

SANDY LOAM OVER COARSELY STRUCTURED RED CLAY

General Description: *Firm to hard loamy sand to sandy loam over a coarsely structured dispersive red sandy clay to clay, calcareous with depth*

Landform: Dunefields of closely spaced low to moderate parallel sandhills with some broader flats.

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

Vegetation: Mallee.



Type Site: Site No.: MM143

1:50,000 sheet: 6928 - 1 (Caliph)

Hundred: Allen

Annual rainfall: 290 mm

Sampling date: 23/02/99

Landform: Flat

Surface: Firm with no stones

Soil Description:

Depth (cm)	Description
0-13	Reddish brown soft loamy sand. Abrupt to:
13-25	Red firm light sandy clay loam with coarse columnar structure. Clear to:
25-48	Red hard light clay with coarse columnar structure. Gradual to:
48-80	Yellowish red very hard very highly calcareous light clay with coarse subangular blocky structure and more than 50% fine carbonate segregations. Diffuse to:
80-170	Red hard medium clay with coarse subangular blocky structure and 20-50% fine carbonate segregations.



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

Summary of Properties

Drainage Moderately well drained. Soil rarely remains saturated for more than a week 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 overall capacity of the soil to supply nutrients is reduced by the low clay and organic carbon levels in the surface soil. Regular phosphorus applications are necessary (levels are low at sampling site). Nitrogen levels depend on cropping history and legume status of pastures. Zinc and copper deficiencies occur occasionally. Zinc concentrations are low at the sampling site.

pH Neutral at the surface, strongly alkaline with depth.

Rooting depth Not recorded. Estimate 48 cm at pit site, with few roots below 25 cm.

Barriers to root growth

Physical: The dense clayey subsoil restricts root density.

Chemical: High pH and sodicity from 48 cm prevent deeper root growth.

Water holding capacity Approximately 40 mm in the root zone.

Seedling emergence: Generally satisfactory, although surface may seal in places.

Workability: Firm 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	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	6.9	6.6	-	0.06	0.6	0.58	10	443	-	1.0	0.5	-	8.9	0.3	6.8	3.3	1.0	< 0.1	1.1	1.5
0-13	6.9	6.6	-	0.08	0.7	0.62	11	449	-	0.8	0.4	-	10.1	0.2	6.8	3.7	1.1	< 0.1	1.1	1.5
13-25	8.3	7.4	< 0.1	0.10	0.9	0.29	4	250	-	1.0	0.6	-	5.2	0.2	9.6	5.1	1.5	0.10	0.78	10.4
25-48	8.9	8.0	0.4	0.31	2.0	0.34	1	194	-	1.4	0.7	-	2.0	0.1	21.9	8.3	7.8	4.2	0.71	19.2
48-80	9.3	8.4	12	0.99	6.5	0.14	1	368	-	6.9	0.9	-	0.4	0.1	16.5	4.7	7.2	5.6	0.97	33.9
80-170	9.3	8.3	7.8	1.05	6.8	0.09	1	389	-	12.4	0.6	-	0.5	0.2	15.3	2.9	6.5	6.2	1.1	40.5

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.