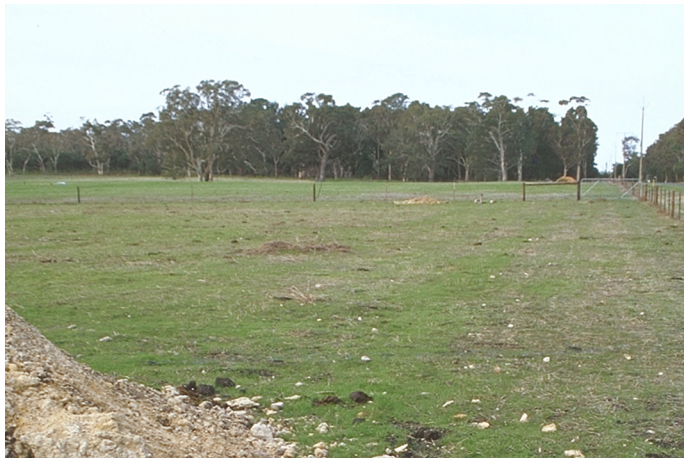
SHALLOW BLACK CRACKING CLAY ON CALCRETE

General Description: *Black seasonally cracking calcareous clay over calcreted limestone at shallow depth*

Landform: Level lacustrine plain.

Substrate: Calcreted calcareous clay of the Padthaway Formation.

Vegetation: Blue gum (Eucalyptus leucoxylon).



Type Site:

Site No.:	SE031	1:50,000 mapsheet:	6924-2 (Lucindale)
Hundred:	Joyce	Easting:	444270
Section:		Northing:	5908130
Sampling date:	15/06/1994	Annual rainfall:	595 mm average

Flat plain. Cracking surface with 2-10% calcrete stone (60-200 mm).
Watertable at 115 cm, but rising to within 50 cm of the surface later in the season.

Soil Description:

Depth (cm)	*Description*
0-10	Black firm slightly calcareous light clay with strong polyhedral structure. Clear to:
10-20	Very dark grey firm moderately calcareous medium clay with strong polyhedral structure and minor hard carbonate fragments. Sharp to:
20-25	Very strongly cemented massive calcrete pan. Sharp to:
25-55	Dark grey firm highly calcareous medium clay with strong polyhedral structure and more than 50% hard carbonate nodules (2-60 mm).
55-115	Pale yellow and yellowish brown hard calcareous light medium clay (marl).
115-	Watertable.

Classification: Melanic, Petrocalcic, Black Dermosol; moderate, slightly gravelly, clayey / clayey, very shallow

Summary of Properties

Drainage: Poorly drained. The lower part of the soil remains wet for several months during winter / spring due to the shallow watertable.

Fertility: Inherent fertility is high, as indicated by the exchangeable cation data. High surface clay and organic matter contents provide ample nutrient retention capacity. Phosphorus concentrations are low, and calcium : magnesium ratio is high. Manganese deficiencies are possible due to the combined effects of high pH and prolonged waterlogging.

pH: Alkaline throughout.

Rooting depth: 95 cm in pit, but few roots below 55 cm.

Barriers to root growth:

Physical: The calcrete impedes root growth, but is sufficiently thin and fractured that some roots can penetrate.

Chemical: The high carbonate content in a clayey matrix below the calcrete restricts root growth.

Waterholding capacity: Approximately 70 mm in the pit.

Seedling emergence: Fair. The clayey surface can seal over, reducing emergence percentages.

Workability: Fair to poor. The clayey surface becomes sticky and intractable when wet.

Erosion Potential:

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	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	8.1	7.5	8.8	0.24	0.82	5.0	17	391	11.4	2.1	-	-	-	-	28.1	26.81	3.96	0.29	1.82	1.0
0-10	8.0	7.4	6.3	0.32	1.32	5.4	17	399	17.8	2.0	-	-	-	-	33.5	30.76	3.70	0.33	1.87	1.0
10-20	8.1	7.6	15.2	0.26	1.33	2.1	7	239	10.7	1.4	-	-	-	-	27.2	26.01	3.45	0.27	1.25	1.0
20-25	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	
25-55	8.5	7.7	32.7	0.17	0.51	0.8	2	269	5.9	2.5	-	-	-	-	22.8	15.31	6.55	0.32	1.40	1.4
55-95	8.6	7.8	57.3	0.19	0.84	0.1	2	239	7.3	1.2	-	-	-	-	14.4	7.82	6.56	0.51	0.85	3.5
95-115	8.7	7.9	55.5	0.18	0.68	0.1	5	185	7.3	0.9	-	-	-	-	11.1	6.27	5.12	0.42	0.52	3.8

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.

Further information: DEWNR Soil and Land Program