

BLACK CLAY LOAM TO CLAY OVER CALCRETE

General Description: *Black well structured clay over calcreted marl at shallow depth*

Landform: Level plain.

Substrate: Calcrete capped marly clay (Padthaway Formation).

Vegetation:



Type Site: Site No.: SE020

1:50,000 sheet: 6924-2 (Lucindale)

Hundred: Joyce

Annual rainfall: 600 mm

Sampling date: 15/06/94

Landform: Flat plain

Surface: Firm, seasonally cracking, with no stones. Water table at 135 cm.

Soil Description:

Depth (cm) Description

0-5 Black friable slightly calcareous light clay with strong coarse prismatic breaking to fine polyhedral structure and 2-10% calcrete fragments (20-60 mm). Clear to:

5-18 Very dark grey firm highly calcareous light medium clay with strong polyhedral structure. Sharp to:

18-20 Calcrete pan. Sharp to:

20-60 Greyish brown firm highly calcareous massive medium heavy clay (marl) with 10-20% carbonate nodules (2-20 mm). Diffuse to:

60-100 As above. Diffuse to:

100-140 As above, with water table at 135 cm.



Classification: Ceteric, Petrocalcic, Calcic Calcarosol; moderate, slightly gravelly, clayey / clayey, very shallow

Summary of Properties

Drainage Imperfectly drained. The underlying water table restricts deep drainage so that part of the profile remains saturated for several weeks at a time.

Fertility Inherent fertility is high, as indicated by the exchangeable cation data. However, surface carbonate tends to reduce availability of phosphorus, zinc, copper and manganese. Phosphorus levels are low at the sampling site. Organic matter concentrations are very high.

pH Alkaline throughout.

Rooting depth 18 cm in pit.

Barriers to root growth

Physical: The calcrete capping on the marl severely restricts root growth, but this could be disrupted by ripping. Periodic saturation of the marl impedes root growth.

Chemical: The high concentration of carbonates in the marl limits root growth.

Water holding capacity Approximately 40 mm above the calcrete, with a similar amount below, if accessible.

Seedling emergence: Fair to good. The surface may seal over depending on frequency of opening rains.

Workability: Fair. Clayey surface becomes sticky and intractable when wet.

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	8.3	7.5	18.8	0.19	1.02	5.2	12	547	11.2	1.4	-	-	-	-	38.2	28.51	7.20	1.13	2.15	3.0
0-5	8.3	7.6	5.7	0.28	1.40	6.0	11	554	13.9	1.8	-	-	-	-	43.7	31.95	7.52	2.15	2.20	4.9
5-18	8.5	7.7	13.4	0.35	1.42	3.4	6	442	14.2	1.1	-	-	-	-	39.2	27.31	6.32	2.64	1.87	6.7
18-20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-60	8.9	7.9	62.3	0.22	1.21	0.4	4	285	11.2	0.7	-	-	-	-	10.2	7.21	3.76	0.95	1.01	9.3
60-100	9.1	7.9	51.9	0.26	1.42	0.3	2	379	16.1	0.8	-	-	-	-	15.6	7.26	6.53	2.05	1.53	13.1
100-140	9.1	8.0	63.6	0.35	2.82	0.2	2	328	25.8	0.7	-	-	-	-	13.7	6.58	5.56	2.04	1.15	14.9

Note: Paddock sample bulked from 20 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