

ACIDIC LOAM OVER BROWN AND RED CLAY ON ROCK

General Description: *Sandy loam to clay loam overlying a brown, red and yellowish mottled well structured clay, forming in weathering siltstone or fine sandstone*

Landform: Slopes of undulating to rolling low hills in the Mt. Lofty Ranges

Substrate: Weathering siltstone or fine sandstone, sometimes weakly metamorphosed

Vegetation: Open forest of blue gum and stringybark



Type Site: Site No.: CH048

1:50,000 sheet:	6628-2 (Onkaparinga)	Hundred:	Onkaparinga
Annual rainfall:	1,000 mm	Sampling date:	18/03/93
Landform:	Upper slope of a low hill, slope 16%		
Surface:	Hard setting with 2-10% siltstone fragments		

Soil Description:

Depth (cm)	Description
0-8	Dark brown clay loam with moderate granular structure and 10-20% siltstone gravel. Clear to:
8-14	Light brown massive clay loam with 2-10% siltstone gravel. Abrupt to:
14-30	Yellowish brown and red heavy clay with strong polyhedral structure. Gradual to:
30-50	Brown, red and yellow mottled medium clay with strong polyhedral structure and 2-10% siltstone fragments. Diffuse to:
50-75	Greyish brown, red and yellowish brown medium clay with polyhedral structure and 2-10% siltstone fragments. Gradual to:
75-100	As above with 20 - 50% siltstone fragments. Clear to:
100-125	Bluish grey, yellow and red mottled medium clay (highly weathered shale).



Classification: Bleached-Mottled, Eutrophic, Brown Kurosol; medium, gravelly, clay loamy / clayey, deep

Summary of Properties

Drainage	The soil is moderately well drained, although the clay subsoil tends to restrict water movement to some extent. The profile may remain wet for a week or so.
Fertility:	The soil has a moderate level of natural fertility, as indicated by the exchangeable cation values. There are no apparent deficiencies; surface organic matter levels are high.
pH	Acidic throughout, strongly so at base. Lime is needed for pH correction.
Rooting depth	125 cm in pit, but there are few roots below 50 cm.
Barriers to root growth	
Physical:	The firm clay subsoil may retard root development to some degree.
Chemical:	Acidity and associated aluminium toxicity are the only apparent chemical barriers to root growth.
Water holding capacity	170 mm in root zone, but about 60 mm is effectively unavailable due to low root density.
Seedling emergence	Good to fair. Surface soil will seal over and set hard if excessively disturbed.
Workability	Good to fair. Organic matter levels must be maintained.
Erosion Potential	
Water:	Moderately high, due to the 16% slope.
Wind:	Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CaCO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP	Ext Al mg/kg
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
0-8	5.5	5.0	0	0.06	0.24	3.7	27	290	-	1.0	17.3	240	8.5	4.2	14.5	6.84	3.35	0.14	0.55	1.0	3.7
8-14	5.2	4.5	0	0.04	0.11	1.0	10	180	-	0.7	1.2	69	0.3	0.5	9.6	2.34	2.00	0.12	0.25	1.3	-
14-30	5.0	4.4	0	0.04	0.10	0.6	8	230	-	1.6	0.4	15	0.1	0.3	14.4	4.36	6.50	0.21	0.56	1.5	-
30-50	5.0	4.3	0	0.05	0.11	0.4	6	200	-	1.7	0.1	8	<0.1	0.1	17.9	2.70	8.35	0.28	0.50	1.6	9.9
50-75	4.9	4.3	0	0.05	0.11	0.2	5	130	-	1.2	0.1	6	<0.1	<0.1	18.2	1.07	9.95	0.29	0.21	1.6	-
75-100	4.9	4.2	0	0.05	0.13	0.2	5	94	-	0.7	0.3	11	<0.1	0.1	11.1	0.49	5.49	0.19	0.05	1.7	15.3
100-125	4.7	4.1	0	0.08	0.17	0.2	5	86	-	0.6	0.1	9	<0.1	0.1	20.0	0.38	11.83	0.36	0.12	1.8	-

Note: 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.