

GRADATIONAL RED LOAMY SAND

General Description: *Soft loamy sand grading to a highly calcareous red sandy clay loam with abundant fine to rubbly carbonate from shallow depth*

Landform: Rises in dune - swale landscapes

Substrate: Medium textured very highly calcareous Woorinen Formation overlying Tertiary clay

Vegetation: Mallee



Type Site:	Site No.:	CL015	1:50,000 mapsheet:	6628-4 (Gawler)
	Hundred:	Port Gawler	Easting:	277700
	Section:	612	Northing:	6171700
	Sampling date:	11/06/93	Annual rainfall:	415 mm average

Slope of longitudinal east - west sand ridge. 3% gradient with north easterly aspect. Soft surface, no stone. Bean crop.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Reddish brown loose loamy sand. Clear to:
10-20	Yellowish red soft light sandy loam. Clear to:
20-40	Reddish brown hard highly calcareous sandy loam. Abrupt to:
40-70	Yellowish red soft very highly calcareous light sandy clay loam with more than 50% carbonate nodules. Gradual to:
70-110	Reddish yellow very highly calcareous light sandy clay loam with less than 10% carbonate nodules. Diffuse to:
110-170	Reddish yellow very highly calcareous massive firm sandy clay loam. Gradual to:
170-200	Red very hard coarsely structured sandy medium clay with 10-20% soft carbonate.



Classification: Sodic, Lithocalcic, Red Kandosol; medium, non-gravelly, sandy / clay loamy, very deep



Summary of Properties

Drainage: Rapidly drained, although deep substrate clay will cause water to seep laterally in wet seasons.

Fertility: Natural fertility is moderately low, due to the low clay content. Organic carbon levels are high for this soil type, and concentrations of all measured nutrients are adequate.

pH: Neutral at the surface, strongly alkaline with depth.

Rooting depth: 170 mm in pit.

Barriers to root growth:

Physical: No physical barriers. Calcareous materials are friable and easily penetrated.

Chemical: High pH from 110 cm affects root growth. Toxic levels of boron and sodium are at 170 cm, and beyond the root zone of most agricultural plants. However, where the underlying Tertiary clay is closer to the surface, toxicity symptoms are likely.

Waterholding capacity: Approximately 100 mm in rootzone.

Seedling emergence: Good.

Workability: Good.

Erosion Potential:

Water: Low

Wind: Moderate, due to light sandy 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 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	7.8	7.5	0.1	0.18	1.06	1.4	47	558	-	1.9	0.7	7	6.8	3.2	9.1	6.37	1.50	0.23	1.32	2.5
0-10	7.0	6.8	0	0.12	0.93	1.2	39	455	-	1.7	0.5	8	6.2	2.8	8.5	7.14	1.68	0.23	1.12	2.7
10-20	7.7	7.4	0	0.09	0.51	0.4	24	368	-	1.1	0.3	3	1.8	0.1	8.4	5.87	1.36	0.21	0.85	2.5
20-40	8.5	8.0	2.4	0.10	0.30	0.4	10	256	-	1.4	0.3	3	0.7	0.2	6.8	5.91	1.19	0.19	0.58	2.8
40-70	8.7	8.1	15.6	0.11	0.40	0.3	8	143	-	1.9	0.5	3	0.6	0.2	6.2	5.63	2.09	0.29	0.21	4.7
70-110	9.0	8.2	18.9	0.13	0.59	0.4	6	166	-	2.9	0.4	2	0.4	<0.1	5.1	2.97	3.35	0.38	0.23	7.5
110-170	9.4	8.5	15.9	0.32	2.56	0.1	8	265	-	5.1	0.3	2	0.5	0.1	5.3	1.56	3.79	1.13	0.65	21
170-200	9.5	8.6	15.0	0.83	4.30	0.2	7	695	-	40.0	0.3	4	0.3	0.2	16.5	1.65	7.28	6.89	2.00	42

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.

Further information: [DEWNR Soil and Land Program](#)

