

BLACK CRACKING CLAY

General Description: *Black well structured clay, becoming heavier and blocky with depth, and containing variable amounts of soft carbonate*

Landform: Plains and alluvial flats

Substrate: Fine grained alluvium

Vegetation: Red gum woodland on narrow flats, grassland on broader plains



Type Site: Site No.: CH046

1:50,000 sheet: 6628-2 (Onkaparinga) Hundred: Talunga
 Annual rainfall: 875 mm Sampling date: 14/01/93
 Landform: Adjacent to drainage depression between rolling low hills. Slope 2%
 Surface: Seasonally cracking, but covered by 10 cm recent alluvial sediment

Soil Description:

Depth (cm)	Description
0-10	Black, weakly blocky clay loam (surface wash). Clear to:
10-25	Black light medium clay with moderate polyhedral structure. Gradual to:
25-55	Black heavy clay with strong polyhedral structure. Gradual to:
55-85	Black heavy clay with strong lenticular structure. Clear to:
85-105	Dark greyish brown massive fine sandy clay loam. Clear to:
105-140	Dark grey heavy clay with strong coarse lenticular structure.



Classification: Endocalcareous, Epipedal, Black Vertosol; non-gravelly, fine / very fine, moderate

Summary of Properties

Drainage	The soil is imperfectly drained, due to its high clay content and position in the landscape. The soil may remain wet for several weeks to a couple of months.
Fertility	Natural fertility of the soil is very high, as indicated by the CEC (more than 20 cmol(+)/kg) and base status values. Phosphorus levels are low at the pit site. Zinc is often deficient on clay soils, but appears to be adequate here.
pH	Acidic at the surface, alkaline with depth. Lime is needed for pH correction.
Rooting depth	140 cm at pit site but few roots below 105 cm.
Barriers to root growth	
Physical:	The heavy clay provides some restrictions to root growth.
Chemical:	There are no chemical limitations.
Water holding capacity	150 mm in root zone (high).
Seedling emergence	Good to fair, depending on surface structure. Some of these soils set hard and seal, but most maintain a friable surface condition.
Workability	The soil at this site tends to be too hard when dry due to some surface wash deposit, but generally surface soils are friable. All of these soils are very sticky when wet.
Erosion Potential	
Water:	Low to moderately low (soil receives run-on from upslope and stream overflow), but is resistant to sheet erosion.
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	SO ₄ -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	5.2	4.9	0	0.20	0.79	3.6	28	390	-	1.5	5.44	524	269	13.0	23.4	16.2	6.02	0.48	0.82	2.1
0-10	5.1	4.9	0	0.36	2.18	2.6	17	370	-	0.9	-	-	-	-	18.0	11.8	4.39	0.36	0.65	2.0
10-25	5.3	5.0	0	0.31	1.51	1.7	6	310	-	1.2	-	-	-	-	21.7	12.8	7.69	0.59	0.60	2.7
25-55	7.3	7.0	2	0.40	1.55	1.2	2	470	-	1.6	-	-	-	-	30.0	14.1	14.2	1.41	1.02	4.7
55-85	8.2	7.9	4	0.56	1.63	0.9	4	490	-	1.4	-	-	-	-	34.1	15.0	16.5	1.97	1.06	5.8
85-105	8.0	7.6	<1	0.30	1.59	0.2	4	360	-	0.5	-	-	-	-	12.9	6.51	7.44	0.95	0.57	7.4
105-140	7.7	7.2	<1	0.22	0.82	0.3	4	470	-	0.6	-	-	-	-	20.5	10.2	10.5	1.08	0.94	5.3

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.