ACIDIC LOAM OVER RED CLAY ON WEATHERED ROCK

General Description: *Hard brown loam with a paler gravelly subsurface layer overlying a well structured red, brown and yellow clay grading to weathering basement rock*

Landform: Slopes of rolling low hills, central Mt. Lofty Ranges

Substrate: Medium to fine grained sandstone

Vegetation: Eucalyptus obliqua / E. leucoxylon forest

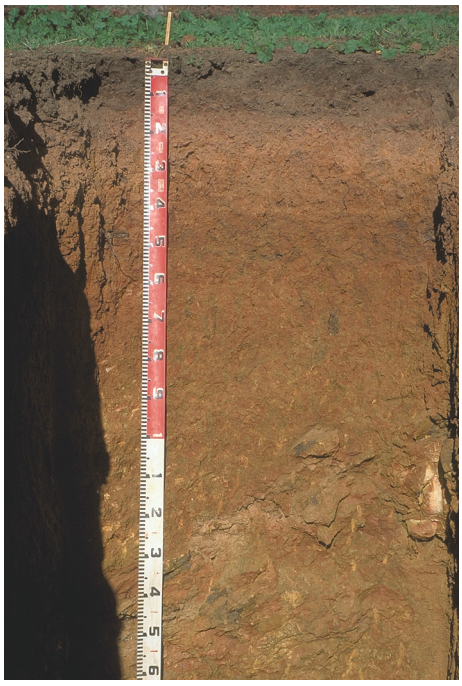
Type Site:

Site No.:	CH091	1:50,000 mapsheet:	6627-4 (Noarlunga)
Hundred:	Willunga	Easting:	283300
Section:	556	Northing:	6097300
Sampling date:	29/04/96	Annual rainfall:	880 mm average

Upper slope of rolling low hills; hard setting surface, negligible stone and 5% slope.

Soil Description:

Depth (cm)	*Description*
0-12	Dark brown loam with weak granular structure and 2-10% ironstone nodules. Gradual to:
12-28	Yellowish red hard massive clay loam with 10-20% ironstone nodules and quartz gravel. Abrupt to:
28-50	Yellowish red hard medium heavy clay with coarse prismatic breaking to strong polyhedral structure. Gradual to:
50-85	Red and brown mottled medium heavy clay with structure as above. Diffuse to:
85-125	Red and yellowish brown mottled medium heavy clay with structure as above. Diffuse to:
125-155	Red and yellowish brown mottled medium heavy clay with strong polyhedral structure, slickensides and 20-50% ironstone and quartz fragments. Diffuse to:
155-190	Red and yellowish brown mottled medium clay with 20-50% fine sandstone fragments.



Classification: Sodic, Eutrophic, Red Chromosol; medium, slightly gravelly, loamy / clayey, very deep

Summary of Properties

Drainage: Moderately well drained. Water will "perch" on top of the heavy clay subsoil, saturating the upper part of the soil for a week or so at a time.

Fertility: The predominance of the clay mineral kaolin causes this soil's natural fertility to be moderately low, as indicated by the exchangeable cation data (except the anomalous 0-12 cm sample). Test data indicate possible manganese deficiency.

pH: Acidic at the surface, grading to neutral, but strongly acidic with depth. Lime is needed to correct pH

Rooting depth: There are roots to 160 cm, although these are probably tree roots.

Barriers to root growth:

Physical: The heavy clay subsoil restricts optimum root proliferation, preventing uniform distribution of roots.

Chemical: Potentially toxic levels of salt and sodicity from 125 cm, acidity from 155 cm.

Waterholding capacity: Over 150 mm in potential rootzone (very high).

Seedling emergence: Fair to good. Adequate levels of organic matter are needed to prevent surface sealing.

Workability: Good to fair - unless organic matter levels are maintained, there is only a limited moisture range for effective working.

Erosion Potential:

Water: Moderate, due to the slope of the land.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Row	5.8	5.6	0	0.38	3.17	2.4	25	300	24	1.2	4.52	189	13.9	12.8	12.0	7.67	2.73	0.37	0.58	3.1
0-12	5.4	5.1	0	0.42	2.34	10.0?	262?	904	30	2.7	-	-	-	-	26.5	17.63	5.10	0.23	2.01	0.9
12-28	6.8	6.2	0	0.08	0.67	0.7	32	428	8	1.3	-	-	-	-	7.3	4.32	2.28	0.19	0.82	2.6
28-50	7.0	6.5	0	0.13	0.50	1.1	5	811	17	1.5	-	-	-	-	14.8	5.99	6.60	0.44	2.05	3.0
50-85	6.5	6.3	0	0.24	0.89	0.4	<4	415	128	1.9	-	-	-	-	12.0	4.25	6.68	1.11	0.89	9.3
85-125	6.4	6.0	0	0.27	1.04	0.3	<4	168	133	1.4	-	-	-	-	10.9	3.25	5.85	1.82	0.31	16.7
125-155	6.1	5.9	0	0.76	4.61	0.3	<4	131	113	1.3	-	-	-	-	9.2	2.89	5.25	2.04	0.28	22.2
155-190	4.8	4.8	0	1.76	9.40	0.2	<4	76	80	1.1	-	-	-	-	6.6	1.59	4.57	1.53	0.12	23.2

Note: Row sample bulked from 20 cores (0-10 cm) taken along the planting rows.
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.

Further information: DEWNR Soil and Land Program