SANDY LOAM OVER RED CLAY

General Description: *Medium thickness hard red brown fine sandy loam abruptly overlying a well structured red clay, calcareous with depth*

Landform: Lower slopes of undulating rises and low hills.

Substrate: Association of fine grained colluvium and deeply weathered rock

Vegetation:

Type Site: Site No.: CL044B

1:50,000 sheet:	6628-1 (Barossa)	Hundred:	Nuriootpa
Annual rainfall:	505 mm	Sampling date:	29/11/04
Landform:	Lower slope of undulating low hill, 5% slope		
Surface:	Hard setting with minor quartz stone (6-20 mm)		

Soil Description:

Depth (cm)	*Description*
0-18	Dark reddish brown hard fine sandy loam with weak granular structure and minor quartz gravel (6-20 mm). Clear to:
18-35	Dark reddish brown firm medium clay with strong fine polyhedral structure. Clear to:
35-62	Dark reddish brown hard medium heavy clay with strong fine polyhedral structure. Clear to:
62-100	Red firm highly calcareous light medium clay with moderate medium polyhedral structure and more than 50% soft carbonate segregations. Diffuse to:
100-140	Red firm moderately calcareous light clay with weak medium polyhedral structure and 20-50% soft carbonate segregations.

Classification: Haplic, Hypercalcic, Red Chromosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Well drained. The soil is unlikely to remain saturated for more than a couple of days following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderately high, as indicated by the exchangeable cation data. The surface soil has satisfactory nutrient retention capacity, while subsoil reserves of calcium, magnesium and potassium are high. Of the tested nutrients, only zinc is possibly deficient.

pH: Alkaline at the surface (due to deliberate or incidental lime application), neutral in the subsurface, and alkaline with depth. Surface soil would be slightly acidic in natural state.

Rooting depth: 120 cm in pit, but few roots below 100 cm.

Barriers to root growth:

Physical: There are no significant physical barriers.

Chemical: There are no apparent chemical barriers apart from marginally high salinity from 62 cm.

Water holding capacity: (Estimates for potential root zone of irrigated crops)

Total available: 160 mm
Readily available: 70 mm

Seedling emergence: Fair to satisfactory, depending on degree of hard setting at the surface. Gypsum will improve condition.

Workability: Fair to satisfactory, depending on degree of hard setting. Soil is likely to shatter if worked too dry, or puddle if worked too wet. Gypsum will improve workability.

Erosion Potential

Water: Moderate, due to slope.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	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				Est. ESP
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-18	7.9	7.2	0	0.102	0.96	0.87	42	538	32	4.1	0.6	8.47	111	259	3.15	9.5	6.75	1.08	0.39	1.28	4.1
18-35	7.3	6.7	0	0.173	1.07	0.72	5	499	36	69.2	1.0	5.22	57	126	0.36	23.2	15.2	6.11	0.63	1.19	2.7
35-62	7.2	6.8	0	0.240	2.00	0.54	3	453	125	127	1.1	5.36	52	132	0.29	27.9	17.2	8.99	0.63	1.11	2.3
62-100	8.7	7.9	28.8	0.234	1.24	0.24	2	431	70	32.0	1.1	1.65	9	12.4	0.22	25.4	16.1	7.64	0.56	1.05	2.2
100-140	8.8	8.0	13.6	0.150	0.58	0.10	2	466	21	7.1	1.6	1.30	11	4.25	0.45	22.1	12.4	8.13	0.58	1.06	2.6

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.