GRADATIONAL LOAM

General Description: *Friable loam becoming more clayey and coarsely structured with depth, grading to a calcareous clay*

Landform: Alluvial fan

Substrate: Fine grained outwash sediments mantled by fine carbonates of aeolian origin

Vegetation:

Type Site: Site No.: CM096

1:50,000 sheet:	6530-4 (Mundoora)	Hundred:	Redhill
Annual rainfall:	410 mm	Sampling date:	10/05/02
Landform:	Alluvial fan, 3% slope		
Surface:	Firm with 2-10% gravel		

Soil Description:

Depth (cm)	*Description*
0 –9	Dark reddish brown friable silty loam with subangular blocky structure and some quartzite and ironstone on the surface. Abrupt to:
9 – 22	Reddish brown hard silty clay loam with coarse prismatic structure. Clear to:
22 – 42	Yellowish red highly calcareous light clay with weak coarse prismatic structure. Clear to:
42 – 70	Strong brown highly calcareous light clay with weak subangular blocky structure. Gradual to:
70 – 100	Yellowish red highly calcareous light clay with subangular blocky structure. Gradual to:
100 – 135	Yellowish red moderately calcareous light medium clay with weak coarse prismatic structure. Diffuse to:
135 – 180	Yellowish red moderately calcareous medium clay with weak lenticular structure.

Classification: Sodic, Hypercalcic, Red Dermosol; thin, slightly-gravelly, loamy / clayey, moderate

Summary of Properties

Drainage: Well drained. Soil is unlikely to remain saturated for more than a few days at a time following heavy or prolonged rainfall.

Fertility: Good levels of phosphorus in surface soil (probably because of toxicity problems limiting uptake). Inherent fertility is very high as indicated by the exchangeable cation figures down the profile.

pH: Neutral at the surface, strongly alkaline with depth

Rooting depth: Some roots to 100 cm in pit.

Barriers to root growth:

Physical: Subsoil is poorly structured.

Chemical: Strongly alkaline below 42 cm. Somewhat raised salinity and high boron levels below 70 cm. Sodium levels are toxic (affecting crop yield) below 70 cm.

Water holding capacity:

Surface: approx. 180 mm/m over 0.09 m	= 16 mm
Upper subsoil: approx. 160 mm/m over 0.33 m	= 52 mm
Mid subsoil: approx. 140 mm/m over 0.28 m	= 39 mm
Lower subsoil: approx. 80 mm/m over 0.30 m	= 24 mm
Total:	= 131 mm (high)

Seedling emergence: Good due to friable surface soil. Organic matter levels need to be maintained to preserve surface soil structure.

Workability: Good to fair to poor due to friable surface soil.

Erosion Potential

Water: Moderately low.

Wind: Low.

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	SO_4-S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.4	6.8	0	0.27	1.4	1.82	36	721	21	1.8	1.90	12.5	22.4	1.08	34.8	26.7	5.42	0.61	2.11	1.7
0-9	7.4	7.1	0	0.35	2.1	1.80	64	710	14	1.4	2.10	16.0	41.8	0.77	33.2	25.0	5.55	0.78	1.88	2.3
9-22	8.0	7.5	1	0.16	0.5	0.83	7	260	4.6	1.3	1.84	12.0	5.14	0.40	36.5	29.1	6.06	0.53	0.82	1.5
22-42	8.6	7.9	18	0.15	0.4	0.52	4	180	5.5	1.7	1.69	9.77	1.70	0.30	31.9	25.1	5.60	0.77	0.47	2.4
42-70	9.4	8.1	36	0.29	1.4	0.33	3	200	7.7	3.6	1.24	6.95	1.23	0.20	24.7	13.7	6.80	3.70	0.54	15.0
70-100	9.5	8.4	23	0.66	3.7	0.19	1	357	51	14.9	1.05	9.85	1.36	0.21	31.0	10.1	10.7	9.22	0.99	29.7
100-135	9.5	8.7	11	1.07	4.7	0.12	1	439	97	22.6	0.86	9.81	0.84	0.25	35.9	8.19	12.8	13.7	1.16	38.2
135-180	9.3	8.7	3	1.27	5.5	0.08	3	456	139	26.0	0.73	10.2	0.73	0.37	38.6	6.74	13.4	17.3	1.19	44.8

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

Sum of cations (an estimate of cation exchange capacity or CEC) 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.