

## BLACK CRACKING CLAY

**General Description:** *Dark brown self-mulching seasonally cracking clay, becoming redder and more calcareous with depth*

**Landform:** Upper slopes of gently undulating rises

**Substrate:** Heavy clay with coarse blocky structure and slickensides

**Vegetation:** Mallee scrub



**Type Site:** Site No.: CM059  
 1:50,000 sheet: 6530-1 (Koolunga)      Hundred: Koolunga  
 Annual rainfall: 425 mm      Sampling date: 18/08/95  
 Landform: Upper slope of undulating rise, 3% slope  
 Surface: Self-mulching, seasonally cracking with no stones

### Soil Description:

Depth (cm)	Description
0-10	Dark brown highly calcareous medium clay with strong polyhedral structure. Clear to:
10-25	Dark brown highly calcareous medium heavy clay with very coarse prismatic structure breaking to strong polyhedral. Gradual to:
25-40	Dark brown highly calcareous clay with coarse prismatic structure as above. Gradual to:
40-60	Dark reddish brown highly calcareous medium heavy clay (as above) with 2-10% quartz gravel. Diffuse to:
60-80	Reddish brown highly calcareous medium clay with slickensides and 2-10% quartz and ironstone gravel. Diffuse to:
80-130	Reddish brown clay as above with 2-10% soft carbonate segregations. Diffuse to:
130-160	Yellowish red and red very highly calcareous medium heavy clay with slickensides and 2-10% soft carbonate.



**Classification:** Epicalcareous-Endohypersodic, Self-mulching, Black Vertosol

## Summary of Properties

**Drainage** The soil is moderately well drained. The high clay content may cause some layers to remain wet for up to a week following heavy rain.

**Fertility** The natural fertility of the soil is very high (high clay and organic matter content, high CEC and low surface carbonate content). Levels of all elements except sulphur are adequate (phosphorus is marginal).

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

**Rooting depth** 160 cm in pit, but few roots below 130 cm.

### Barriers to root growth

**Physical:** There are no significant physical barriers.

**Chemical:** Boron and salt levels are only at damaging levels below 130 cm (where there is little moisture anyway).

**Water holding capacity** 180 mm in root zone (very high).

**Seedling emergence** Good.

**Workability** Fair, as surface is likely to become sticky when wet.

### Erosion Potential

**Water:** Low

**Wind:** Low

## 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 (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	8.2	7.8	1.4	0.13	0.43	1.7	27	498	6	2.7	0.77	-	7.88	1.85	29.0	27.65	3.51	0.35	1.66	1.2
0-10	8.2	7.8	1.5	0.12	0.41	1.9	22	615	8	2.3	-	-	-	-	32.7	29.21	3.60	0.31	2.14	0.9
10-25	8.2	7.8	0.8	0.12	0.29	1.5	5	357	9	2.4	-	-	-	-	42.1	36.70	5.34	0.53	1.57	1.3
25-40	8.3	7.9	0.6	0.14	0.30	1.6	4	222	4	2.3	-	-	-	-	46.5	38.74	7.51	1.24	1.16	2.7
40-60	8.7	8.0	4.9	0.20	0.34	1.2	<4	199	4	1.8	-	-	-	-	38.6	29.30	8.28	2.98	0.91	7.7
60-80	9.1	8.2	8.5	0.30	0.60	0.8	<4	183	9	2.0	-	-	-	-	31.8	20.53	9.04	5.21	0.85	16.4
80-130	9.0	8.3	11.1	0.86	2.69	0.7	<4	245	113	8.2	-	-	-	-	31.2	14.06	11.48	8.77	1.03	28.1
130-160	9.1	8.4	13.9	1.11	3.47	0.4	<4	291	157	22.6	-	-	-	-	29.1	9.99	12.13	10.01	1.11	34.4

**Note:** Paddock sample bulked from 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.