

LOAM OVER DISPERSIVE RED CLAY

General Description: *Hard sandy loam to clay loam abruptly overlying a red coarsely structured dispersive clay, calcareous with depth*

Landform: Outwash fans

Substrate: Clayey outwash sediments

Vegetation: Mallee



Type Site: Site No.: MP005

1:50,000 sheet:	6728-4 (Angaston)	Hundred:	Jellicoe
Annual rainfall:	350 mm	Sampling date:	31/07/92
Landform:	Gently sloping outwash fan, 4% slope		
Surface:	Hard setting with 2-10% quartzite stones		

Soil Description:

Depth (cm)	Description
0-13	Firm red brown loam with moderate granular structure and 2-10% quartz gravel. Sharp to:
13-30	Hard red medium clay with strong coarse angular blocky structure. Clear to:
30-55	Hard red highly calcareous light medium clay with strong polyhedral structure. Gradual to:
55-94	Hard red light medium clay with strong prismatic structure and slickensides. Clear to:
94-130	Red and grey mottled hard sandy light clay with 10-20% sandstone and quartz gravel. Clear to:
130-168	Grey and red mottled hard light medium clay with 2-10% ironstone and quartz gravel.



Classification: Vertic, Hypernatric, Red Sodosol; medium, slightly gravelly, loamy / clayey, moderate

Summary of Properties

Drainage Moderately well to imperfectly drained. The dispersive clay subsoil perches water for a week or possibly longer following heavy or prolonged rainfall.

Fertility Natural fertility is high as indicated by the exchangeable cation data. Levels of all measured nutrient elements are adequate, and organic carbon levels are satisfactory.

pH Neutral to slightly alkaline at the surface, strongly alkaline with depth.

Rooting depth 140 cm in pit, but few roots below 55 cm.

Barriers to root growth

Physical: The dispersive clay subsoil prevents uniform root distribution patterns, and consequently causes reduced water use efficiency.

Chemical: Root growth is restricted by high pH from 30 cm, very high boron and sodicity, and moderate salinity from 13 cm.

Water holding capacity Approximately 50 mm in the root zone.

Seedling emergence: Fair due to hard setting sealing surface soil.

Workability: Fair. There is a limited moisture range for effective working, outside of which the soil will shatter if too dry, or puddle if too wet.

Erosion Potential

Water: Moderate, due to slope and high soil erodibility.

Wind: 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	7.1	6.8	0	0.26	2.33	1.03	35	530	4.2	3.2	10.4	11.2	0.6	8.7	5.46	2.81	1.04	1.05	12.1
0-13	7.9	7.5	<0.1	0.22	1.14	1.05	37	560	5.7	1.0	7.0	7.6	0.5	12.6	6.23	2.89	1.42	1.10	11.3
13-30	9.1	8.5	3.6	0.90	4.85	0.74	<5	770	32.4	1.7	9.1	1.3	0.3	28.4	6.74	8.00	10.75	2.10	37.9
30-55	9.3	8.6	16.0	1.37	5.94	0.37	<5	600	25.0	1.2	7.0	0.8	0.3	20.0	4.36	6.70	10.99	1.27	55.0
55-94	9.0	8.6	0.3	1.62	6.83	0.10	<5	630	29.3	0.9	9.0	0.2	0.3	22.8	3.80	7.64	13.02	1.33	57.1
94-130	8.3	7.8	<0.1	1.47	5.86	0.12	<5	540	14.5	0.8	13.4	0.1	0.3	20.7	3.07	5.82	11.11	1.05	53.7
130-168	5.9	5.4	0	1.08	7.19	0.17	<5	450	5.8	0.8	46.4	0.2	0.3	20.0	2.90	5.17	10.13	0.93	50.7

Note: Paddock sample bulked from 20 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.