

BLACK CRACKING CLAY

General Description: *Black cracking clay, with strong fine structure at the surface grading to coarse blocky structure with depth, containing variable soft carbonate throughout and formed over grey - green heavy clay*

Landform: Very gently undulating to flat plains

Substrate: Pleistocene age heavy clay with strongly developed slickensides

Vegetation: Grassland



Type Site:	Site No.:	CH095	1:50,000 mapsheet:	6627-4 (Noarlunga)
	Hundred:	Willunga	Easting:	277350
	Section:	198	Northing:	6097550
	Sampling date:	29/04/96	Annual rainfall:	575 mm average

Very gently undulating plain (1% slope) with a self-mulching and seasonally cracking surface.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Black highly calcareous medium clay with moderate granular structure. Clear to:
10-30	Black slightly calcareous heavy clay with strong polyhedral structure. Clear to:
30-70	Black slightly calcareous heavy clay with coarse prismatic structure and slickensides. Gradual to:
70-100	Black highly calcareous heavy clay with coarse prismatic structure, slickensides and 2-10% soft carbonate segregations. Gradual to:
100-130	Light grey and black mottled highly calcareous heavy clay with coarse prismatic structure, slickensides and 10-20% soft carbonate segregations. Gradual to:
130-170	Grey, light brown and olive mottled highly calcareous heavy clay with coarse lenticular structure, slickensides and 2-10% soft carbonate segregations.



Classification: Epicalcareous-Endohypersodic, Self-mulching, Black Vertosol; non-gravelly, deep



Summary of Properties

Drainage: Imperfectly drained. The clay has low permeability and once the cracks have closed, parts of the profile may remain wet for several weeks after prolonged rainfall.

Fertility: Natural fertility is very high, as indicated by the exchangeable cation data. Zinc is commonly deficient on these soils. Manganese levels may also be low.

pH: Alkaline at the surface, strongly alkaline with depth.

Rooting depth: Root growth to 130 cm in pit.

Barriers to root growth:

Physical: The coarse structural aggregates below 30 cm impede root growth, most of which occurs between the aggregates.

Chemical: Boron and exchangeable sodium levels are marginally high from 70 cm and toxic from 100 cm.

Waterholding capacity: Approximately 200 mm in rootzone (extremely high), but only about 90 mm of this is readily available.

Seedling emergence: Good

Workability: Fair to good - surface becomes sticky when wet.

Erosion Potential:

Water: Low

Wind: Low

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Row	7.9	7.7	3.5	0.48	1.87	1.5	110	665	197	3.0	5.98	27.3	9.85	4.03	42.8	39.7	2.98	0.48	3.27	1.1
											*6.2	*27	*3.4	*2.3						
0-10	7.6	7.5	2.1	2.04	2.94	1.7	170	701	1645	2.3	-	-	-	-	49.3	42.3	3.68	0.40	2.64	0.8
10-30	7.8	7.6	0.6	0.64	2.39	1.1	8	275	430	1.8	-	-	-	-	34.3	31.0	4.77	0.50	0.95	1.5
30-70	8.1	7.7	1.5	0.56	1.80	1.2	6	374	295	1.5	-	-	-	-	48.6	36.8	10.7	3.04	1.47	6.3
70-100	8.8	8.1	7.7	0.66	1.75	0.8	5	395	220	4.0	-	-	-	-	45.6	25.4	13.7	8.38	1.59	18.4
100-130	9.2	8.5	8.7	0.81	1.63	0.1	<4	364	198	15.7	-	-	-	-	42.5	15.7	14.1	14.2	1.37	33.4
130-170	9.3	8.6	4.9	0.88	1.43	0.1	<4	343	147	27.0	-	-	-	-	46.7	14.0	13.9	16.6	1.09	35.7

Note: Row sample bulked from 20 cores (0-10 cm) taken along the planting lines.

* DTPA trace element analyses for "row" sample.

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.

Further information: [DEWNR Soil and Land Program](#)

