

CH10: Mottled-Sodic, Supracalci, Brown Chromosol

General description of the soil

A texture-contrast soil with a mottled brown and yellowish red clayey B2 horizon which grades to highly calcareous (i.e. Supracalci) B3k horizons which are very strongly sodic (ESP >16).

Distribution:	A common soil in the southern central parts of South Australia (i.e. Eastern Eyre Peninsula, Upper South East, Central Murray Mallee, Lake Plains and southern Yorke Peninsula).
Typical land use:	Grazing.
Common variants:	The amount of soft carbonate is variable but usually high.
World Reference Base:	Luvic Calcisol.
Other names:	Sodic Red-Brown Earths.

Environment and location of the example profile

Landform:	Low rise on gently undulating plain.
Parent material or substrate:	Tertiary sands, mantled by aeolian carbonates.
Drainage class:	Imperfectly drained.
Surface condition:	Firm.
Site disturbance:	Cleared.
Native vegetation:	Eucalypt shrubland.

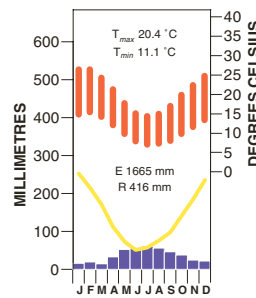


Yorke Peninsula, South Australia

Site location



Site climate



Soil morphology

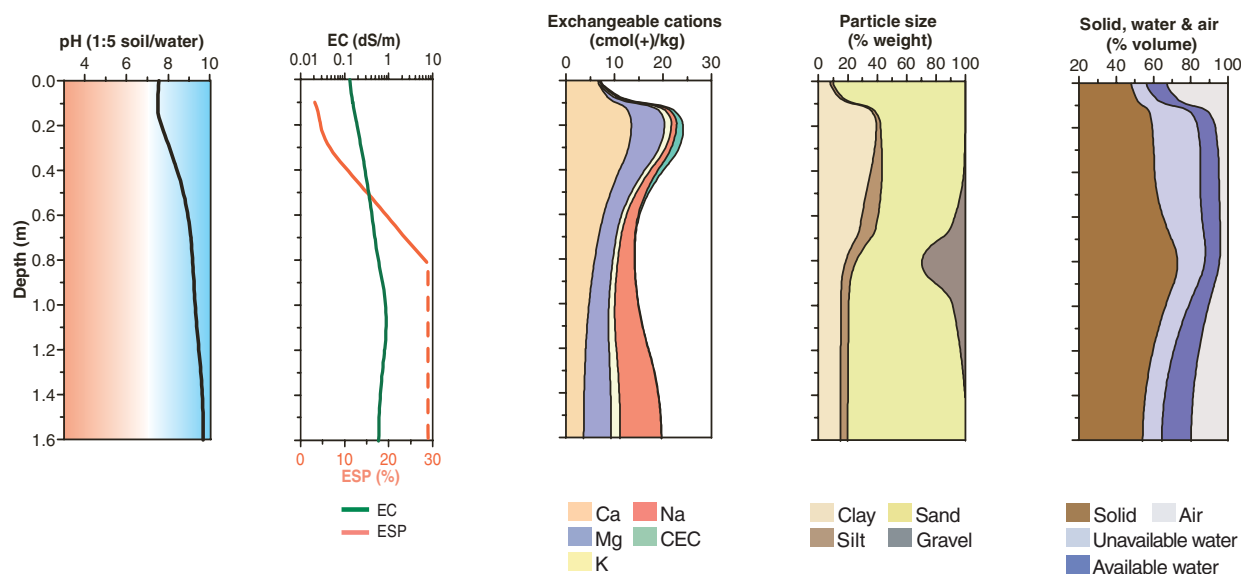
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
Ap	0.00–0.10	dark brown (10YR 3/3)	–	heavy sand	single grain	–	–	very weak (moderately moist)	–	–	sharp
B21t	0.10–0.19	strong brown (7.5YR 4/6)	pale olive (5Y 6/3) and yellowish red (5YR 4/6)	sandy medium clay	weak parting to strong	prismatic parting to angular blocky	50–100 mm parting to 10–20 mm	very firm (moderately moist)	–	–	gradual
B22t	0.19–0.37	strong brown (7.5YR 5/6)	light olive brown (2.5Y 5/4)	sandy medium clay	weak parting to strong	prismatic parting to angular blocky	50–100 mm parting to 10–20 mm	firm (moist)	–	slightly calcareous*	clear
B31k	0.37–0.70	brownish yellow (10YR 6/6)	–	sandy light clay	massive	–	–	weak (moderately moist)	–	>50% soft carbonate very highly calcareous*	clear
B32k	0.70–0.90	very pale brown (10YR 7/4)	–	sandy light clay	massive	–	–	weak (moderately moist)	20–50% carbonate fragments (6–20 mm)	>50% soft carbonate very highly calcareous*	diffuse
CB1k	0.90–1.20	very pale brown (10YR 7/4)	–	sandy loam	massive	–	–	firm (moderately moist)	–	>50% soft carbonate very highly calcareous*	
CB2k	1.20–1.60	pale yellow (5Y 7/3)	–	sandy loam	massive	–	–	firm (moderately moist)	–	>50% soft carbonate 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 cmol(+)/kg							ESP % ^A	Bulk dens. Mg/m ³	Particle size % ^A				
										Ca	Mg	K	Na	H+Al	CEC	ECEC			CS	FS	Silt	Clay	
Ap	0.00–0.10	7.5	7.2	0.13	< 1	0.8	24				5.6	0.8	0.4	0.1		6		–		71	22	2	5
B21t	0.10–0.19	7.2	6.7	0.16	2	0.4	6				16.3	6.7	1.6	1.3		27		5		35	16	2	47
B22t	0.19–0.37	8.0	7.7	0.22	3	0.1	< 2				16.1	5.6	1.4	0.9		27		3		40	16	3	41
B31k	0.37–0.70	9.0	8.1	0.36	30	0.1	< 2				7.0	4.1	0.9	2.1		13		17		37	18	13	32
B32k	0.70–0.90	9.2	8.1	0.52	39	0.2	< 2				5.5	4.0	1.0	3.2		12		27					
CB1k	0.90–1.20	9.3	8.1	1.06	46	0.2	< 2				4.1	4.3	1.2	5.1		12		43					
CB2k	1.20–1.60	9.7	8.4	0.58	36	<0.1	< 2				3.5	5.9	1.9	8.5		18		48					

Key profile properties



General qualities of the soil

Infiltration:	Rapid under pasture and native vegetation.
Available water store:	Moderate.
Permeability:	Decreasing permeability in the B horizon due to sodicity – low permeability in the B3 horizon.
Physical root limitations:	Strength and aeration limitations are likely in the B2 and B3 horizons.
Erosion hazard:	Moderately low to moderate.
Nutrient availability:	The soil's ability to retain nutrients varies with depth from moderate to high. Organic matter and phosphorus levels are low. Potassium levels are adequate. Often saline at depth.
Toxicities:	None recorded.



Profile occurs on low rises across the plain, near Yorketown, South Australia

Acknowledgements: Soil image, description and laboratory data: Department of Water, Land and Biodiversity Conservation, South Australia. Site CY015. Landscape image: Don Brice, Southlight Photo Agency.