ACIDIC CLAY LOAM OVER RED CLAY ON ROCK

General Description: *Loam to clay loam surface overlying red to reddish brown well structured friable clay subsoil, grading to weathering fine grained metamorphic rock*

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

Substrate: Slates, phyllites, fine grained schists or micaceous siltstones of Proterozoic age

Vegetation: Red and blue gum woodland

Type Site:

Site No.:	CH041	1:50,000 mapsheet:	6628-2 (Onkaparinga)
Hundred:	Onkaparinga	Easting:	307600
Section:	5246	Northing:	6129300
Sampling date:	18/12/92	Annual rainfall:	780 mm average

Lower slope of undulating low hills, 12% slope. Firm surface with no stone.

Soil Description:

Depth (cm)	*Description*
0-23	Dark reddish brown clay loam with moderate granular structure. Abrupt to:
23-50	Dark red medium heavy clay with moderate coarse blocky, breaking to fine polyhedral structure. Some manganese staining on ped faces. Gradual to:
50-75	Dark red medium heavy clay with moderate coarse prismatic, breaking to fine polyhedral structure. Abundant manganese staining on ped faces. Diffuse to:
75-100	Red, greyish brown and orange medium heavy clay with strong coarse prismatic structure and 2-10% soft slate fragments. Diffuse to:
100-140	Dark red and brown medium clay with strong coarse prismatic structure and 2-10% soft slate fragments.

Classification: Haplic, Eutrophic, Red Chromosol; medium, non-gravelly, clay loamy / clayey, deep

Summary of Properties

Drainage: Moderately well drained, temporary waterlogging being due to the high clay content, particularly of the subsoil. The soil may remain wet for a week or so.

Fertility: Natural fertility is moderately high, as indicated by the exchangeable cation data. Cation ratios are satisfactory, but absolute values of calcium and magnesium are marginally low. Phosphorus and sulphur are also low, but trace element levels are adequate.

pH: Acidic at surface, neutral with depth.

Rooting depth: 130 cm in pit, but few roots below 100 cm.

Barriers to root growth:

Physical: No physical barriers are apparent.

Chemical: These acidic red soils are sometimes affected by manganese toxicity. EDTA extractable manganese is very high. Aluminium levels are low.

Waterholding capacity: 160 mm in rootzone (very high).

Seedling emergence: Good to fair, depending on the degree to which the soil seals over. Organic carbon levels should be maintained at 2% or more to maintain surface structure.

Workability: Good to fair, depending on surface structure. The lower the organic carbon content, the more limited is the moisture range for effective working.

Erosion Potential:

Water: Moderate, due to the 12% 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 (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP	Ext Al mg/kg
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
Paddock	5.1	4.7	0	0.06	0.35	1.6	20	240	5.8	0.9	2.77	194	205	8.94	7.8	4.80	1.52	0.18	0.43	2.3	2
0-23	5.0	4.3	0	0.05	0.20	1.3	14	190	4.1	0.9	-	-	-	-	7.0	3.97	1.29	0.15	0.30	2.1	<1
23-50	5.3	4.9	0	0.09	0.21	0.81	8	160	35	2.1	-	-	-	-	18.8	9.78	8.10	0.46	0.82	2.4	<1
50-75	6.0	5.7	0	0.11	0.21	0.36	4	340	19	1.3	-	-	-	-	18.9	8.14	10.4	0.90	0.93	4.4	<1
75-100	6.6	6.2	0	0.11	0.26	0.19	3	310	-	1.1	-	-	-	-	17.9	8.83	10.7	1.06	0.69	4.7	-
100-140	6.9	6.4	0	0.10	0.26	0.10	3	210	-	0.7	-	-	-	-	16.5	12.6	12.2	1.26	0.31	3.3	-

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 (or sum of cations where the latter is greater than the measured CEC).

Further information: DEWNR Soil and Land Program