

BLACK CRACKING CLAY

General Description: *Black self mulching clay, with coarse subsurface structure and cracks, and with soft carbonate at variable depths.*

Landform: Undulating to rolling rises and low hills

Substrate: Heavy clays deposited in ancient glacial valleys

Vegetation: Grassland



Type Site: Site No.: CH002

1:50,000 sheet:	6527-2 (Yankalilla)	Hundred:	Yankalilla
Annual rainfall:	625 mm	Sampling date:	30/01/92
Landform:	Lower slope of undulating rises, 7% slope		
Surface:	Self-mulching and seasonally cracking with no stones		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Black medium clay with strong granular structure. Gradual to:
10-30	Black medium clay with strong polyhedral structure. Gradual to:
30-60	Light brownish grey light medium clay with weak coarse subangular blocky structure. Clear to:
60-120	Black heavy clay with coarse blocky structure and slickensides. Gradual to:
120-150	Greyish brown heavy clay with coarse blocky structure and up to 10% fine Class I carbonate.



Classification: Endocalcareous - Endohypersodic, Self-mulching, Black Vertisol

Summary of Properties

Drainage	Imperfect to moderately well drained. Soil may remain wet for a week to several weeks.
Fertility	High nutrient retention capacity, as indicated by high cation exchange capacity. Naturally well supplied with essential elements. Zinc deficiency is probable. Other elements appear to be in good supply, although magnesium deficiency induced by very high calcium levels is possible.
pH	Neutral in the surface, becoming alkaline with depth.
Rooting Depth	120 cm at type site.
Barriers to root growth	
Physical:	None in upper profile, but clay strength increases with depth, as indicated by the higher exchangeable sodium percentage from 50 cm. Cracking in the upper part of the profile as the soil dries may damage roots.
Chemical:	Class I carbonate layer is generally associated with poor root growth. Elevated boron concentrations below 120 cm may affect root growth. There is no significant salinity.
Water holding capacity	150 to 220 mm in rootzone (high).
Seedling emergence	Good, provided that self mulching surface is maintained. Soil surface does not crust or set hard, and is not water repellent.
Workability	Fair. Sticky and boggy when wet.
Erosion potential	
Water:	Moderately low to moderate. Despite the slope, the strong surface structure of these soils stabilises them against sheet erosion. However they are prone to rilling and gullyng by stream flow.
Wind:	Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CaCO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-10	7.5	7.3	0.4	0.19	0.6	3.1	35	500	49	2.2	0.5	11	5.6	0.2	36.5	31.3	1.6	0.37	1.48	1.0
10-30	7.6	7.3	0.5	0.12	0.3	2.0	31	290	16	2.5	0.4	8	3.2	0.2	36.4	32.5	3.8	0.37	1.01	1.0
30-60	7.6	7.3	<0.1	0.07	0.3	1.9	15	140	11	1.1	0.5	8	3.0	<0.1	23.3	20.1	2.6	0.23	0.31	1.0
60-120	8.1	7.4	<0.1	0.12	0.3	1.4	16	310	47	3.6	0.5	13	2.5	<0.1	37.1	22.3	11.3	2.64	1.04	7.1
120-150	8.8	8.2	8.3	0.48	0.7	0.2	19	380	93	11.9	0.5	9	0.6	<0.1	32.6	13.5	14.1	6.24	1.26	19

Note: CEC (cation exchange capacity) is a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC.