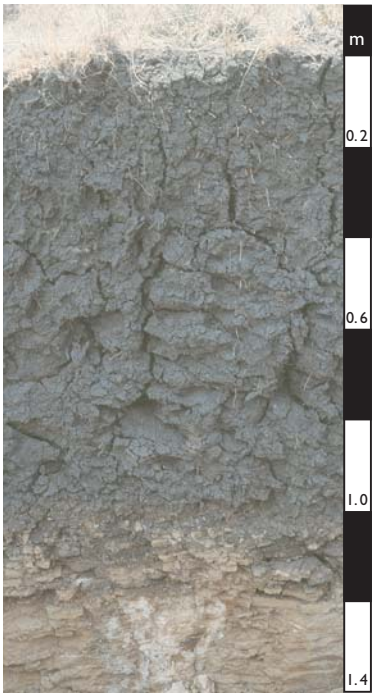
VE11: Epicalcareous, Self-mulching, **Black Vertosol**



North-west of Goondiwindi, south Queensland

General description of the soil

A black, shrink-swell, cracking clay soil that is self-mulching, calcareous and non-sodic.

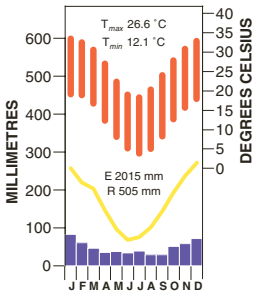
Distribution:	These soils are widely distributed in eastern Australia, mainly in the 500–1000 mm rainfall zone extending approximately from central Queensland to central New South Wales, with smaller occurrences in the other states. In Western Australia these soils are very limited and are confined to the far north.
Typical land use:	Grazing of native pastures, some dryland cropping.
Common variants:	Variable amounts of carbonate are a feature, with some gypsum in soils of the more arid areas.
World Reference Base:	Grumic Vertisol.
Other names:	Black Earths and Black Cracking Clays.

Environment and location of the example profile

Landform:	Undulating rises.
Parent material or substrate:	Labile sedimentary rocks.
Drainage class:	Imperfectly drained.
Surface condition:	Self-mulching with periodic cracking.
Site disturbance:	Minor disturbance by grazing animals.
Native vegetation:	Open Eucalypt woodland with tussock grassland.
Microrelief:	Linear gilgai with a 0.15 m vertical interval.

Site location

Site climate



Soil morphology

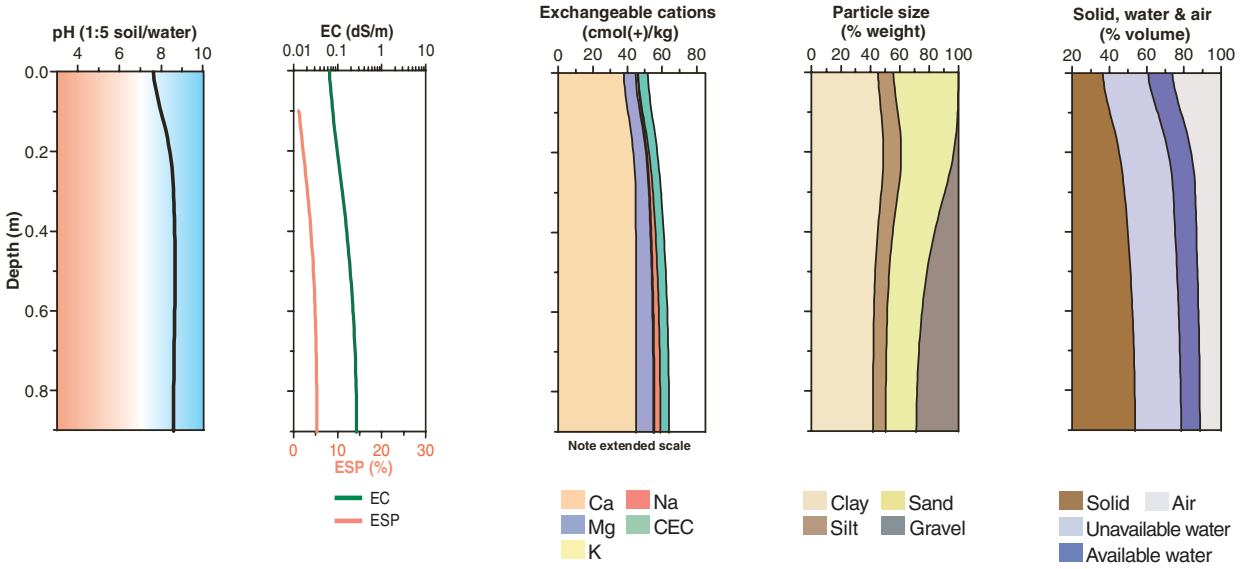
Horizon	Depth (m)	Colour	Mottles	Texture	Structure			Consistence	Coarse fragments	Segregations	Boundary
					Grade	Shape	Size				
A11	0.00–0.02	brownish black (10YR 3/2)	–	medium heavy clay	strong	granular	5–10 mm parting to 2–5 mm	weak (dry)	–	–	abrupt
A12	0.02–0.06	brownish black (10YR 3/2)	–	medium heavy clay	moderate	angular blocky	20–50 mm	weak (moist)	–	–	clear
B21	0.06–0.45	brownish black (10YR 3/1)	–	heavy clay	strong	angular blocky	20–50 mm	weak (moist)	–	<2% carbonate nodules (2–6 mm)	gradual
B22k	0.45–0.92	brownish black (10YR 3/1)	–	heavy clay	strong parting to moderate	lenticular	20–50 mm parting to 10–20 mm	strong (dry)	–	10–20% carbonate nodules (2–6 mm)	gradual
BC	0.92–1.01			soft weathered sandstone and siltstone	moderate	angular blocky	5–10 mm			2–10% soft carbonate (6–20 mm)	gradual
Ck	1.01+	hardrock at depth (2–4 m)		weathering sandstone and siltstone						10–20% carbonate laminae (6–20 mm)	

Soil chemical and physical properties

Horizon	Sample Depth (m)	pH H_2O [A]	pH $CaCl_2$	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/m³	Particle size % [I]			
										Ca	Mg	K	Na	H+Al	CEC	ECEC			CS	FS	Silt	Clay
A1	0.00–0.10	7.7		0.07		0.9	3	0.028	0.562	38	6.8	1.1	0.3		52		–		7	36	11	46
B2	0.10–0.30	8.6		0.09				0.018	0.494	45	6.9	0.5	1.3		58		2		5	32	13	52
B2k	0.30–0.60	8.7		0.18				0.015	0.515	45	8.8	0.6	2.8		62		5		4	29	12	54
B22k	0.60–0.90	8.6		0.27				0.016	0.539	45	10	0.6	3.4		64		5		4	25	12	57

* 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 at depth.
Physical root limitations:	Unlikely.
Erosion hazard:	Moderate erosion hazard on slopes.
Nutrient availability:	Nitrogen is low. Phosphorus and zinc are low to very low and potassium is high.
Toxicities:	None likely.

These Black Vertosols are used for cropping wherever rainfall is adequate. Condamine region, south Queensland.

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