ACIDIC GRADATIONAL LOAM ON ROCK

General Description: *Loamy surface soil, grading without an abrupt texture change to a brownish or reddish clayey subsoil forming in kaolinitic weathering siltstone*

Landform: Upper slopes or low hills in the central Mount Lofty Ranges

Substrate: Kaolinized siltstones of Proterozoic age

Vegetation: Open stringybark forest

Type Site:

Site No.:	CH045	1:50,000 sheet:	6628-2 (Onkaparinga)
Hundred:	Talunga	Easting:	308750
Section:	6261	Northing:	6141550
Sampling date:	14/01/93	Annual rainfall:	815 mm average

Upper slope of rolling low hills, slope 6%. Firm surface with no stones. Pasture.

Soil Description:

Depth (cm)	*Description*
0-12	Dark greyish brown weakly granular loam with 2-10% siltstone gravel. Abrupt to:
12-25	Very pale brown massive clay loam with 2-10% siltstone and quartz gravel. Gradual to:
25-45	Brown weakly polyhedral heavy clay loam with 2-10% siltstone and quartz gravel. Clear to:
45-65	Yellowish red light clay with moderate coarse prismatic, breaking to strong polyhedral structure. Gradual to:
65-115	Brownish yellow, white and red silty light clay. Diffuse to:
115-160	Soft kaolinitic weathering siltstone of the Undalya Formation.

Classification: Bleached-Acidic, Mesotrophic, Red Dermosol; medium, slightly gravelly, loamy / clayey, deep

Summary of Properties

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

Fertility: The inherent fertility of the soil is low, as indicated by the low exchangeable cation values in the subsoil. This is due to the dominance of kaolin minerals in the soil. The higher exchangeable cation values in the surface are linked to the high organic carbon level. Magnesium is relatively low in the surface. Phosphorus, copper, manganese and iron levels are marginal.

pH: Acidic throughout. Dolomite is needed for pH correction.

Rooting depth: 115 cm in pit, but few roots below 65 cm.

Barriers to root growth:

Physical: There are no apparent physical barriers to root growth.

Chemical: Low natural fertility is a significant limitation to root growth. Aluminium toxicity, caused by a combination of low pH and kaolin dominant clay, is likely. Acidity must be corrected as its development will further reduce the soil's capacity to retain nutrients.

Waterholding capacity: 100 mm in rootzone (high).

Seedling emergence: Good.

Workability Good, provided surface structure is maintained with adequate organic matter.

Erosion Potential:

Water: Moderate, due to the 6% slope.

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 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	
Paddock	5.6	5.3	0	0.18	0.84	3.5	22	430	-	1.0	1.50	92.8	14.3	5.30	14.2	12.0	1.20	0.15	0.69	1.1
0-12	5.8	5.6	0	0.18	0.79	3.6	26	470	-	1.1	-	-	-	-	15.2	13.5	1.26	0.14	1.00	0.9
12-25	5.5	5.1	0	0.06	0.29	0.85	4	86	-	0.5	-	-	-	-	6.0	2.61	0.47	0.13	0.12	2.2
25-45	5.4	4.8	0	0.05	0.18	0.76	3	31	-	0.7	-	-	-	-	6.1	2.57	0.82	0.17	0.11	2.8
45-65	5.2	4.8	0	0.05	0.12	0.23	2	23	-	1.2	-	-	-	-	5.8	1.97	2.64	0.13	0.08	2.2
65-115	5.0	5.0	0	0.05	0.15	0.09	<2	16	-	0.9	-	-	-	-	4.6	0.86	2.66	0.10	0.07	2.2

Note: Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.
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