

MODERATELY DEEP SAND OVER SANDY CLAY LOAM

General Description: *Thick reddish sand over a red clayey sand to sandy clay loam, calcareous with depth, grading to clayey sand below 150 cm.*

Landform: Gently undulating parallel dunefields

Substrate: Coarse grained windblown deposits (probably reworked Tertiary sediments), mantled by fine carbonate.

Vegetation: Mallee



Type Site: Site No.: MR004

1:50,000 sheet:	7029-4 (Renmark)	Hundred:	Out of Hundreds
Annual rainfall:	265 mm	Sampling date:	22/09/04
Landform:	Crest of low longitudinal sand dune		
Surface:	Loose with no stones		

Soil Description:

Depth (cm)	Description
0-10	Reddish brown soft single grain light loamy sand. Abrupt to:
10-25	Yellowish red soft single grain sand. Gradual to:
25-52	Yellowish red soft single grain sand. Abrupt to:
52-70	Red hard massive clayey sand with 2-10% fine carbonate segregations. Gradual to:
70-100	Yellowish red firm massive very highly calcareous light sandy clay loam with 20-50% fine carbonate segregations. Diffuse to:
100-160	Red and strong brown firm massive very highly calcareous light sandy clay loam with 20-50% fine and 20-50% laminar carbonate segregations. Diffuse to:
160-205	Yellowish red and strong brown friable massive highly calcareous clayey sand with 20-50% fine carbonate segregations.



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

Summary of Properties

- Drainage:** Rapidly drained. The soil rarely remains wet for more than a couple of hours following heavy or prolonged rainfall (or irrigation).
- Fertility:** Inherent fertility is low, as indicated by the low clay content and the exchangeable cation data. Deficiencies of zinc and copper, as well as phosphorus and nitrogen are likely.
- pH:** Alkaline at the surface, strongly alkaline with depth.
- Rooting depth:** 100 cm in pit, but few roots below 52 cm.
- Barriers to root growth:**
- Physical:** There are no significant physical barriers, although the subsoil is hard and massive.
 - Chemical:** High pH and sodicity, and moderately high salinity and boron restrict root growth below 100 cm. Low nutrient status and retention capacity also impede growth.
- Water holding capacity:** (Estimates for potential root zone of irrigated crops)
- Total available: 100 mm
 - Readily available: 55 mm
- Seedling emergence:** Satisfactory, although water repellence may be a problem in some years.
- Workability:** Sandy surface soils are readily worked over a range of moisture contents, although dry working predisposes the soil to wind erosion.

Erosion Potential

- Water:** Low.
- Wind:** Moderate.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-10	8.1	7.3	1	0.057	0.34	0.57	27	280	5	4.6	0.7	1.35	65	1.16	30.1	6.9	5.16	0.97	0.06	0.69	0.8
10-25	8.7	7.7	1	0.061	0.34	0.30	6	196	4	5.5	0.6	0.53	46	0.37	25.0	6.8	5.17	1.03	0.07	0.5	1.0
25-52	8.8	7.8	1	0.071	0.41	0.20	4	150	8	7.8	0.7	0.56	25	0.3	15.6	7.2	5.35	1.45	0.06	0.35	0.8
52-70	9.2	8.1	2	0.116	0.58	0.16	5	319	21	4.5	1.2	0.68	13	0.41	17.7	12.6	6.65	4.61	0.54	0.8	4.3
70-100	9.2	8.5	7	0.313	2.25	0.21	5	434	117	18	2.8	0.75	6	0.52	2.56	15.4	7.03	5.04	2.15	1.13	14.0
100-160	9.8	8.5	12	0.617	5.23	0.13	4	334	332	45	4.6	0.73	6	0.49	1.29	15.7	6.56	3.92	4.37	0.81	27.9
160-205	9.6	8.4	2	0.628	6.80	0.26	7	369	380	91	9.9	0.74	18	0.78	16.7	12.7	4.04	3.77	3.94	0.9	31.1

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.