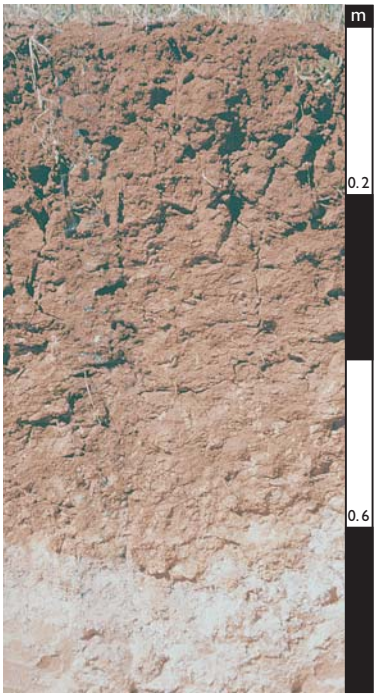
VE3: Episodic-Gypsic, Epipedal, **Red Vertosol**



Fifty-five kilometres south-east of Woomera, South Australia

General description of the soil

A red, shrink-swell, cracking clay soil that has a blocky-structured sodic surface horizon, and a gypsic horizon in the subsoil.

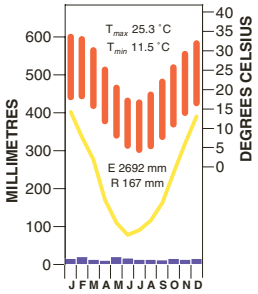
Distribution:	A common and widespread soil in the lower rainfall parts of the Australian arid zone.
Typical land use:	Very sparse grazing, mainly by sheep.
Common variants:	Carbonate and gypsum contents are variable, as is the amount of siliceous stones on the soil surface.
World Reference Base:	Vertic Solonchak.
Other names:	Red Clays and Cracking Clays.

Environment and location of the example profile

Landform:	Undulating low tableland.
Parent material or substrate:	Sedimentary deposit with a large aeolian component.
Drainage class:	Imperfectly drained.
Surface condition:	Loose with periodic cracking. 2–10% quartzite fragments (20–60 mm)
Site disturbance:	Very sparse grazing by sheep.
Native vegetation:	Sparse shrubland dominated by bladder saltbush (*Atriplex vesicaria*).
Microrelief:	Site is in a shallow (0.18 m) gilgai depression.

Site location

Site climate



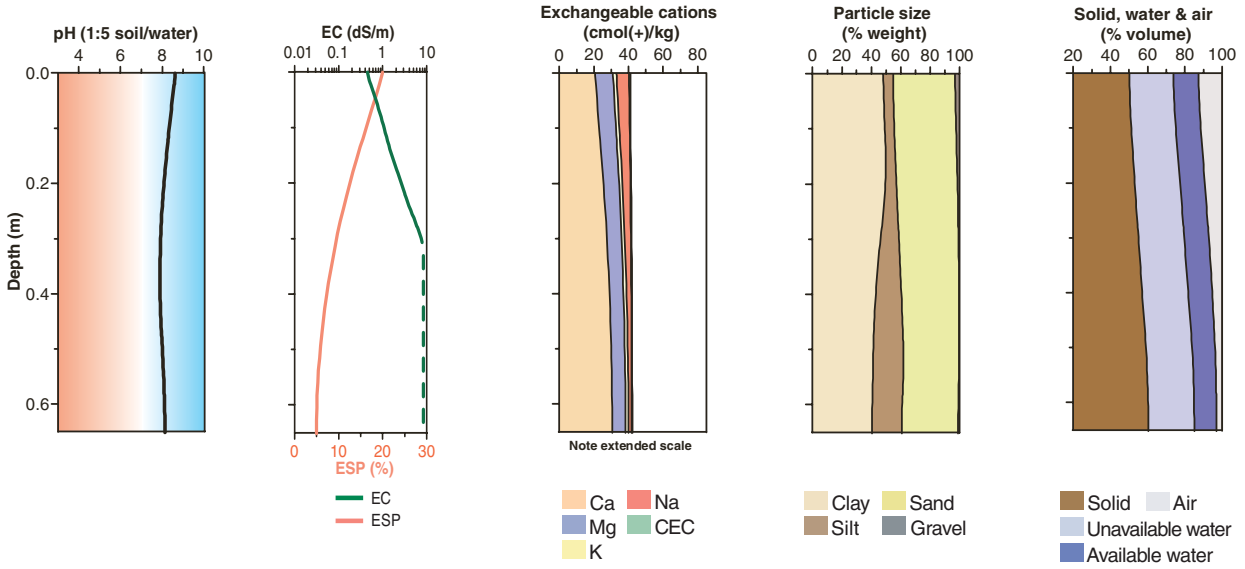
Soil morphology

Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1	0–0.02	yellowish red (5YR 4/6 d)	–	clay		subangular blocky	5–15 mm		<2% quartzite (20–60 mm)	–	diffuse
B1	0.02–0.28	red (2.5YR 4/6 d)	–	clay	massive to weak	subangular blocky	40–50 mm			–	diffuse
B21	0.28–0.38	red (2.5YR 4/6 d)	–	clay	massive	–	–	very strong (dry)	<2% quartzite (2–6 mm)	–	diffuse
B22	0.38–0.58	red (2.5YR 4/6 d)	–	clay	massive	–	–	very strong (dry)	<2% quartzite (2–6 mm)	2–10% soft gypsum <2% soft carbonate (<2 mm)	
B3	0.58–0.65	red (2.5YR 4/6 d)	–	clay	massive	–	–	very strong (dry)	–	20–50% soft gypsum (<2 mm) <2% soft carbonate (<2 mm)	

Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H_2O [A]	pH $CaCl_2$ [E]	Elect. Cond. dS/m [C]	$CaCO_3$ % [C]	Org. C % [E]	Extr. P mg/kg [A]	Tot. P %	Tot. K %	Cation exchange properties [E] cmol(+)/kg							ESP % [A]	Bulk dens. Mg/m^3	Particle size % [F]			
										Ca	Mg	K	Na	H+Al	CEC	ECEC			CS	FS	Silt	Clay
A1	0–0.02	8.7	7.4	0.27	<1	0.3	15			22.0	10.0	2.0	6.6		37		18		12	29	6	47
B1	0.02–0.12	8.4	7.3	0.50																		
B1	0.12–0.22	8.1	7.1	0.21	<1	0.3	3			29.0	8.1	1.8	2.7		37		7		14	26	4	50
B1	0.22–0.28	7.9	7.4	1.01																		
B21	0.28–0.38	7.8	7.4	10.39		0.3	4												11	25	17	38
B22	0.38–0.48	7.8	7.5	13.06																		
B22	0.48–0.58	8.1	7.7	21.37		0.3	7												9	23	20	36
B3	0.58–0.65	8.2	7.7	44.51	1	0.2	13												12	20	16	33

Key profile properties



General qualities of the soil

Infiltration:	Slow to very slow.
Available water store:	Small.
Permeability:	Low.
Physical root limitations:	Unlikely, although the upper profile is dense and sodic.
Erosion hazard:	Low, except from disturbance on slopes.
Nutrient availability:	Moderate, low organic matter.
Toxicities:	Extremely saline subsoil.

Gently undulating low tableland with Red Vertosols occurring in the mostly stone free (near-foreground) shallow depressions of the gilgai microrelief – north-east of Woomera, South Australia

Acknowledgements: Soil image, soil description and laboratory data: CSIRO Land and Water. Profile A1044. Landscape image: CSIRO.