RED CRACKING CLAY

General Description: *Reddish brown well structured clay, with strong coarse subsoil structure and variable fine lime*

Landform: Flat to gently undulating upper slopes and crests.

Substrate: Heavy clays, possibly Pleistocene lake bed sediments, occurring as residual deposits following dissection of the surrounding country.

Vegetation:

Type Site:

Site No.:	CU003	1:50,000 mapsheet:	6531-2 (Gladstone)
Hundred:	Narridy	Easting:	252300
Section:	396	Northing:	6296650
Sampling date:	21/02/1992	Annual rainfall:	450 mm average

Upper slope of gently undulating rises, 2% slope. Self-mulching, cracking surface, no stones.

Soil Description:

Depth (cm)	*Description*
0-10	Reddish brown highly calcareous medium clay with strong granular structure. Clear to:
10-25	Reddish brown highly calcareous hard medium heavy clay with coarse prismatic structure. Clear to:
25-50	Yellowish red highly calcareous heavy clay with strong coarse blocky structure. Diffuse to:
50-90	Yellowish red highly calcareous heavy clay with moderate subangular blocky structure. Diffuse to:
90-130	As for 50-90 cm layer. Gradual to:
130-175	Red highly calcareous medium heavy clay, with moderate subangular blocky structure and 10-20% soft gypsum segregations.

Classification: Epicalcareous-Epihypersodic, Self-mulching, Red Vertosol; non-gravelly, medium fine / very fine, deep

Summary of Properties

Drainage: Moderately well to imperfect. Soil may remain wet for a week to several weeks.

Fertility: Soil has a very high nutrient retention capacity, as indicated by high exchangeable cation values. Organic carbon levels are marginal, suggesting low nitrogen reserves. These soils are prone to zinc deficiency.

pH: Alkaline in the surface; strongly alkaline from 10 cm. Reduced availability of trace elements can be expected at these pH levels.

Rooting depth: 130 cm at type site, but low density below 50 cm.

Barriers to root growth:

Physical: High clay strength due to high exchangeable sodium (Na) at low moisture contents may affect root growth.

Chemical: Very high levels of boron from 50 cm (15 mg/kg is toxic), and high exchangeable sodium (Na) may restrict root development. Salinity is high from 130 cm, but this is beyond the rootzone.

Waterholding capacity: 200 mm in rootzone (high), although plants may be unable to extract it because of poor root development.

Workability: Good, provided self-mulching surface is maintained through organic matter returns to the soil. Soil becomes boggy and inaccessible after prolonged rainfall.

Seedling establishment: Good, due to well structured surface.

Erosion potential:

Water: Low, due to low slope and high stability of soil.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 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	8.8	7.8	6.0	0.16	-	0.94	27	460	-	-	0.89	3.2	4.1	0.23	-	-	-	-	-	-
0-10	8.6	7.8	6.0	0.15	0.5	1.00	38	520	-	-	0.92	2.9	2.7	0.26	41.8	29.4	4.94	0.88	1.91	2.1
10-25	9.1	7.8	8.9	0.16	0.4	0.48	3	180	-	-	0.90	2.3	0.9	0.09	36.7	25.1	5.85	2.41	1.11	6.6
25-50	9.4	8.2	10.1	0.52	1.1	0.34	3	190	-	14.6	1.17	4.0	1.0	0.06	38.1	15.7	7.82	9.91	1.08	26
50-90	9.4	8.5	8.0	0.97	2.6	0.26	2	240	-	48.0	1.14	3.7	0.6	0.07	39.7	12.5	8.58	15.4	1.35	39
90-130	9.3	8.5	6.8	1.18	3.2	0.16	7	260	-	44.4	0.79	3.0	0.3	0.06	39.7	12.6	8.17	17.2	1.26	43
130-175	8.2	8.1	4.1	3.64	9.4	0.11	6	190	-	29.7	0.56	2.0	0.1	0.07	41.3	15.0	7.64	18.0	0.92	43

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