

BROWN CRACKING CLAY

General Description: *Dark brown to black cracking clay, browner at depth with variable soft carbonate, overlying a red to brown very firm coarsely structured heavy clay*

Landform: Slopes of gently undulating to undulating rises

Substrate: Red to brown heavy clay, probably derived from the deep weathering of very fine grained basement rock

Vegetation:



Type Site: Site No.: CM016
1:50,000 sheet: 6629-1 (Riverton) Hundred: Waterloo
Annual rainfall: 440 mm Sampling date: 12/02/92
Landform: Upper slope of a gently undulating rise, 3% slope
Surface: Firm, seasonally cracking with no stones

Soil Description:

Depth (cm)	Description
0-15	Black slightly calcareous medium clay with strong granular structure. Clear to:
15-25	Very dark greyish brown slightly calcareous medium clay with strong subangular blocky structure. Clear to:
25-55	Strong brown and very dark brown moderately calcareous heavy clay with strong coarse angular blocky structure. Clear to:
55-140	Strong brown highly calcareous heavy clay with 10-20% soft carbonate segregations and strong coarse angular blocky structure. Diffuse to:
140-160	Brown highly calcareous light clay with weathering siltstone fragments.



Classification: Epicalcareous-Endohypersodic, Epipedal, Brown Vertisol

Summary of Properties

Drainage Imperfectly drained. The high clay content restricts water movement, and at least the subsoil may remain wet for several weeks at a time.

Fertility The soil has very high inherent fertility, as indicated by its high cation exchange capacity and high calcium saturation. Phosphorus and organic carbon levels are adequate, but these soils are prone to zinc deficiency.

pH Slightly alkaline at the surface, alkaline with depth.

Rooting depth 115 cm in pit, but few roots below 100 cm.

Barriers to root growth

Physical: High clay strength at depth may impose some restriction on root growth.

Chemical: High boron levels (more than 15 mg/kg) from about 100 cm limit root growth.

Water holding capacity More than 150 mm in root zone.

Seedling emergence Good.

Workability Fair. The surface becomes very sticky when wet, thereby restricting the period during which effective working can be carried out.

Erosion Potential

Water: Low.

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	7.5	6.9	2.2	0.12	0.6	1.76	53	390	-	-	0.96	14.6	6.5	0.29	34.5	25.85	4.57	0.28	1.27	0.8
0-15	8.3	7.3	3.3	0.12	0.5	1.39	25	300	-	-	0.74	6.5	1.9	0.21	33.5	26.96	3.33	0.32	0.95	1.0
15-25	8.7	7.6	1.5	0.07	0.3	0.71	5	75	-	1.5	0.58	5.5	2.6	0.14	14.4	12.12	1.69	0.30	0.20	2.1
25-55	8.9	7.8	5.4	0.13	0.3	0.56	4	130	-	3.4	0.70	5.6	0.6	0.06	37.6	26.59	8.85	1.21	0.50	3.2
55-140	9.2	8.0	11.9	0.31	0.9	0.37	3	110	-	16.1	0.86	5.1	0.5	0.07	35.8	20.46	13.10	4.50	0.53	12.6
140-160	8.1	8.0	4.9	1.97	5.6	0.14	3	120	-	24.6	0.58	4.6	0.5	0.14	33.6	17.31	10.74	5.70	0.45	17.0

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.