SANDY LOAM OVER RED CLAY

General Description: *Medium thickness hard massive sandy loam to loam over a coarsely structured red clay, calcareous with depth*

Landform: Lower slopes and alluvial fans adjacent low hills and rises.

Substrate: Clayey alluvium derived from fine grained basement rocks, mantled by fine carbonates.

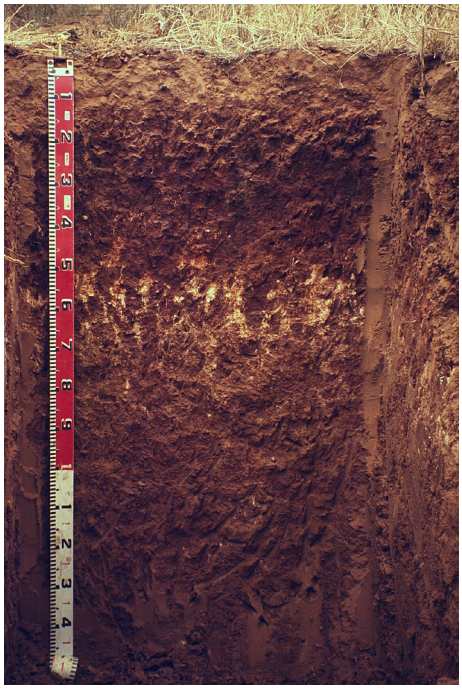
Vegetation: -

Type Site:

Site No.:	CL055	1:50,000 mapsheet:	6628-1 (Barossa)
Hundred:	Nuriootpa	Easting:	306410
Section:	102	Northing:	6179510
Sampling date:	18/12/07	Annual rainfall:	540 mm average

Alluvial fan with 4% slope below undulating low hills. Hard setting surface with minor quartz stones.

Soil Description:



Depth (cm)	*Description*
0-14	Dark reddish brown very hard massive fine sandy loam with 2-10% quartz gravel to 20 mm. Abrupt to:
14-35	Dark reddish brown very hard medium clay with strong very coarse prismatic, breaking to strong medium angular blocky structure. Clear to:
35-50	Dark reddish brown hard medium clay with strong coarse prismatic, breaking to strong medium angular blocky structure, and 2-10% fine carbonate segregations. Gradual to:
50-85	Reddish brown hard medium clay with weak coarse prismatic, breaking to strong fine angular blocky structure, and 10-20% fine carbonate segregations. Diffuse to:
85-120	Yellowish red and reddish brown hard highly calcareous medium clay with strong fine angular blocky structure, and 2-10% fine carbonate segregations. Diffuse to:
120-150	Reddish brown and yellowish red very hard highly calcareous medium heavy clay with weak coarse prismatic structure and 2-10% fine carbonate segregations.

Classification: Calcic, Subnatric, Red Sodosol; medium, slightly gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Moderately well drained. The clayey subsoil perches water, saturating the lower part of the topsoil for a week or so at a time following heavy or prolonged rainfall. This is only likely to affect grape vines in the event of heavy summer rain.

Fertility: Inherent fertility is moderately high, as indicated by the exchangeable cation data. Relatively low surface organic carbon restricts the nutrient retention capacity of the topsoil. Levels of all tested nutrient elements are adequate to high with the possible exception of zinc. The low calcium to magnesium ratio reflects the low organic carbon levels.

pH: Slightly acidic at the surface, strongly alkaline with depth.

Rooting depth: There are some roots to 120 cm, but most growth is in the upper 50 cm.

Barriers to root growth:

Physical: The coarsely structured subsoil clay prevents uniform proliferation of roots.

Chemical: High pH, sodicity and boron concentrations from 50 cm restrict root growth.

Waterholding capacity: (Estimates for potential rootzone of irrigated crops)
Total available: 80 mm
Readily available: 35 mm

Seedling emergence: Affected by hard setting sealing surface.

Workability: Surface soil tends to shatter if worked too dry, and puddle if worked too wet.

Erosion Potential:

Water: Moderate.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	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				Est. ESP
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-14	6.2	5.5	0	0.08	0.98	1.17	43	448	42	9.9	0.8	3.20	211	148	1.25	7.2	4.15	1.48	0.47	1.05	6.6
14-35	7.4	6.4	0	0.06	0.39	0.68	6	528	11	5.2	1.9	4.25	112	183	0.42	16.4	6.78	6.40	1.86	1.32	11.4
35-50	9.0	8.2	1.3	0.28	0.78	0.60	2	565	32	5.8	2.6	4.13	38	109	0.44	27.4	11.4	10.8	3.89	1.34	14.2
50-85	9.5	8.6	12.9	0.34	0.84	0.23	6	558	33	8.1	6.8	1.59	10	7.75	0.35	26.0	8.99	10.6	4.96	1.47	19.1
85-120	9.6	9.0	11.2	0.41	0.62	0.16	2	620	49	15.4	12.3	1.17	8	2.71	0.34	27.1	7.80	11.1	6.60	1.59	24.4
120-150	9.8	9.0	10.1	0.45	1.18	0.14	5	688	79	32.1	13.5	1.17	9	2.31	0.35	28.4	7.36	11.2	8.20	1.69	28.8

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.

Further information: DEWNR Soil and Land Program