

CH3: Haplic, Hypercalcic, Red Chromosol

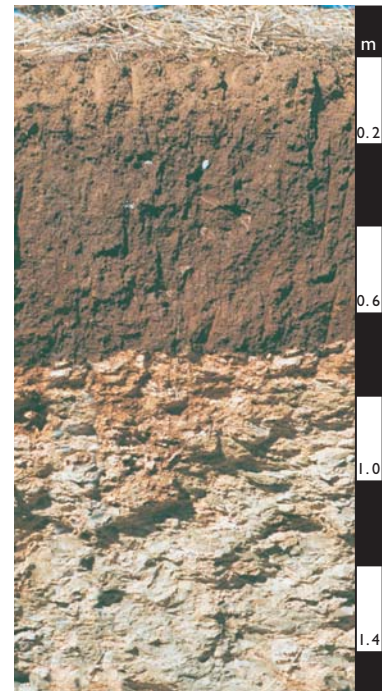
General description of the soil

A non-sodic, red texture-contrast soil with a hypercalcic horizon (>20% of soft, finely divided carbonate) occurring in the transition from lower B to C horizons. No diagnostic subgroup features are present (i.e. Haplic).

Distribution:	A common soil in semi-arid southern Australia.
Typical land use:	Cereal cropping.
Common variants:	Carbonate may vary in form and amount. The texture profile is approaching that of a Dermosol.
World Reference Base:	Calcic Luvisol.
Other names:	Red-Brown Earths and Red Duplex Soils.

Environment and location of the example profile

Landform:	Undulating rise.
Parent material or substrate:	Weathered slate.
Drainage class:	Well-drained.
Surface condition:	Firm.
Site disturbance:	Cultivated.
Native vegetation:	Eucalypt woodland.

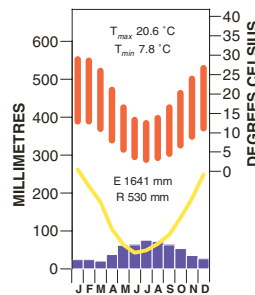


Clare Valley, South Australia

Site location



Site climate



Soil morphology

Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1	0.00–0.10	dark reddish brown (5YR 3/3)	–	clay loam	strong	granular	5–10 mm	weak (dry)	–	–	abrupt
B21	0.10–0.20	dark reddish brown (2.5YR 3/3)	–	light medium clay	strong	polyhedral	2–5 mm	firm (dry)	–	–	clear
B22	0.20–0.40	dark reddish brown (2.5YR 3/3)	–	light medium clay	strong	angular blocky	5–10 mm	firm (dry)	–	–	gradual
B23	0.40–0.70	dark reddish brown (2.5YR 3/3)	–	medium clay	strong	prismatic	10–20 mm	firm (dry)	–	–	abrupt
B3k/Ck	0.70–1.30							firm (dry)	> 50% weathered slate	20–50% soft carbonate very highly calcareous*	gradual
Cr	1.30–1.50			–	–	–	–	strong (dry)	weathering slate	2–10% soft carbonate in pockets moderately calcareous*	

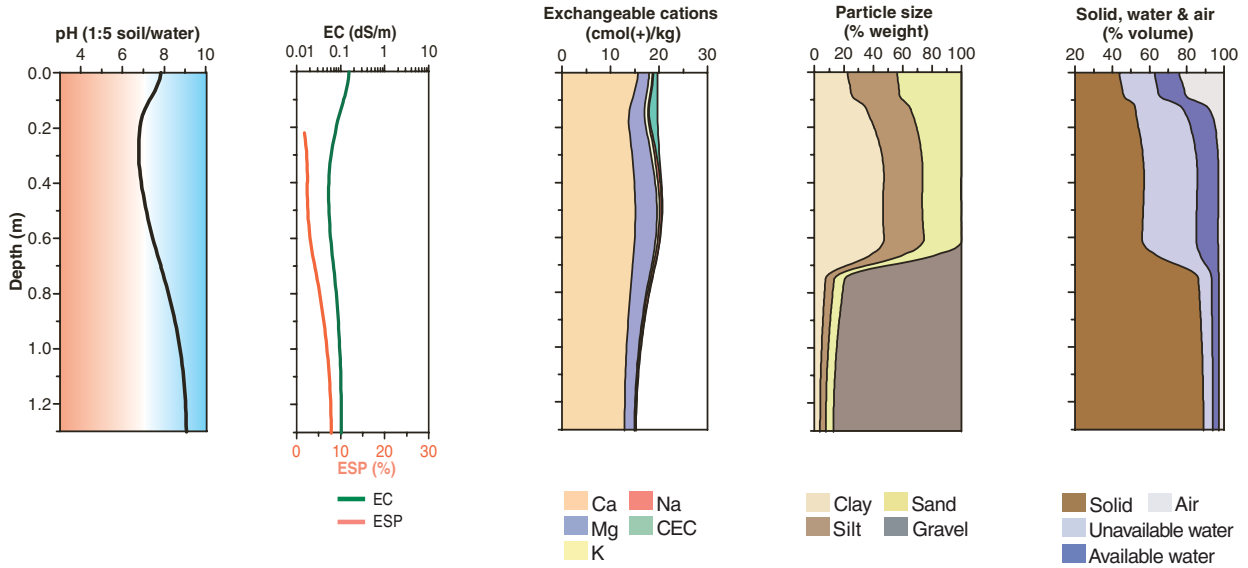
* Fine earth fraction

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 ^E cmol(+)/kg						ESP % ^A	Bulk dens. Mg/m ³	Particle size % ^A			
										Ca	Mg	K	Na	H+Al	CEC			ECEC	CS	FS	Silt
A1	0.00–0.10	7.8	7.6	0.15	3	1.7	21			15.5 ^C	2.3 ^C	0.7 ^C	0.2 ^C	20 ^C		–	6	36	33	24	
B21	0.10–0.20	6.6	6.1	0.08		1.2	15			12.3	3.4	0.8	0.2	20		–	3	35	30	32	
B22	0.20–0.40	6.6	6.0	0.05		0.9	4			14.7	4.0	0.6	0.6	20		3					
B23	0.40–0.70	7.2	6.6	0.05		0.7	< 4			15.5	4.9	0.5	0.4	20		2	2	25	27	47	
B3k/Ck	0.70–1.30	8.9	8.2	0.10	39	0.1	< 4			13.1 ^C	2.3 ^C	0.1 ^C	0.3 ^C	4 ^C		7					

Note: High pH and CaCO₃ in surface due to road dust.

Key profile properties



General qualities of the soil

Infiltration:	Rapid.
Available water store:	Moderate.
Permeability:	Moderate due to the very strong structure.
Physical root limitations:	Root growth below the weathering rock and carbonate layers depends on the hardness of the carbonate and the inclination of the layers in the rock (roots will grow in the vertical fissures).
Erosion hazard:	Moderate erosion hazard on slopes. The surface soil is well structured and has a naturally high resistance to erosion.
Nutrient availability:	The soil has a high level of exchangeable calcium, organic matter levels are adequate but phosphorus is low.
Toxicities:	Unlikely.



This soil type occurs on undulating rises in the foreground, mid-north, South Australia

Acknowledgements: Soil image, soil description and laboratory data: Department of Water, Land and Biodiversity Conservation, South Australia. Site CM021. Landscape image: John Coppi, CSIRO.