

## VE8: Epicalcareous-Endohypersodic, Self-mulching, Grey Vertisol

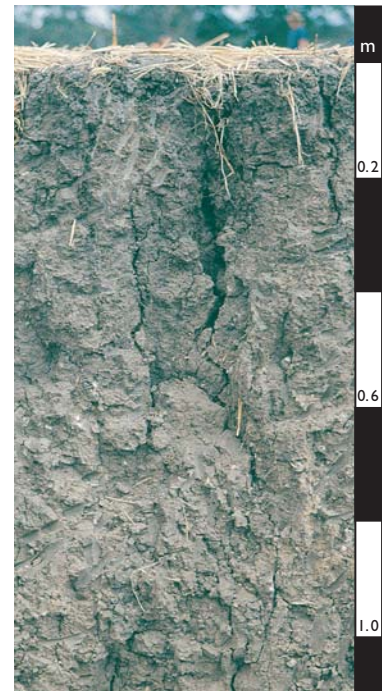
### General description of the soil

A grey, shrink-swell, cracking clay soil that is self-mulching, calcareous below the A1 horizon, and strongly sodic (i.e. ESP >15) below 0.5 m.

<b>Distribution:</b>	These soils are of limited extent in South Australia but are very similar to those occupying large areas on gently undulating plains and alluvial flats across inland eastern Australia.
<b>Typical land use:</b>	Rotational cropping and grazing.
<b>Common variants:</b>	The amount and form of carbonate varies widely, and in the more arid areas variable amounts of gypsum can be a feature.
<b>World Reference Base:</b>	Grumic Vertisol.
<b>Other names:</b>	Grey Clays and Cracking Clays.

### Environment and location of the example profile

<b>Landform:</b>	Gently undulating plain.
<b>Parent material or substrate:</b>	Pleistocene clays.
<b>Drainage class:</b>	Imperfectly drained. Soil may remain wet for weeks at a time due to the low permeability and landscape position.
<b>Surface condition:</b>	Periodic cracking and self-mulching.
<b>Site disturbance:</b>	Cultivation.
<b>Native vegetation:</b>	Open woodland of <i>Casuarina</i> and <i>Eucalyptus</i> species.
<b>Microrelief:</b>	Crabhole gilgai is common.

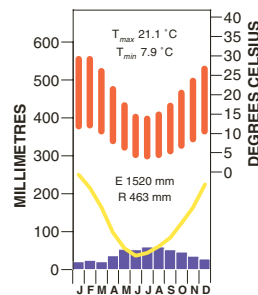


Bordertown, South Australia

### Site location



### Site climate



### Soil morphology

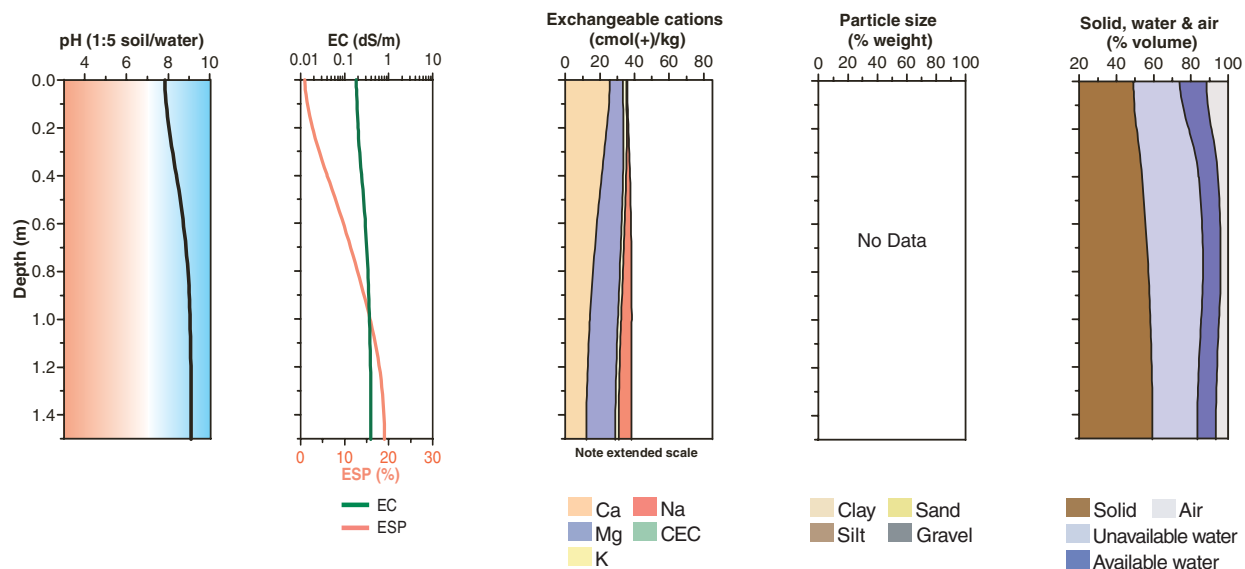
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
Ap	0.00–0.02	very dark grey (10YR 3/1)	–	medium clay	moderate	granular	<2mm	weak (dry)	–	–	abrupt
A1	0.02–0.20	dark grey (10YR 4/1)	–	medium clay	weak	angular blocky	5–10 mm	very strong (dry)	–	–	gradual
B21	0.20–0.40	grey (10YR 5/1)	greyish brown (10YR 5/2)	medium heavy clay	weak	angular blocky	5–10 mm	very strong (dry)	–	moderately calcareous*	gradual
B22	0.40–0.60	dark grey (10YR 4/1)	–	heavy clay	moderate	prismatic	10–20 mm	very strong (dry)	–	2–10% soft carbonate moderately calcareous*	gradual
B3	0.60–1.00	light brownish grey (2.5Y 6/2)	greyish brown (2.5Y 5/2)	heavy clay	moderate parting to strong	prismatic parting to angular blocky	20–50 mm	very strong (moderately moist)	–	2–10% soft carbonate moderately calcareous*	gradual
BC	1.00–1.50	light grey (2.5Y 7/2)	yellowish brown (10YR 5/6)	medium clay	strong	lenticular	20–50 mm	firm (moist)	–	20–50% soft carbonate 2–10% carbonate nodules highly calcareous*	

\* Fine earth fraction

### Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H <sub>2</sub> O <sup>A</sup>	pH CaCl <sub>2</sub> <sup>B</sup>	Elect. Cond. dS/m <sup>A</sup>	CaCO <sub>3</sub> % <sup>B</sup>	Org. C % <sup>D</sup>	Extr. P mg/kg <sup>A</sup>	Tot. P % <sup>D</sup>	Tot. K %	Cation exchange properties <sup>C</sup>						ESP % <sup>A</sup>	Bulk dens. Mg/m <sup>3</sup>	Particle size %			
										cmol(+)/kg								CS	FS	Silt	Clay
A1	0.00–0.20	7.9	7.8	0.19		1.7	9			25.3	8.1	2.0	0.5		36		1				
B21	0.20–0.40	8.2	7.9	0.21	3	0.8	4			22.4	11.5	1.7	1.5		37		4				
B22	0.40–0.60	8.9	8.3	0.32	10	0.3	< 2			16.9	15.1	1.8	4.4		38		12				
BC	1.00–1.50	9.1	8.4	0.39	21	0.2	3			12.4	16.7	1.9	7.3		39		19				

## Key profile properties



## General qualities of the soil

<b>Infiltration:</b>	Slow.
<b>Available water store:</b>	Moderate to large.
<b>Permeability:</b>	Low.
<b>Physical root limitations:</b>	No physical root limitations apart from restricted aeration when wet.
<b>Erosion hazard:</b>	Low.
<b>Nutrient availability:</b>	Moderately high except for phosphorus, nitrogen and commonly zinc.
<b>Toxicities:</b>	Excessive boron in the highly calcareous subsoil may occur along with subsoil salinity.



**Self-mulching Grey Vertosols are used widely for cereal cropping and grazing. Near Bordertown, South Australia.**

*Acknowledgements:* Soil image, soil description and laboratory data: Department of Water, Land and Biodiversity Conservation, South Australia. Site SE003. Landscape image: Peter Walton, Australian Scenics.