

LOAM OVER ACIDIC RED CLAY ON ROCK

General Description: *Thin loamy surface soil overlying a red clay subsoil grading to highly weathered, often kaolinised, metamorphosed siltstone or fine grained schist.*

Landform: Slopes of rolling low hills in the north eastern Mount Lofty Ranges

Substrate: Weathering, sometimes kaolinitic, micaceous siltstone, schist of the Tappanappa Formation

Vegetation: Eucalyptus leucoxydon / Casuarina stricta woodland



Type Site: Site No.: CH008

1:50,000 sheet: 6728-3 (Tepko)

Hundred:

Tungkillo

Annual rainfall: 675 mm

Sampling date:

28/10/91

Landform: Midslope of undulating low hills, 8% slope

Surface: Hard setting with no stones

Soil Description:

Depth (cm) Description

0-5 Dark brown, moderately granular loam. Sharp to:

5-16 Light brown loam with weak coarse prismatic structure and 10% quartz and schist gravel. Abrupt to:

16-25 Red light clay with strong prismatic structure. Clear to:

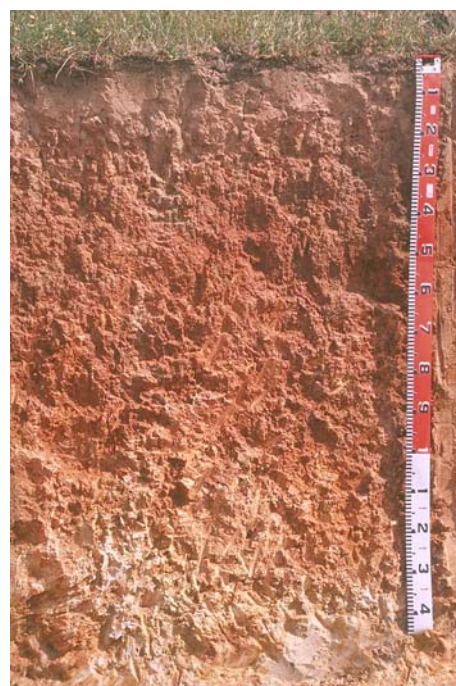
25-45 Red medium clay with strong prismatic structure. Gradual to:

45-70 As for 25-45 cm. Gradual to:

70-100 Red light clay with strong prismatic structure and 10% soft schist fragments. Gradual to:

100-130 Yellowish red silty clay loam with moderate prismatic structure and increasing amounts of schist fragments. Gradual to:

130-160 Yellowish red, yellow and brown highly weathered fine grained schist.



Classification: Bleached-Sodic, Eutrophic, Red Chromosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage	Well drained. The soil is unlikely to remain wet for more than a few days.
Fertility	Moderate inherent fertility, as indicated by the exchangeable cation data. Fertility status is reduced by cation leaching. Magnesium levels are low, calcium levels are marginal. Phosphorus levels low, but potassium is adequate. Organic carbon levels are high.
pH	Acidic at surface, slightly acidic to neutral with depth. Dolomite is required to correct the problem.
Rooting depth	100 cm but very few below 70 cm in pit.
Barriers to root growth	
Physical:	The hardness of the soil restricts root development, particularly if the soil dries rapidly in spring.
Chemical:	None that are not readily correctable. Acidity must be avoided as soils with low base status clays are prone to aluminium toxicity if pH falls too low.
Water holding capacity	120 mm in root zone, but efficiency of uptake is low because of poor root distribution.
Seedling emergence	Fair due to hard setting, sealing surface. Organic matter levels must be maintained.
Workability	Fair, due to the narrow moisture range within which cultivation is effective and not damaging.
Erosion Potential	
Water:	Moderate, due to the low permeability of the clay at shallow depth, and the 8% 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		
0-5	5.2	4.7	0	0.10	0.4	4.7	14	263	-	1.2	0.5	335	33.8	1.5	10.5	6.3	1.2	0.44	0.58	4.2	4
5-16	5.3	4.5	0	0.04	0.2	1.0	<4	146	-	0.9	0.3	58	16.8	0.2	5.8	2.5	0.5	0.93	0.31	16.0	2
16-25	5.9	5.1	0	0.04	0.1	0.6	<4	164	-	1.3	0.3	6.5	0.7	0.1	7.6	4.2	1.6	0.53	0.42	3.9	<1
25-45	6.6	6.0	0	0.05	0.1	0.4	<4	169	-	2.1	0.1	1.8	0.6	0.1	10.5	5.5	3.5	0.53	0.48	5.0	<1
45-70	6.7	6.3	0	0.05	0.1	0.2	<4	131	-	1.9	0.1	1.7	0.2	0.1	8.6	4.7	3.7	0.83	0.34	9.7	<1
70-100	6.7	6.3	0	0.05	0.1	0.1	<4	81	-	1.5	0.1	3.1	0.3	0.1	7.2	3.7	3.6	0.99	0.14	13.8	<1
100-130	6.6	6.1	0	0.05	0.1	0.1	<4	35	-	1.5	0.1	2.4	0.1	0.1	8.9	3.0	3.7	0.71	0.09	8.0	-
130-160	6.9	6.1	0	0.04	0.1	0.1	<4	29	-	0.7	0.1	5.0	0.0	0.1	5.6	2.1	3.2	0.53	0.04	9.5	-

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.