

RED CRACKING CLAY

General Description: *Red brown well structured calcareous clay, becoming more clayey and calcareous with depth, grading to a Class I carbonate layer, overlying a coarsely structured red heavy clay*

Landform: Flats and long gentle slopes

Substrate: Reddish strongly structured heavy clay of Pleistocene age (Hindmarsh Clay equivalent)

Vegetation:



Type Site: Site No.: CM049

1:50,000 sheet:	6530-3 (Lochiel)	Hundred:	Cameron
Annual rainfall:	450 mm	Sampling date:	22/12/93
Landform:	Midslope of a low hill, 6% slope		
Surface:	Seasonally cracking with 10-20% quartzite stones		

Soil Description:

Depth (cm)	Description
0-10	Dark reddish brown moderately calcareous light clay with strong subangular blocky structure and 10-20% quartzite stones. Abrupt to:
10-30	Dark reddish brown highly calcareous heavy clay with strong coarse angular blocky structure. Clear to:
30-55	Reddish brown highly calcareous heavy clay with strong coarse angular blocky structure. Diffuse to:
55-75	Reddish brown highly calcareous heavy clay with strong very coarse prismatic structure. Abrupt to:
75-100	Yellowish red highly calcareous heavy clay with strong very coarse prismatic structure and 20-50% soft carbonate segregations (Class I carbonate layer). Gradual to:
100-140	Brown and pale brown mottled highly calcareous heavy clay with strong lenticular structure (Hindmarsh Clay equivalent).

Depth to the Class I carbonate layer varies from 35 cm to 75 cm.



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

Summary of Properties

- Drainage** The soil is moderately well drained. The clayey texture and impermeable subsoil cause saturation for a week or so after heavy rain.
- Fertility** The natural fertility of the soil is very high, as indicated by the high cation exchange capacity (CEC) and high exchangeable calcium. Organic carbon levels are adequate (satisfactory nitrogen reserves), but phosphorus and zinc are marginal at the sampling site.
- pH** Alkaline at the surface grading to strongly alkaline with depth.
- Rooting depth** 140 cm in pit, but there are very few roots below 75 cm.
- Barriers to root growth**
- Physical:** The sodic clay (ESP greater than 6%) subsoil prevents good root proliferation.
 - Chemical:** High subsoil pH (more than 9.2 in H₂O), high exchangeable sodium (ESP more than 25%) and high boron (more than 15 mg/kg), restrict root growth below 75 cm.
- Water holding capacity** Approximately 140 mm in root zone (high), although not all is available due to low root densities
- Seedling emergence** Good.
- Workability** Fair to good. Surface becomes sticky when wet.
- Erosion Potential**
- Water:** Moderate due to the 6% slope, although the soil surface is naturally stable.
 - Wind:** Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO 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 (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.9	7.7	1.3	0.18	0.68	2.0	24	682	-	3.1	1.3	9	8.9	0.5	42.7	35.7	5.2	0.81	2.65	1.9
0-10	7.9	7.7	1.5	0.19	0.77	2.0	35	722	-	2.9	1.3	7	8.9	0.6	43.7	37.0	4.3	0.52	2.94	1.2
10-30	8.2	7.8	3.9	0.14	0.40	1.2	12	319	-	2.8	1.1	9	3.9	0.2	45.5	37.9	5.6	1.14	1.53	2.5
30-55	8.8	7.9	11.3	0.22	0.41	0.9	9	163	-	2.7	1.1	11	2.7	0.2	40.8	29.1	8.4	4.54	0.96	11.1
55-75	9.1	8.2	14.6	0.32	0.67	0.8	7	188	-	5.4	1.2	11	2.5	0.2	40.0	22.9	11.3	7.81	1.06	19.5
75-100	9.4	8.5	20.8	0.62	1.45	1.4	5	245	-	27.4	1.6	8	1.9	0.2	32.1	11.2	11.6	11.94	1.14	37.2
100-140	9.6	8.7	20.6	1.00	2.48	0.2	5	229	-	40.3	0.9	7	1.0	0.2	32.0	8.7	10.6	14.90	0.90	46.6

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.