

GREY BROWN CRACKING CLAY

General Description: *Dark grey seasonally cracking clay becoming paler coloured, more clayey and more coarsely structured with depth, calcareous from about 50 cm.*

Landform: Lower slopes and flats in a landscape of gently undulating rises.

Substrate: Heavy clay.

Vegetation: Buloke (*Allocasuarina leuhmannii*) woodland.



Type Site: Site No.: SE076

1:50,000 sheet: 7025-2 (Tatiara)

Hundred: Tatiara

Annual rainfall: 450 mm

Sampling date: 21/09/04

Landform: Flat between an undulating rise and a water course

Surface: Hard and seasonally cracking, but little evidence of gilgai. No stones.

Soil Description:

Depth (cm)	Description
0-8	Very dark greyish brown firm medium clay with moderate coarse blocky structure. Clear to:
8-25	Dark greyish brown and dark yellowish brown firm medium heavy clay with strong coarse blocky structure. Diffuse to:
25-60	Brown, dark greyish brown and yellowish brown mottled firm heavy clay. Gradual to:
60-80	Brown and yellowish brown mottled highly calcareous heavy clay with 2-10% soft carbonate segregations. Gradual to:
80-120	Yellowish brown and greyish brown mottled firm highly calcareous heavy clay with 2-10% soft carbonate segregations and strong coarse lenticular structure. Gradual to:
120-150	Light yellowish brown hard highly calcareous heavy clay.



Classification: Endocalcareous-Endohypersodic, Epipedal, Brown Vertosol; non-gravelly, medium fine / very fine, deep

Summary of Properties

Drainage: Well to imperfectly drained. Part of the profile remains saturated for up to several weeks following prolonged rainfall

Fertility: Inherent fertility is high, as indicated by the exchangeable cation data. Test data indicate that concentrations of all nutrient elements are adequate. Clay soils are susceptible to zinc deficiency. Regular phosphorus and nitrogen applications are essential.

pH: Neutral at the surface, alkaline with depth.

Rooting depth: 120 cm in pit, but few roots below 80 cm.

Barriers to root growth:

Physical: The high strength of the heavy clay subsoil restricts root densities.

Chemical: Moderate salinity and high sodicity from 80 cm impede deeper root growth.

Water holding capacity: Approximately 75 mm in main root zone (i.e. to 80 cm).

Seedling emergence: Fair, due to tendency for surface to seal and set hard if it dries out after initial rains.

Workability: Fair. Surface tends to set hard and shatter when too dry, and becomes very sticky when wet.

Erosion Potential

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-8	6.7	6.0	0	0.10	0.91	2.16	92	564	46	48	1.8	1.80	267	6.3	120	21.5	12.7	6.26	1.06	1.46	4.9
8-25	8.0	6.9	0	0.20	1.71	0.65	6	260	76	53	2.6	1.39	104	0.41	122	23.7	11.1	9.52	2.42	0.69	10.2
25-60	8.6	7.5	0	0.26	1.75	0.46	4	261	159	44	5.3	1.78	67	0.57	150	27.7	11.5	11.4	4.14	0.69	14.9
60-80	9.2	8.2	2	0.55	3.89	0.24	3	381	424	42	9.1	1.34	24	0.27	100	31.8	12.0	12.9	6.04	0.96	19.0
80-120	9.1	8.2	9	0.98	4.30	0.18	2	438	825	102	10.8	0.94	11	0.29	7.46	35.7	14.7	13.2	6.73	1.10	18.9
120-150	8.9	8.2	4	1.32	5.76	0.12	3	462	1248	147	11.0	0.85	14	0.22	6.84	38.4	14.5	15.2	7.45	1.20	19.4

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percentage) is estimated by dividing the exchangeable sodium value by the sum of cations.