

SHALLOW LOAMY SAND OVER CALCRETE

General Description: *Loamy sand to sandy loam over calcrete at shallow depth*

Landform: Very gently undulating plain with low sandy and stony rises and saline flats.

Substrate: Calcreted calcarenite (Bridgewater Formation).

Vegetation: Mallee.



Type Site: Site No.: MM121
 1:50,000 sheet: 6726-1 (Meningie) Hundred: Bonney
 Annual rainfall: 465 mm Sampling date: 30/05/94
 Landform: Low rise on saline flats
 Surface: Loose with 2-10% calcrete stones (60-200 mm)

Soil Description:

Depth (cm)	Description
0-11	Very dark greyish brown soft loamy sand. Abrupt to:
11-19	Dark brown soft loamy sand. Abrupt to:
19-23	Brown soft sand. Sharp to:
23-43	Rubbly calcrete with old root channels. Clear to:
43-90	Very pale brown hard massive very highly calcareous light sandy clay loam with 2-10% carbonate nodules (20-60 mm). Clear to:
90-125	Yellow soft massive highly calcareous light sandy clay loam with minor carbonate nodules (6-20 mm). Diffuse to:
125-160	Brownish yellow soft massive highly calcareous light sandy loam.



Classification: Basic, Petrocalcic, Leptic Tenosol; medium, slightly gravelly, sandy / sandy, very shallow

Summary of Properties

Drainage	Rapidly drained. Soil rarely remains saturated for more than a few hours.
Fertility	Inherent fertility is moderately low, as indicated by the exchangeable cation data. Regular phosphorus applications are essential. Nitrogen levels depend on legume status of pastures. Zinc and copper deficiencies are possible although concentrations at sampling site are adequate. Manganese may be required by lupins, although at the sampling site, calcrete is too shallow. Organic carbon levels are high.
pH	Neutral at the surface, strongly alkaline with depth.
Rooting depth	90 cm in pit, but few roots below 23 cm.
Barriers to root growth	
Physical:	The calcrete layer severely restricts deeper root growth (only through old channels).
Chemical:	High pH below the calcrete impedes deeper root growth.
Water holding capacity	Approximately 25 mm in the root zone.
Seedling emergence:	Satisfactory although water repellence is a problem in dry seasons.
Workability:	Soft / loose surface is easily worked.
Erosion Potential	
Water:	Low.
Wind:	Moderately 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	7.7	7.4	0.2	0.11	0.94	1.8	24	153	0.9	0.4	11	3.3	1.2	7.0	5.7	0.6	0.08	0.31	1.1
0-11	7.2	7.0	<0.1	0.01	0.77	1.5	17	125	0.9	0.6	16	6.1	1.6	6.4	6.3	0.7	0.11	0.28	1.7
11-19	7.2	7.0	<0.1	0.06	0.65	0.5	7	84	0.5	0.2	14	1.9	0.3	4.0	3.1	0.3	0.11	0.18	2.8
19-23	7.1	6.9	<0.1	0.05	0.71	0.3	6	64	0.4	0.1	17	0.5	0.1	3.3	2.1	0.3	0.12	0.13	3.6
23-43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43-90	9.3	8.6	20.1	0.54	6.14	0.1	<4	80	1.1	0.1	2	0.1	0.1	2.4	1.4	0.8	0.46	0.18	19.2
90-125	9.5	8.6	16.5	0.53	5.72	0.4	<4	69	0.3	0.1	2	0.1	0.1	2.0	1.0	0.6	0.29	0.13	14.5
125-160	9.4	8.6	17.2	0.61	6.90	0.1	5	119	0.6	0.1	2	0.2	0.1	1.9	1.0	0.6	0.34	0.14	17.9

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.