60–1.30	white (10YR 8/2)	–	limestone	massive	–	–	rigid (dry)	>50% limestone fragments (60–200 mm) strongly cemented nodular calcrete pan	20–50% carbonate nodules (>60 mm) very highly calcareous*	clear
2C2km	1.30–1.45	white (10YR 8/2)	–	limestone	massive	–	–	rigid (dry)	>50% limestone fragments (60–200 mm)	20–50% 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 ^C						ESP % ^A	Bulk dens. Mg/m ³	Particle size %			
										Ca	Mg	K	Na	H+Al	CEC			ECEC	CS	FS	Silt
A1pk	0.00–0.08	8.4	7.8	0.15	25	1.6	50			13.2	3.4	0.6	0.2		14		–				
B21k	0.08–0.19	8.6	8.0	0.16	36	1.3	5			12.7	5.1	0.4	0.4		15		2				
B22k	0.19–0.37	8.6	8.1	0.20	49	1.1	3			8.0	6.2	0.3	0.4		11		4				
B23k	0.37–0.60	8.8	8.4	0.20	55	0.8	3			4.9	6.8	0.2	0.5		8		6				

Key profile properties



General qualities of the soil

Infiltration:	Rapid.
Available water store:	Small to moderate in the root zone (0 – 0.6 m in the example profile).
Permeability:	Moderate.
Physical root limitations:	May be restricted at depth by stone and boulder calcrete.
Erosion hazard:	Erodibility is usually low. The calcareous surface soil may be eroded by wind after intense tillage.
Nutrient availability:	These highly calcareous soils fix nutrients. Regular phosphorus fertiliser is essential and nitrogen requirements will depend on the legume content of the pastures. Copper and zinc deficiencies require occasional additions.
Toxicities:	Strongly alkaline at depth. May be highly saline at depth. Possible boron toxicity.



Undulating plain in the Murray Mallee, South Australia

Acknowledgements: Soil image, soil description and laboratory data: Department of Water, Land and Biodiversity Conservation, South Australia. Site MM069 from McCord (1995). Landscape image: Caroline Fisher.