

SHALLOW BLACK CLAY OVER CALCRETE

General Description: *Well structured black clay becoming more clayey with depth over calcrete at shallow depth*

Landform: Low lying salinized plain with extensive swamps

Substrate: Calcreted limestone (Bungunna Limestone equivalent).

Vegetation: Salt tolerant grasses and samphire.



Type Site: Site No.: MM115

1:50,000 sheet:	6827-3 (Moorlands)	Hundred:	Coolinong
Annual rainfall:	385 mm	Sampling date:	31/03/93
Landform:	Flat		
Surface:	Seasonally cracking with no stones		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-11	Black hard silty clay with moderate coarse granular structure. Abrupt to:
11-25	Very dark grey hard medium heavy clay with strong coarse angular blocky structure. Sharp to:
25-60	Laminar calcrete. Clear to:
60-85	Massive calcrete. Diffuse to:
85-130	Semi hard carbonate with 20-50% hard nodules. Diffuse to:
130-162	Pale yellow very highly calcareous firm massive sandy clay loam with 10-20% calcareous nodules.
162-	Water table. Salinity is 16,000 mg/l.



Classification: Petrocalcic, Epipedal, Black Vertosol; non-gravelly, fine / medium fine, shallow

Summary of Properties

Drainage	Moderately well drained. Soil rarely remains saturated for more than a week.
Fertility	Inherent fertility is high, as indicated by the exchangeable cation data. Regular phosphorus applications are essential. Nitrogen content depends on legume status of pastures. Occasional zinc and copper deficiencies can be expected. Organic carbon levels are high.
pH	Slightly acidic at the surface, alkaline with depth.
Rooting depth	25 cm in pit.
Barriers to root growth	
Physical:	The calcrete and limestone limit root penetration.
Chemical:	No barriers above the calcrete, but high salinity and fluctuating water tables affect any root growth that does occur into the calcrete and limestone.
Water holding capacity	35 mm in root zone.
Seedling emergence:	Moderate limitation due to hard, sealing surface soil.
Workability:	Hard setting and sealing surface restricts moisture range for effective and safe working. Stones may interfere with cultivation in places.

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	6.1	5.5	<1	0.20	1.82	2.2	30	890	3.4	1.7	60	67	0.76	21.8	11.95	4.19	0.44	2.77	2.0
0-11	6.0	5.2	<1	0.11	1.04	1.9	16	680	2.8	1.4	25	59	0.49	16.7	8.05	3.40	0.33	1.97	2.0
11-25	7.6	7.0	<1	0.19	1.25	0.8	5	1200	8.5	2.1	-	13	<0.06	36.3	15.49	12.02	1.79	4.01	4.9
25-60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60-85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85-130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
130-162	8.9	8.3	42	1.26	12.15	<1	3	640	9.1	0.24	8.9	1.3	0.10	11.9	4.03	5.10	2.82	1.53	23.7

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.