

## BROWN CRACKING CLAY

**General Description:** *Brown cracking clay formed on fine grained alluvium*

**Landform:** Valley flats, often with gilgai (crabhole) microrelief

**Substrate:** Brown and red alluvial clay with variable calcareous segregations

**Vegetation:**



<b>Type Site:</b>	Site No.:	CU027	1:50,000 mapsheet:	6631-4 (Jamestown)
	Hundred:	Belalie	Easting:	280350
	Section:	110	Northing:	6322400
	Sampling date:	25/02/1993	Annual rainfall:	465 mm average

Valley flat, 0% slope, with gilgai (crabhole) microrelief

### Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-8	Dark brown hard (dry) medium heavy clay with strong coarse prismatic, breaking to strong granular structure. Clear to:
8-30	Brown friable heavy clay with weak coarse blocky, breaking to strong granular structure, and 2-10% fine carbonate nodules. Diffuse to:
30-55	Brown friable heavy clay as for the 8-30 cm layer. Gradual to:
55-95	Dark brown firm slightly calcareous heavy clay with weak coarse prismatic structure. Diffuse to:
95-140	Dark brown firm moderately calcareous heavy clay with slickensides. Clear to:
140-160	Dark brown firm very highly calcareous medium clay with 10-20% carbonate nodules.



**Classification:** Endocalcareous, Epipedal, Brown Vertosol; non-gravelly, medium fine / very fine, very deep



## Summary of Properties

- Drainage:** The soil is moderately well to imperfectly drained, due to its high clay content and low position in the landscape. The profile may remain wet for a week or more following rain.
- Fertility:** The inherent fertility of the soil is high, as indicated by the high CEC values and the high proportion of exchangeable calcium. These soils have a high capacity to retain nutrients. There are no apparent deficiencies at the type site, with the possible exception of zinc which is commonly deficient in high pH clay soils.
- pH:** Neutral at the surface, grading to alkaline with depth.
- Rooting depth:** 140 cm in pit, but there are very few roots below 95 cm.
- Barriers to root growth:**
- Physical:** The clay may be hard when not fully wet and restrict root growth. There may also be some inhibition due to temporary waterlogging.
  - Chemical:** The only apparent chemical limitation is zinc deficiency.
- Waterholding capacity:** Approximately 150 mm in the rootzone (very high), most of which is available to plants. The soil, being clayey, has a high wilting point, and in some years, the plant available capacity may not fill.
- Seedling emergence:** Good, provided the surface does not dry out at the critical time.
- Workability:** Fair. The surface is too hard to work until moist, and becomes 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> 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	7.3	6.8	0	0.12	0.49	2.1	33	1034	-	2.2	1.7	30	27.3	2.7	31.1	20.57	5.26	0.22	3.16	0.7
0-8	7.5	6.9	0.1	0.13	0.50	2.3	24	1171	-	2.2	1.7	29	19.4	0.6	32.2	24.47	4.54	0.20	3.28	0.6
8-30	7.9	7.6	2.1	0.13	0.31	0.5	5	662	-	2.6	1.5	15	3.7	0.1	38.2	25.33	6.65	0.17	2.20	0.4
30-55	8.0	7.7	2.8	0.14	0.27	0.5	5	699	-	2.6	1.4	15	2.9	0.2	33.8	23.26	8.17	0.31	1.41	0.9
55-95	8.1	7.7	2.4	0.15	0.33	0.4	5	653	-	2.9	1.4	16	3.5	0.2	37.0	19.67	11.06	0.75	1.79	2.0
95-140	8.3	7.8	4.4	0.17	0.27	0.3	4	630	-	4.3	1.3	15	2.4	0.1	38.7	18.55	12.87	1.20	2.18	3.1
140-160	8.5	7.8	41.0	0.16	0.34	0.1	6	544	-	4.3	0.7	10	1.3	0.1	22.8	10.91	7.78	0.75	1.34	3.3

- 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.

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

