

## BROWN CRACKING CLAY

**General Description:** *Dark brown to dark grey seasonally cracking clay, becoming coarsely structured with depth*

**Landform:** Gilgai plain.

**Substrate:** Alluvial clay (Pooraka Formation).

**Vegetation:**



**Type Site:** Site No.: CY011

1:50,000 sheet: 6429-3 (Maitland)

Hundred: Wauraltee

Annual rainfall: 440 mm

Sampling date: 09/12/92

Landform: Near top of gilgai mound on flat plain

Surface: Hard, seasonally cracking with no stones. Surface is saline, preventing medic growth.

### Soil Description:

Depth (cm)	Description
0-13	Very dark greyish brown friable highly calcareous light medium clay with moderate fine angular blocky structure. Clear to:
13-34	Dark brown friable very highly calcareous light clay with weak fine angular blocky structure and minor quartz gravel. Gradual to:
34-72	Yellowish brown, green and orange friable very highly calcareous light medium clay with strong medium angular blocky structure and minor quartz gravel. Diffuse to:
72-120	Yellowish brown, green and orange friable highly calcareous medium heavy clay with strong coarse angular blocky structure. Diffuse to:
120-140	Yellowish brown, green and orange friable moderately calcareous light medium clay with strong coarse angular blocky structure. Layer is saturated by water entering from macropores at 65 cm in the gilgai hollow.



**Classification:** Episodic-Epicarceous, Epipedal, Brown Vertosol; non-gravelly, fine / medium fine, deep

### Summary of Properties

<b>Drainage</b>	Imperfectly drained, water table at 120 cm at this site at time of sampling.
<b>Fertility</b>	The soil's natural capacity to retain nutrients is high as indicated by the exchangeable cation data. Surface fertility relies on organic matter levels which are adequate, and on phosphorus levels which are high at this site (these high levels most likely indicate poor plant uptake of applied phosphorus). Potassium levels are adequate. Zinc deficiencies are also likely from time to time.
<b>pH</b>	Alkaline throughout.
<b>Rooting depth</b>	Roots to 70 cm in pit.
<b>Barriers to root growth</b>	
<b>Physical:</b>	The clayey texture and coarse subsoil structure cause reduced root densities.
<b>Chemical:</b>	Moderate to high salinity, high sodicity and high boron concentrations combine to restrict root growth. Low trace element availability may also be a problem.
<b>Water holding capacity</b>	Approximately 105 mm in rootzone, but less is effectively available due to low root densities and increased effective wilting point caused by the high salt level. High wilting point causes water to be withheld in dry seasons.
<b>Seedling emergence:</b>	Fair to poor due to salinity levels.
<b>Workability:</b>	Fair to poor due to strength of clay and narrow moisture range for effective working.
<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	8.1	8.0	11	5.41	26.60	2.2	81	670	-	10.1	3.5	40	29	0.79	46.9	20.0	10.5	15.6	2.40	33.2
0-13	8.3	8.1	11	3.45	15.89	2.0	32	580	-	8.5	1.7	34	28	0.55	44.4	21.0	10.2	14.7	2.18	33.2
13-34	9.0	8.4	22	1.70	6.70	1.3	5.3	410	-	14.3	0.82	19	7.2	0.16	37.1	16.2	10.2	13.5	1.37	36.5
34-72	8.9	8.4	32	1.91	8.18	0.24	5.3	370	-	29.6	1.0	5.4	1.5	0.15	29.5	9.79	10.4	11.0	1.10	37.2
72-120	8.8	8.8	17	2.88	11.29	0.15	<2.0	420	-	50.2	0.69	4.6	0.75	0.12	35.7	9.78	12.6	14.5	1.39	40.5
120-140	8.6	8.4	11	3.95	13.91	0.08	<2.0	440	-	58.2	1.6	5.2	0.63	0.18	35.8	8.70	13.9	15.3	1.83	42.8
#	8.7	8.3	26	3.70	20.20	0.29	4.2	540	-	19.5	0.36	11	0.65	0.20	46.6	13.7	10.5	27.2	1.95	58.3

**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

# Gravelly clay containing perched water table in gilgai hollow.