

GREY CRACKING CLAY

General Description: *Coarsely structured firm to hard grey calcareous clay, seasonally cracking, grading to a very coarsely structured and very hard greenish grey heavy clay with variable carbonate and slickensides.*

Landform: Gilgai plain

Substrate: Pleistocene age heavy clay (Blanchetown Clay equivalent)

Vegetation: Mallee



Type Site: Site No.: MM056

1:50,000 sheet: 7026-2 (Shaugh)

Hundred: Shaugh

Annual rainfall: 450 mm

Sampling date: 24/08/92

Landform: Gilgai plain

Surface: Firm to hard, seasonally cracking surface with no stones

Site MM056A is on a gilgai mound. Site MM056B is in a gilgai hollow.

Summary of Properties

Drainage Imperfectly to poorly drained. Soil may remain wet for several weeks to a month or more following heavy or prolonged rainfall.

Fertility Inherent fertility is high, as indicated by the exchangeable cation data. However, regular phosphorus and nitrogen applications are essential. Calcareous soils are prone to zinc and manganese deficiencies, but levels are satisfactory at sampling site.

pH Alkaline throughout, but substrate can be strongly acidic with depth.

Rooting depth 65 cm (mound pit) to 80 cm (hollow pit).

Barriers to root growth

Physical: Coarsely aggregated hard clay restricts optimum root development

Chemical: High sodicity and pH in subsoil limit root growth - limitation is greater on mound.

Water holding capacity 85 mm to 100 mm in rootzone.

Seedling emergence: Moderate to slight limitation, depending on hardness and dispersiveness of surface.

Workability: Moderate difficulty - too sticky when wet, leading to smearing and compaction. Too hard when dry, leading to shattering.

Erosion Potential

Water: Low.

Wind: Low.

Soil Description: (MM056A)

Depth (cm)	Description
0-10	Dark grey firm medium clay with minor fine calcareous segregations and coarse granular structure. Abrupt to:
10-20	Greyish brown hard medium heavy clay with coarse prismatic structure and minor calcareous segregations. Diffuse to:
20-65	Olive grey hard heavy clay with coarse prismatic structure and minor calcareous segregations. Gradual to:
65-130	Olive grey, light brown and red mottled hard heavy clay, slightly calcareous with strong coarse lenticular structure and slickensides. Diffuse to:
130-170	As above, but non calcareous. Diffuse to:
170-190	As above, but acidic.



Classification: Epicalcareous-Epihypersodic, Epipedal, Grey Vertosol

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	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	8.3	7.9	4	0.27	0.55	1.7	9.9	640	3.8	0.73	19	4.6	0.87	27.2	19.85	10.63	0.97	1.83	3.6
0-10	8.2	7.8	3	0.21	0.59	1.6	5.0	590	3.1	-	-	-	-	26.2	20.41	9.85	0.45	1.47	1.7
10-20	8.6	8.0	4	0.25	0.63	0.89	3.1	440	4.2	-	-	-	-	22.5	13.19	10.46	0.92	1.16	4.1
20-65	9.2	8.6	6	1.14	3.36	0.28	3.6	680	6.8	-	-	-	-	29.4	6.17	16.99	8.08	1.86	27.5
65-130	8.7	8.3	2	2.14	5.82	0.08	2.0	630	6.0	-	-	-	-	29.7	3.74	15.67	9.96	1.64	33.5
130-170	-	-	1	-	7.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
170-190	5.2	4.7	1	2.36	6.57	0.12	<2.0	510	3.8	-	-	-	-	26.5	2.45	13.64	9.92	1.32	37.4

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.

Soil Description: (MM056B)

<i>Depth (cm)</i>	<i>Description</i>
0-12	Very dark grey firm medium clay with strong coarse granular structure and minor fine calcareous segregations. Clear to:
12-30	Dark grey hard medium clay with strong coarse prismatic structure. Diffuse to:
30- 70	Grey hard medium clay with strong coarse prismatic structure. Diffuse to:
70-175	Olive grey hard medium clay with coarse lenticular breaking to subangular blocky structure. Diffuse to:
175-190	Light olive grey heavy clay with coarse lenticular breaking to subangular blocky structure.

Classification: Epihypersodic, Epipedal, Grey Vertosol

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	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	8.3	7.9	4	0.27	0.55	1.7	9.9	640	3.8	0.73	19	4.6	0.87	27.2	19.85	10.63	0.97	1.83	3.6
0-12	8.4	7.7	<1	0.19	0.93	2.3	13	550	2.5	-	-	-	-	32.4	20.70	7.25	0.32	1.62	1.0
12-30	8.5	7.8	<1	0.16	1.02	1.6	7	340	2.4	-	-	-	-	32.4	19.44	8.85	0.60	1.10	1.9
30-70	9.2	8.0	<1	0.40	4.4	0.4	3	470	2	-	-	-	-	34.1	13.10	13.34	5.33	1.54	15.6
70-120	9.3	8.2	<1	0.80	3.98	0.5	2	470	2.6	-	-	-	-	32.7	7.78	13.24	8.81	1.60	26.9
120-175	9.2	8.2	<1	0.91	5.07	0.2	<2	430	2.5	-	-	-	-	28.5	5.75	10.78	8.49	1.42	30.0
175-190	9.1	8.1	<1	1.12	6.50	0.1	<2	420	3.1	-	-	-	-	24.9	4.00	10.15	7.88	1.20	31.6

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.