

## BLACK CRACKING CLAY

**General Description:** *Black cracking clay with a well structured surface, becoming coarsely structured, greyer and calcareous with depth*

**Landform:** Gentle to moderate slopes.

**Substrate:** Grey heavy clay with coarse structure and slickensides.

**Vegetation:** Grassland



**Type Site:** Site No.: CH100

1:50,000 sheet:	6526-4 (Cape Jervis)	Hundred:	Yankalilla
Annual rainfall:	600 mm	Sampling date:	17/10/96
Landform:	Fan adjacent rolling low hills, 8% slope		
Surface:	Hard setting and cracking. Water table at 130 cm.		

### Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Black firm medium clay with strong polyhedral structure. Clear to:
10-30	Black calcareous heavy clay with strong coarse blocky breaking to strong polyhedral structure. Abrupt to:
30-45	Orange and dark brown calcareous heavy clay with weak coarse blocky breaking to strong polyhedral structure. Abrupt to:
45-70	Olive brown and orange calcareous heavy clay with weak coarse blocky structure and 20-50% soft carbonate. Gradual to:
70-120	Greyish brown very highly calcareous heavy clay with weak blocky structure and 20-50% soft carbonate. Clear to:
120-140	Olive heavy clay with strong lenticular structure, slickensides and 2-10% soft carbonate segregations.



**Classification:** Epicalcareous, Epipedal, Black Vertosol

## Summary of Properties

**Drainage** Imperfect. Due to the high clay content, parts of the profile may remain saturated for several weeks at a time during winter.

**Fertility** Natural fertility (ie nutrient storage capacity) is high - typical of black clay soils. At the pit site phosphorus levels are very low, zinc and copper appear to be marginal; there are no other measured deficiencies.

**pH** Slightly acidic at the surface, strongly alkaline with depth.

**Rooting depth** 70 cm in pit.

### Barriers to root growth

**Physical:** High soil strength impedes root growth.

**Chemical:** There are no chemical barriers.

**Water holding capacity** Approximately 100 mm in root zone, but wilting point is high.

**Seedling emergence:** Fair to good, depending on the degree of self-mulching.

**Workability:** Fair. The surface tends to get very sticky when wet.

### Erosion Potential

**Water:** Moderate. The soil has a natural resistance to sheet erosion, but is highly susceptible to gullyng.

**Wind:** Low, due to the well structured clayey surface.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> -S 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	
Paddock	6.2	5.9	0	0.08	0.65	2.6	9	367	13	1.4	1.6	275	142	1.6	16.8	11.45	3.29	0.45	1.18	2.7
0-10	6.8	6.5	0	0.10	0.55	3.5	8	533	24	1.8	-	-	-	-	33.5	28.08	4.59	0.35	2.03	1.0
10-30	7.9	7.5	4.9	0.16	0.49	2.4	5	523	23	1.5	-	-	-	-	37.8	31.27	4.15	0.34	2.00	0.9
30-45	8.3	7.8	22.0	0.15	0.30	0.7	<4	534	21	2.5	-	-	-	-	34.8	24.37	7.19	0.45	2.30	1.3
45-70	8.5	7.9	31.8	0.15	0.23	0.4	<4	526	16	2.0	-	-	-	-	29.0	17.05	9.43	0.45	2.24	1.6
70-120	8.9	7.9	43.1	0.19	0.37	0.1	<4	451	13	2.5	-	-	-	-	20.6	7.05	9.45	1.26	1.48	6.1
120-140	9.2	8.3	10.2	0.63	1.19	0.1	<4	489	42	6.0	-	-	-	-	29.5	7.54	13.19	6.56	1.45	22.2

**Note:** Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

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.