

VE6: Gypsic, Self-mulching, Grey Vertisol

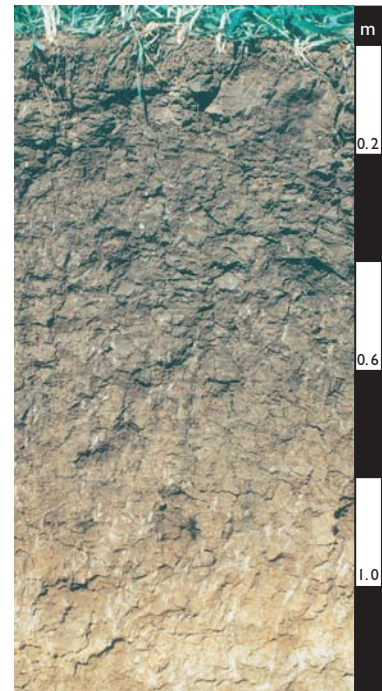
General description of the soil

A grey, shrink-swell, cracking clay soil with a self-mulching surface and a gypsic horizon in the subsoil.

Distribution:	A widespread soil in semi-arid, arid and subhumid inland Queensland and extending into north and central New South Wales. Small areas might also occur in Victoria and South Australia.
Typical land use:	Grazing of native pastures and often cultivated for grain crops.
Common variants:	Carbonate content is very variable.
World Reference Base:	Salic Vertisol.
Other names:	Grey Clays and Cracking Clays.

Environment and location of the example profile

Landform:	Gently undulating rises.
Parent material or substrate:	Cretaceous mudstone.
Drainage class:	Imperfectly drained.
Surface condition:	Self-mulching and periodic cracking.
Native vegetation:	Mitchell grass (<i>Astrelba lappacea</i>) grassland with scattered <i>Casuarina cristata</i> .

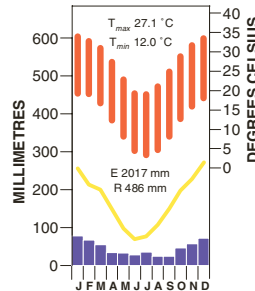


Roma district, south Queensland

Site location



Site climate



Soil morphology

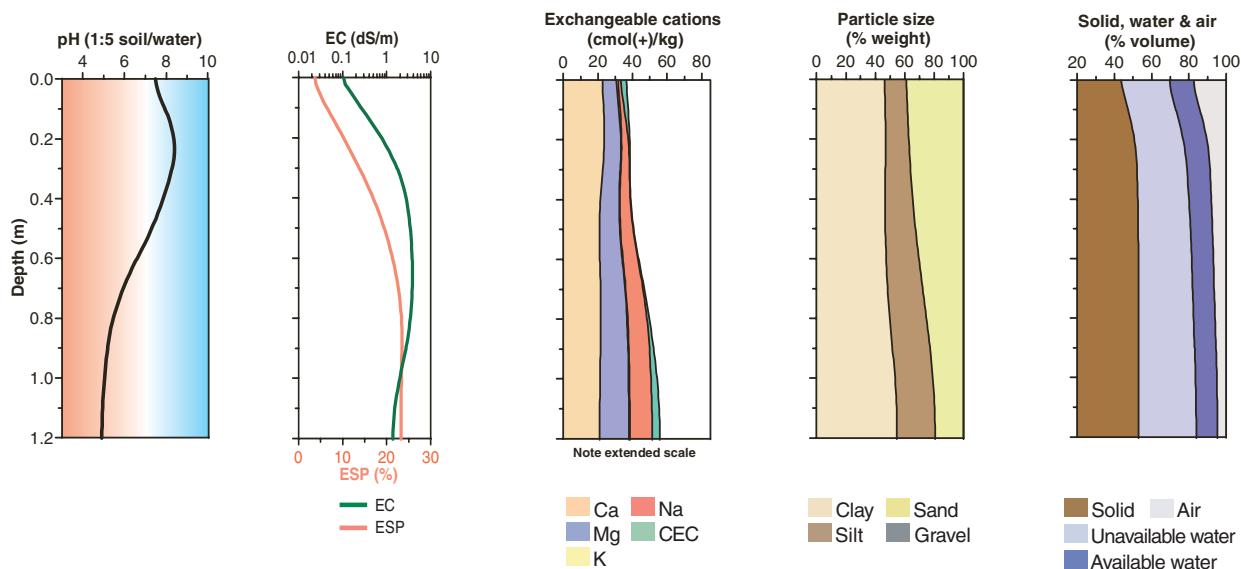
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A1	0.00–0.20	dark grey (10YR 4/1)	–	medium heavy clay	strong	angular blocky	10–20 mm		–	–	gradual
B21	0.20–0.50	dark grey (10YR 4/1)	–	medium heavy clay	weak parting to moderate	lenticular parting to angular blocky	50–100 mm parting to 20–50 mm		–	2–10% soft carbonate (2–6 mm)	gradual
B22	0.50–0.90	brown (10YR 5/3)	–	medium heavy clay	moderate	angular blocky	20–50 mm		–	20–50% gypsum crystals (2–6 mm)	gradual
BC	0.90–1.40	brownish yellow (10YR 6/6)	–	medium clay	weak				–	–	

Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H ₂ O ^A	pH CaCl ₂ ^C	Elect. Cond. dS/m ^A	CaCO ₃ %	Org. C % ^{G*}	Extr. P mg/kg ^{A*}	Tot. P % ^A	Tot. K % ^A	Cation exchange properties ^G cmol(+)/kg						ESP % ^A	Bulk dens. Mg/m ³	Particle size % ^I				
										Ca	Mg	K	Na	H+Al	CEC			ECEC	CS	FS	Silt	Clay
A1	0.00–0.10	7.5	6.4	0.07		1.1	16	0.025	0.608	23.0	8.2	1.0	1.5		37		4		2	37	15	47
B21	0.20–0.30	8.9	7.7	0.30				0.020	0.907	25.0	9.6	0.3	4.1		39		11		2	35	15	47
B22	0.50–0.60	7.8	7.7	3.60				0.018	0.531	20.0	11.0	0.4	6.5		34		19		8	27	20	47
B22	0.80–0.90	5.4	5.2	4.20				0.014	0.812	22.0	15.0	0.5	11.0		46		24		3	23	25	48
BC	1.10–1.20	4.9	4.5	1.30				0.013	0.919	21.0	17.0	0.5	13.0		56		23		1	19	26	55

* Bulk sample

Key profile properties



General qualities of the soil

Infiltration:	Moderate to very slow depending on surface condition and water content.
Available water store:	Moderate.
Permeability:	Moderate to low.
Physical root limitations:	Unlikely, although the dense, sodic subsoil will have restricted aeration when wet.
Erosion hazard:	Moderate on disturbed slopes.
Nutrient availability:	Moderate.
Toxicities:	The soil is usually extremely saline below about 0.5 m and strongly acid at depth.



This soil is widespread and commonly associated with grasslands of Mitchell Grass. The left-hand paddock has been heavily grazed and degraded while that on the right is conservatively managed – near Cunnamulla, Queensland.

Acknowledgements: Soil image, soil description and laboratory data: Department of Natural Resources and Mines, Queensland. Open Downs Soil, Site 32. Landscape image: Australian National Botanic Gardens.