SHALLOW BLACK LOAM ON CLAY

General Description: Poorly structured black loam over black clay with a thick rubbly calcrete pan and a shallow watertable

Landform: Low plain.

Substrate: Marly clay of the

Padthaway Formation.

Vegetation: Saltwater tea tree

Type Site: Site No.: SE910 1:50,000 mapsheet: 6924-4 (Gyp Gyp)

Hundred:MinecrowEasting:420930Section:96Northing:5934370

Sampling date: 26/09/05 Annual rainfall: 590 mm average

Level plain. Watertable at 72 cm.

Soil Description:

Depth (cm) Description

0-5 Compacted massive black loam. Many roots

present. Sharp to:

5-28 Black heavy clay with coarse prismatic peds

breaking to moderate sub-angular blocky structure. Roots common. Sharp to:

structure. Roots common. Sharp to.

28-34 Fractured calcrete pan with pockets of fine

calcrete rubble and friable black clay (10% of volume). Roots common in clay. Sharp to:

34-52 Fractured calcrete pan. No roots. Sharp to:

52-72 Fractured calcrete pan with seams of moist

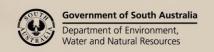
grey brown massive light clay (70% of volume) and coarse calcrete rubble. Sharp to:

72+ Watertable



Classification: Lithocalcic, Mesonatric, Black Sodosol; thin, non-gravelly, loamy / clayey, shallow or:

Calcareous, Sodosolic, Oxyaquic Hydrosol; thin, non-gravelly, loamy / clayey, shallow





Summary of Properties

Drainage: Due to its poor structure and high clay content, the soil above the calcrete pan has low

permeability. Water is likely to pond or run off the surface soil during wet winters. However the rubbly lower profile is likely to be quite permeable. Site drainage is poor

due to the low flat topography and the presence of a shallow watertable.

Fertility: As indicated by the CEC in the table below, inherent fertility is naturally high. P levels

are very low for pasture, and are likely to be a limiting factor for pasture vigour. K status is high, probably relating to the mineralogy of the clay. Sulphur levels are adequate for

pasture.

pH: Moderately alkaline at the surface, becoming very strongly alkaline below the rootzone.

Soil pH greater than 9.2 in water is likely to restrict root growth.

Rooting depth: 34 cm.

Barriers to root growth:

Physical: Poor structure and compact condition of the surface, and the coarse structure of the

subsoil are likely to reduce the efficiency of the soil to provide air, water and nutrients to plant roots and will impact on overall plant vigour. The calcrete pan at 28 cm is fractured and includes some clay, allowing roots beyond this point. Carbonate gravel significantly reduces waterholding capacity between 28 and 34 cm. Fluctuating watertable is likely to

saturate the lower part of the profile for significant periods.

Chemical: Most of the profile is highly alkaline, and the soil is sodic to highly sodic throughout. The

high sodicity may also further degrade the soil's structure.

Waterholding capacity: Total available water is estimated to be around 30 mm within the rootzone.

Seedling emergence: Fair. The compacted and potentially dispersive surface may reduce emergence through

waterlogging and some surface sealing.

Workability: Fair. Access may be restricted during the winter months, and the watertable may come to

the surface.

Erosion Potential:

Water: Low Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaC1 ₂	N mg/kg	-	EC 1:5 dS/m	ECe dS/m	Org.C %	Г	K	Cl mg/kg	SO ₄ -S mg/kg		Trace Elements mg/kg (EDTA)			CEC cmol	Exchangeable Cations cmol(+)/kg			ESP		
													Cu	Fe	Zn	Mn	(+)/kg	Ca	Mg	Na	K	
Paddock	7.2			0.3	0.18		2.2										16	3.8	6.7	0.9	1.1	5.6
0-5	8.0	7.1	4		0.105		1.33	5	231		5.7	203										
5-28	8.6	7.5	8	0.5	0.349		0.98	9	695		11.2	494					21	3.4	7.8	4.1	1.8	19.5
28-34																						
34-52	9.9			35.6	0.40		0.8	·			·						23	4.0	7.8	9.1	2.7	39.6
52-72	9.9			41.4	0.51		0.0										23	3.5	8.2	9.1	2.7	39.6

Note: CEC figures measured independently of exchangeable cations, using NH₄ extraction.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC. Shaded data estimated from samples collected in same pit on 23/03/05, mainly at 10 cm depth intervals.

Further information: <u>DEWNR Soil and Land Program</u>

