ACIDIC SANDY LOAM OVER BROWN CLAY ON ROCK

General Description: *Thin sandy to loamy topsoil overlying brownish or yellowish friable clay subsoil grading to soft weathering metamorphosed sandstone.*

Landform: Slopes of undulating to rolling low hills in the Southern Mount Lofty Ranges

Substrate: Weathering metasandstone of the Backstairs Passage Formation

Vegetation: Eucalyptus baxteri / Euc. fasciculosa scrub

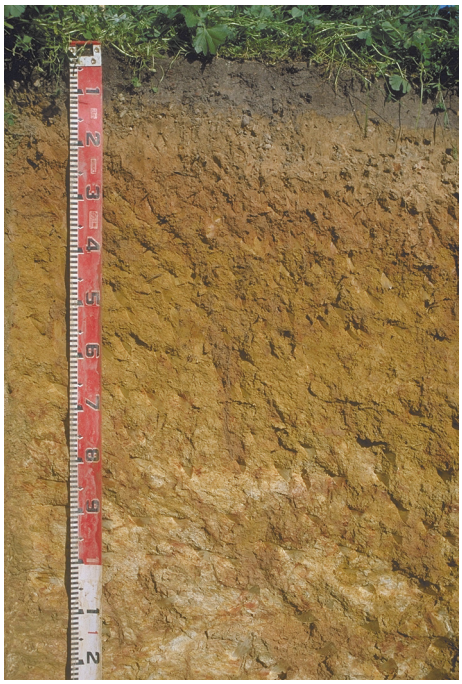
Type Site:

Site No.:	CH016	1:50,000 mapsheet:	6627-3 (Willunga)
Hundred:	Goolwa	Easting:	286100
Section:	316	Northing:	6075700
Sampling date:	29/07/92	Annual Rainfall:	815 mm average

Midslope of undulating low hills, slope 10%. Firm surface with no stone.

Soil Description:

Depth (cm)	*Description*
0-10	Black soft granular sandy loam with 10% ironstone nodules. Abrupt to:
10-23	Very pale brown soft massive sandy loam with 10-20% quartz, sandstone and ironstone gravel. Abrupt to:
23-40	Yellowish red medium clay with strong fine polyhedral structure. Clear to:
40-70	Brownish yellow, yellowish brown and red medium clay with strong fine polyhedral structure. Gradual to:
70-130	Brownish yellow, pale brown and red heavy clay loam with polyhedral structure. Diffuse to:
130-200	Brownish yellow, white and red sandy clay loam in fractures of soft kaolinitic weathering micaceous sandstone.



Classification: Bleached, Mesotrophic, Brown Kurosol; medium, slightly gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Well drained. The soil is unlikely to remain wet for more than a few days.

Fertility: Natural fertility is moderately low as indicated by the exchangeable cation data. The high organic matter content of the surface is primarily responsible for the soil's high CEC, but indicates very low levels of biological activity. The data indicate marginal magnesium and manganese deficiencies. Phosphorus and potassium levels are high.

pH: Acidic to strongly acidic throughout. Correction with dolomite is required to raise the magnesium / calcium ratio.

Rooting depth: 130 cm at type site, but density is very low from 70 cm.

Barriers to root growth:

Physical: None.

Chemical: Low pH and the kaolinitic nature of the subsoil clay suggest that aluminium toxicity may be a problem. Subsoil infertility may also be restricting root growth.

Waterholding capacity: 160 mm in rootzone, but 40-50 mm is effectively unavailable because of poor root distribution.

Seedling emergence: Good, provided that surface organic matter is maintained. Otherwise surface tends to seal, causing patchy emergence.

Workability: Good, provided that surface structure is maintained.

Erosion Potential:

Water: Moderate at type site because of the 10% slope.

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 (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	5.2	4.7	0	0.12	0.59	6.0	66	230	-	0.8	1.3	449	5.3	3.6	11.4	6.4	1.4	0.14	0.47	1.2
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0-10	4.8	4.2	0	0.08	0.19	5.4	39	66	-	0.9	0.9	451	3.8	2.1	9.0	4.6	0.9	0.10	0.15	1.1
10-23	5.0	4.5	0	0.04	0.10	0.9	15	37	-	0.6	0.2	106	0.2	0.1	3.4	1.5	0.4	0.08	0.09	2.4
23-40	4.9	4.2	0	0.05	0.08	0.8	2	110	-	1.8	0.1	23	0.2	0.1	7.0	1.9	1.7	0.11	0.28	1.6
40-70	4.9	4.5	0	0.06	0.10	0.4	<2	73	-	1.4	<0.1	7	<0.1	<0.1	5.9	1.1	3.1	0.15	0.14	2.5
70-130	5.3	4.8	0	0.04	0.09	<0.1	<2	49	-	0.6	<0.1	2	<0.1	<0.1	1.9	<0.4	1.3	0.14	0.08	na
130-200	5.0	4.6	0	0.04	0.10	<0.1	<2	16	-	0.3	<0.1	1	<0.1	<0.1	1.3	<0.4	0.6	0.10	<0.05	na

Note: Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.
* EDTA trace element analyses for "paddock" sample.
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