

GYPSEOUS BLACK CRACKING CLAY

General Description: *Black cracking clay, becoming greyer with depth and containing soft and crystalline gypsum*

Landform: Low lying salinized plain.

Substrate: Recent lacustrine clay (St. Kilda Formation).

Vegetation: Samphire and sea barley grass.



Type Site: Site No.: MM110

1:50,000 sheet: 6827-3 (Moorlands) Hundred: Coolinong

Annual rainfall: 385 mm Sampling date: 01/04/93

Landform: Flat

Surface: Seasonally cracking with no stones

Soil Description:

Depth (cm)	Description
0-9	Very dark grey hard silty clay with moderate granular structure. Abrupt to:
9-25	Black hard medium heavy clay with strong coarse angular blocky structure. Diffuse to:
25-60	Black hard slightly calcareous medium heavy clay with moderate coarse angular blocky structure. Diffuse to:
60-100	Black soft (wet) massive medium heavy clay with 10-20% gypsum crystals. Diffuse to:
100-135	Dark grey soft (wet) massive medium heavy clay. Clear to:
135-150	Olive brown, yellowish brown and light olive grey soft (wet) sandy light clay with a water table (34,000 mg/l).



Classification: Episodic, Epipedal, Black / Aquic Vertosol

Summary of Properties

Drainage Imperfectly drained. Soil may remain wet for several weeks following heavy or prolonged rainfall.

Fertility Inherent fertility is high, as indicated by the exchangeable cation data. Nutrient retention capacity is high, and nutrient status is satisfactory at the sampling site. Organic carbon levels are high, probably due to low microbial activity.

pH Alkaline throughout.

Rooting depth 60 cm in pit.

Barriers to root growth

Physical: The hard dense clay can prevent uniform root growth.

Chemical: High salinity, sodicity and boron concentrations from 25 cm inhibit deeper root growth.

Water holding capacity 90 mm in the root zone.

Seedling emergence: Slight to moderate, depending on the salinity levels at the surface.

Workability: Surface can set hard, and can become wet - both affect workability.

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	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	6.9	6.3	1	0.28	1.91	2.5	36	930	3.3	1.6	48	80	1.1	25.7	16.67	4.50	2.20	2.85	8.6
0-9	7.4	6.8	1	0.24	1.76	2.7	42	770	3.1	1.4	24	62	1.0	23.6	15.65	2.58	1.32	2.05	5.6
9-25	8.2	7.6	2	0.86	5.68	1.2	8	1400	11	1.7	23	15	0.18	40.6	18.72	8.23	9.57	4.21	23.6
25-60	8.3	8.0	2	3.66	16.70	1.1	13	1600	19	1.4	15	7.3	0.28	43.7	13.75	9.23	18.15	3.91	41.5
60-100	7.8	7.7	3	7.06	25.2	0.4	43	1800	27	1.6	20	6.1	0.14	44.9	13.61	10.23	21.43	4.35	47.7
100-135	7.7	7.7	2	8.82	33.7	0.3	16	1700	30	4.2	11	1.8	0.23	39.0	10.94	9.44	19.69	4.34	51.0

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.