

## RED CRACKING CLAY

**General Description:** *Dark red brown cracking clay, calcareous with depth, formed on fine grained alluvial sediments*

**Landform:** Flood plains, usually characterised by networks of meander channels.

**Substrate:** Clayey weakly calcified, unconsolidated alluvial sediments

**Vegetation:** Woodland of red gum and Broughton willow



**Type Site:** Site No.: CU022

1:50,000 sheet:	6531-3 (Crystal Brook)	Hundred:	Pirie
Annual rainfall:	360 mm	Sampling date:	16/12/92
Landform:	Alluvial flood plain of Broughton River, 0% slope		
Surface:	Firm, well structured and seasonally cracking, with no stones		

**Soil Description:**

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark reddish brown slightly calcareous light medium clay with strong granular structure. Clear to:
10-30	Dark reddish brown moderately calcareous medium clay with strong fine polyhedral structure. Diffuse to:
30-60	Dark reddish brown highly calcareous medium clay with strong fine polyhedral structure. Gradual to:
60-95	Reddish brown very highly calcareous medium heavy clay with 20-50% soft and nodular calcareous segregations. Diffuse to:
95-160	Yellowish red highly calcareous heavy clay with slickensides and strong coarse lenticular to prismatic structure.



**Classification:** Epicalcareous-Endohypersodic, Epipedal, Red Vertosol; non-gravelly, fine / medium fine, very deep

## Summary of Properties

<b>Drainage</b>	Moderately well to imperfectly drained, due to a combination of clayey texture and susceptibility to inundation. The soil may remain wet for one to several weeks.
<b>Fertility</b>	Natural fertility is high, as indicated by the CEC values. The soil has a large capacity to retain and release major nutrient elements. This soil is less dependent on high surface organic matter for its fertility than less clayey soils, although organic carbon should be maintained at current high levels to ensure good structure. Phosphorus and potassium are adequate (note extremely high potassium), but these soils are noted for zinc deficiency.
<b>pH</b>	Neutral to slightly alkaline at surface, strongly alkaline with depth.
<b>Rooting depth</b>	160 cm in pit, but few roots below 60 cm.
<b>Barriers to root growth</b>	
<b>Physical:</b>	Waterlogging in wet years inhibits root growth. Spring-time cracking may damage roots.
<b>Chemical:</b>	Moderate boron and salinity from 95 cm.
<b>Water holding capacity</b>	Over 200 mm in rootzone, but the whole rootzone would not reach field capacity in many years. In those years when it does, waterlogging prevents the root growth necessary to exploit the potentially available water.
<b>Seedling emergence</b>	Good to fair, depending on the break. If organic matter is low, surface may seal.
<b>Workability</b>	Sticky when wet.
<b>Erosion Potential</b>	
<b>Water:</b>	Low.
<b>Wind:</b>	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	7.6	7.2	1	0.34	1.54	1.5	38	1000	-	2.9	-	-	-	-	22.5	15.8	4.61	0.52	2.69	2.3
0-10	7.1	6.8	1	0.30	1.50	1.4	48	1100	-	2.6	-	-	-	-	22.6	14.6	4.71	0.64	2.58	2.8
10-30	8.6	8.0	2	0.20	0.56	0.55	8	480	-	2.9	-	-	-	-	19.9	16.1	5.22	1.37	1.02	6.9
30-60	8.9	8.1	4	0.31	1.09	0.34	5	210	-	4.0	-	-	-	-	24.9	12.9	9.39	2.91	0.58	11.7
60-95	8.8	8.1	14	0.66	2.93	0.19	13	200	-	6.8	-	-	-	-	21.6	9.00	10.5	3.50	0.60	16.2
95-160	8.7	8.3	7	1.52	7.14	0.15	16	270	-	14.2	-	-	-	-	25.2	8.12	13.3	7.07	0.93	28.1

**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.