

SAND OVER POORLY STRUCTURED BROWN CLAY

General Description: *Sand over coarsely structured dispersive brown clay, calcareous with depth*

Landform: Gently undulating plains with occasional low to moderate parallel sandhills.

Substrate: Coarsely structured heavy clay (Blanchetown Clay equivalent).

Vegetation: Mallee.



Type Site: Site No.: MM131

1:50,000 sheet: 6927-2 (Parrakie)

Hundred: Cotton

Annual rainfall: 390 mm

Sampling date: 23/05/96

Landform: Very gentle slope

Surface: Soft with no stones

Soil Description:

Depth (cm)	Description
0-11	Dark brown loose loamy sand. Abrupt to:
11-15	Very pale brown (bleached) loose sand. Sharp to:
15-35	Pale brown very hard sandy medium clay with coarse columnar structure. Clear to:
35-55	Light yellowish brown and orange very hard calcareous medium heavy clay with coarse prismatic structure and 20-50% fine carbonate segregations. Clear to:
55-82	Orange hard highly calcareous light clay with coarse subangular blocky structure and more than 50% fine carbonate segregations. Clear to:
82-120	Yellowish red and light yellowish brown very hard, very highly calcareous heavy clay with coarse prismatic structure and 20-50% fine carbonate segregations. Gradual to:
120-190	Yellowish red and light yellowish brown very hard, slightly calcareous heavy clay with coarse prismatic structure.



Classification: Hypercalcic, Mesonatric, Brown Sodosol; medium, non-gravelly, sandy / clayey, moderate

Summary of Properties

Drainage	Moderately well drained. Water perches on the clayey subsoil for a week or so following heavy or prolonged rainfall.
Fertility	Inherent fertility is low as indicated by the exchangeable cation data. Although the subsoil has high nutrient retention capacity, the low clay and low organic matter surface soil does not. Although levels are satisfactory at the sampling site, there is potential for phosphorus, nitrogen, zinc, copper and manganese deficiencies.
pH	Neutral at the surface, strongly alkaline at depth.
Rooting depth	82 cm in pit, but few roots below 55 cm.
Barriers to root growth	
Physical:	Dense dispersive clayey subsoil restricts optimal root distribution.
Chemical:	High pH, boron and sodicity from 35 cm restrict further root growth.
Water holding capacity	Approximately 40 mm in root zone.
Seedling emergence:	Satisfactory but can be affected by water repellence in dry seasons.
Workability:	Loose to soft surface is easily worked.
Erosion Potential	
Water:	Low.
Wind:	Moderate to 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	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	6.7	6.1		0.05	0.58	0.7	37	195	4	0.7	0.18	37	1.35	1.57	2.6	2.18	0.63	0.12	0.25	4.5
0-11	7.4	7.1	<0.1	0.08	0.74	0.9	39	171	4	0.9	-	-	-	-	3.7	2.32	0.63	0.22	0.25	6.1
11-15	6.9	6.3	<0.1	0.04	0.53	0.2	21	99	2	0.5	-	-	-	-	2.2	0.85	0.30	0.10	0.02	4.7
15-35	8.6	7.4	<0.1	0.16	0.60	0.2	<4	474	2	6.6	-	-	-	-	15.9	5.24	6.47	3.56	1.40	22.3
35-55	9.6	8.7	4.8	0.60	1.27	0.1	<4	672	17	18.4	-	-	-	-	23.4	4.03	10.74	9.66	2.17	41.4
55-82	9.8	8.5	37.3	0.54	1.25	0.1	<4	640	9	16.4	-	-	-	-	16.6	2.74	8.80	7.73	1.63	46.7
82-120	9.9	8.7	23.0	0.73	1.64	<0.1	<4	623	26	13.5	-	-	-	-	16.4	1.39	6.04	8.26	1.15	50.3
120-190	9.0	8.3	0.1	0.95	2.93	<0.1	<4	696	140	9.9	-	-	-	-	24.4	0.80	9.34	14.91	1.98	61.1

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.