THICK SAND OVER SANDY CLAY

General Description: *Thick sand with a bleached A2 layer overlying a red or brown sandy clay loam to sandy clay, calcareous with depth*

Landform: Flats and swales in undulating dunefields

Substrate: Medium grained Tertiary sediments

Vegetation: Mallee

Type Site: Site No.: MM029

1:50,000 sheet:	6927-1 (Kulkami)	Hundred:	Cotton
Annual rainfall:	350 mm	Sampling date:	20/11/91
Landform:	Flat		
Surface:	Loose with no stones		

Soil Description:

Depth (cm)	*Description*
0-9	Brown loose sand. Abrupt to:
9-15	Yellowish brown loose sand. Clear to:
15-57	Very pale brown (bleached) loose sand. Clear to:
57-60	Light grey (bleached) sand. Sharp to:
60-67	Orange massive sandy clay loam. Clear to:
67-77	Red and brownish yellow massive sandy clay. Clear to:
77-95	Red and brownish yellow massive highly calcareous sandy clay. Diffuse to:
95-115	Red and brownish yellow massive light clay with minor carbonate segregations. Diffuse to:
115-180	Red and brownish yellow massive sandy clay loam. Diffuse to:
180-190	As for 115-180 cm.

Classification: Calcic, Hypernatric, Red Sodosol; thick, non-gravelly, sandy / clayey, deep

Summary of Properties

Drainage Rapidly to well drained. Soil rarely remains wet for more than a day.

Fertility Inherent fertility is low, as indicated by the exchangeable cation data for the sandy surface layers. Although the subsoil has good nutrient retention capacity, root growth in these layers is poor. Phosphorus, nitrogen, copper and zinc deficiencies are likely. Organic carbon levels, although low, are consistent with the rainfall and soil type.

pH Neutral at the surface, strongly alkaline at depth.

Rooting depth 67 cm in pit, but few roots below 57 cm.

Barriers to root growth

Physical: The massive subsoil and substrate impede root growth.

Chemical: High pH, boron and sodicity in the subsoil restrict root growth to the sandy topsoil.

Water holding capacity 35 mm in the root zone.

Seedling emergence: Satisfactory, but can be reduced by water repellence in dry years.

Workability: Soft / loose surface is easily worked.

Erosion Potential

Water: Low.

Wind: Moderate.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	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	
0-9	7.0	6.5	<1	0.05	0.34	0.6	12	130	<0.50	0.06	6.8	4.6	0.65	2.1	2.24	0.54	0.10	0.22	na
9-15	7.1	6.6	1	0.04	0.30	0.4	5	110	<0.50	<0.05	7.2	1.9	<0.06	2.1	2.11	0.44	0.28	0.19	na
15-57	7.7	7.2	<1	0.03	0.21	0.1	<2	74	<0.50	<0.05	4.5	0.43	<0.06	2.1	1.82	0.46	0.11	0.11	na
57-60	8.3	7.5	<1	0.02	0.15	<0.1	<2	53	2.2	<0.05	1.8	0.19	<0.06	1.0	0.93	0.40	0.29	0.08	na
60-67	9.5	8.0	<1	0.21	0.68	<0.1	<2	220	7.1	0.07	7.0	0.09	<0.06	9.5	3.62	5.34	1.84	0.54	19.4
67-77	9.6	8.0	1	0.30	0.77	<0.1	3	360	15	0.16	9.3	0.13	<0.06	13.6	4.81	7.85	3.05	0.80	22.4
77-95	9.8	8.5	4	0.42	1.24	0.2	<2	390	12	0.36	10	0.19	<0.06	15.1	5.36	8.36	4.26	0.93	28.2
95-115	10.0	8.5	3	0.44	1.02	0.1	<2	300	6.1	0.47	7.4	0.27	<0.06	13.4	3.92	7.74	4.72	0.78	35.2
115-180	9.1	7.8	<1	0.31	1.69	<0.1	<2	200	2.6	0.39	8.0	0.10	<0.06	10.8	1.60	5.58	3.90	0.50	36.1
180-190	5.7	4.8	<1	0.24	1.70	<0.1	<2	150	<0.50	0.34	12	<0.05	<0.06	7.7	0.71	3.85	2.57	0.35	33.4

Note: 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