

LOAMY SAND OVER POORLY STRUCTURED RED CLAY

General Description: *Loamy sand with a bleached A2 layer over a coarsely structured dispersive red clay, calcareous with depth*

Landform: Gently undulating rises.

Substrate: Clay (weathering product of underlying gneissic basement rock), mantled by fine carbonates.

Vegetation: Mallee.



Type Site: Site No.: CY048

1:50,000 sheet: 6429-2 (Ardrossan) Hundred: Cunningham
 Annual rainfall: 400 mm Sampling date: 16/05/02
 Landform: Lower slope of a gently undulating rise, 1% slope
 Surface: Firm with minor quartz and ironstone grit

Soil Description:

Depth (cm)	Description
0-10	Dark reddish brown firm massive loamy coarse sand with 2-10% quartz grit. Abrupt to:
10-14	Light reddish brown (bleached) very firm massive loamy coarse sand with 2-10% quartz grit. Sharp to:
14-25	Red very hard sandy medium clay with strong coarse columnar structure and minor quartz grit. Gradual to:
25-50	Yellowish red hard medium clay with strong coarse prismatic breaking to strong coarse subangular blocky structure and minor quartz grit. Gradual to:
50-110	Red very firm moderately calcareous medium clay with moderate coarse subangular blocky structure, 20-50% fine carbonate segregations and 2-10% quartz and ironstone gravel (2-20 mm).



Classification: Hypercalcic, Mesonatric, Red Sodosol; medium, slightly gravelly, sandy / clayey, deep

Summary of Properties

Drainage: Imperfectly drained. Water perches on top of the dispersive clayey subsoil for up to several weeks following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately low, as indicated by the exchangeable cation data. Concentrations of all measured nutrient elements are adequate, with the exception of sulphur which is marginal. Organic carbon levels are satisfactory for this soil type and rainfall.

pH: Slightly acidic at the surface, alkaline with depth.

Rooting depth: 50 cm in pit.

Barriers to root growth:

Physical: The hard dispersive clayey subsoil restricts root growth by confining most of the finer roots to the faces of the aggregates. Capacity to exploit water and nutrient reserves inside aggregates is diminished.

Chemical: High sodicity from 50 cm limits deeper root growth.

Water holding capacity: Approximately 50 mm in the root zone.

Seedling emergence: Fair to satisfactory, depending on the degree to which the surface soil sets hard. This may depend on content and nature of organic matter.

Workability: The sandy surface is easily worked.

Erosion Potential

Water: Moderate. Despite the low slope angle, the soil is highly erodible due to its sandy surface and slowly permeable subsoil.

Wind: Moderate due to the sandiness of the surface.

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)				Sum of cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	6.4	5.4	0	0.07	nd	0.84	31	205	4.0	1.1	0.30	55	5.74	1.74	7	4.72	1.16	0.41	0.53	6.0
0-10	5.8	4.9	0	0.10	nd	1.36	41	234	5.3	0.9	0.29	85	8.19	2.36	6	3.77	0.88	0.29	0.64	6.2
10-14	6.8	6.2	0	0.04	nd	0.25	16	105	1.4	0.6	0.21	43	1.98	0.68	3	1.92	0.57	0.22	0.27	na
14-25	7.8	6.7	0	0.13	nd	0.28	2	296	2.5	1.5	0.17	19	0.99	0.24	14	6.73	4.57	2.33	0.75	16.2
25-50	8.6	7.5	0	0.33	nd	0.38	4	484	15.6	4.0	0.64	15	1.41	0.40	28	10.58	9.82	6.49	1.28	23.0
50-110	9.0	8.3	8	1.62	nd	0.16	2	473	181	4.2	0.64	9.2	1.15	0.40	31	10.44	8.05	11.14	1.24	36.1

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.

Sum of cations (an estimate of 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 estimated CEC.