

CALCAREOUS CLAY LOAM

General Description: *Calcareous clay loam becoming more clayey and calcareous with depth, grading to heavy clay within 100 cm*

Landform: Undulating rises.

Substrate: Coarsely structured heavy clay (Hindmarsh Clay equivalent).

Vegetation: Mallee.



Type Site: Site No.: CM091
 1:50,000 sheet: 6530-2 (Blyth) Hundred: Hart
 Annual rainfall: 400 mm Sampling date: 04/08/00
 Landform: Lower slope of undulating rise, 3% slope
 Surface: Firm with minor calcrete and quartz fragments (6-20 mm)

Soil Description:

Depth (cm)	Description
0-14	Dark brown friable highly calcareous moderately granular clay loam. Clear to:
14-26	Brown friable highly calcareous weakly polyhedral light clay with minor carbonate nodules. Gradual to:
26-45	Yellowish red friable very highly calcareous medium clay with moderate polyhedral structure and 2-10% carbonate nodules (2-6 mm). Gradual to:
45-70	Yellowish red friable massive very highly calcareous light clay with 2-10% carbonate nodules (2-6 mm). Diffuse to:
70-100	Red firm highly calcareous medium clay with moderate angular blocky structure. Diffuse to:
100-170	Dark red firm moderately calcareous medium heavy clay with 2-10% soft carbonate and manganese segregations.



Classification: Endohypersodic, Pedal, Hypercalcic Calcarosol; medium, non-gravelly, clay loamy/clayey, deep

Summary of Properties

Drainage: Moderately well to imperfectly drained. The soil may remain wet for a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. Nutrient retention capacity is high and concentrations of all measured nutrient elements are satisfactory. However, free carbonate to the surface reduces availability of phosphorus, zinc and manganese. Organic carbon levels are high.

pH: Alkaline at the surface, strongly alkaline at depth.

Rooting depth: 100 cm in pit, but few roots below 70 cm.

Barriers to root growth:

Physical: The Hindmarsh Clay at 100 cm is the only significant barrier, but at that depth is unlikely to affect annual plants.

Chemical: High pH, sodicity and boron concentrations, and moderate salinity from 45 cm restrict root growth.

Water holding capacity: Approximately 90 mm in the root zone.

Seedling emergence: Satisfactory.

Workability: Firm calcareous surface soil is easily worked.

Erosion Potential

Water: Moderately 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)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	8.3	7.8	-	0.22	1.4	2.05	46	571	4.2	2.3	0.75	6.1	5.1	0.88	28	22.73	3.29	0.50	1.45	1.8
0-14	8.2	7.7	-	0.16	1.0	1.77	37	438	4.1	2.1	0.73	6.6	3.4	0.84	29	24.2	3.44	0.36	1.14	1.2
14-26	8.5	7.9	-	0.14	0.9	0.96	7	152	4.6	1.5	0.81	8.4	1.5	0.40	27	21.3	4.54	0.59	0.41	2.2
26-45	9.3	8.0	-	0.28	1.8	0.61	5	109	6.3	4.0	0.82	7.7	1.0	0.35	24	15.1	6.44	2.53	0.29	10.4
45-70	9.5	8.3	-	1.09	7.1	0.35	4	161	108	15.5	0.72	5.4	0.78	0.27	24	8.60	7.76	6.75	0.42	28.7
70-100	9.6	8.5	-	1.23	8.0	0.21	3	231	128	19.3	0.41	4.2	0.64	0.21	23	6.40	7.59	8.37	0.57	36.5
100-170	9.5	8.7	-	1.46	13.8	0.11	3	373	181	22.5	0.74	5.0	0.46	0.4	32	5.89	11.0	13.8	0.97	43.6

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.

Sum of cations is an approximation of cation exchange capacity, 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 sum of cations.