

SANDY LOAM OVER POORLY STRUCTURED BROWN CLAY

General Description: *Medium to thick sandy to loamy surface soil, overlying a brown, grey and red mottled clayey subsoil grading to silty alluvium, or deeply weathered schistose bedrock.*

Landform: Lower slopes, drainage depressions and valley floors in the eastern Mount Lofty Ranges

Substrate: Silty alluvium or deeply weathered schistose rocks of the Kanmantoo Group

Vegetation: Red and blue gum woodland



Type Site: Site No.: CH031

1:50,000 sheet:	6728-3 (Tepko)	Hundred:	Tungkillo
Annual rainfall:	625 mm	Sampling date:	12/01/93
Landform:	Lower slope of undulating low hills, 10% slope		
Surface:	Firm with minor quartz stones. Water table at 100 cm at time of sampling.		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark greyish brown massive fine sandy loam. Clear to:
10-23	Very pale brown massive fine sandy loam with 15% quartz gravel. Abrupt to:
23-45	Red, yellowish brown and dark brown mottled medium clay, with moderate coarse prismatic, breaking to medium polyhedral structure. Gradual to:
45-65	Yellowish brown and red mottled silty light clay with moderate coarse angular blocky structure. Diffuse to:
65-120	Light brownish grey and orange mottled silty light clay with moderate coarse angular blocky structure. Gradual to:
120-140	Weathering sandy schist.



Classification: Eutrophic, Mottled-Mesonatric, Red Sodosol; medium, non gravelly, loamy / clayey, deep

Summary of Properties

Drainage Imperfectly drained. The tight clay subsoil restricts downward water movement and the soil is subject to lower slope seepage. There two factors cause the soil to remain wet, at least in the lower layers, for periods of several weeks to several months.

Fertility The soil has moderate natural fertility, but this will be reduced as it acidifies. Calcium is marginally deficient (relative to magnesium and potassium). Copper levels are also marginal. Organic carbon levels are very high.

pH Acidic at the surface, slightly alkaline at base.

Rooting depth 120 cm in pit, but few roots below 65 cm.

Barriers to root growth

Physical: Waterlogging, caused by slowly permeable, sodic clay subsoil, and lower profile seepage. The winter saturated 10-23 cm layer may impede root growth by drying out too rapidly in spring before root elongation has occurred.

Chemical: High sodicity from 45 cm impedes root growth. Sodium accumulation may be a result of fluctuating saline water tables in the deep subsoil. Salinity is likely to be an increasing problem.

Water holding capacity 140 mm in root zone (high), but up to one third may be unavailable to plants due to low root densities.

Seedling emergence Fair to good. Surface will set hard if organic matter levels decline.

Workability Fair to good, depending on organic matter.

Erosion Potential

Water: Moderate.

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 (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	5.0	4.5	0	0.28	1.84	5.8	26	180	-	1.1	1.74	301	46	13.7	8.3	3.86	1.56	0.60	0.37	7.2
0-10	5.2	4.4	0	0.12	0.84	2.0	15	86	-	0.7	-	-	-	-	7.5	2.61	1.18	0.59	0.13	7.9
10-23	5.9	4.8	0	0.05	0.34	0.54	4	94	-	0.6	-	-	-	-	4.6	1.12	1.19	0.40	0.08	8.7
23-45	5.9	5.1	0	0.26	1.37	0.46	4	200	-	1.9	-	-	-	-	9.9	2.21	5.34	1.75	0.54	17.7
45-65	7.3	6.6	<1	0.47	2.15	0.16	3	230	-	2.1	-	-	-	-	8.9	1.28	5.94	3.20	0.55	36.0
65-120	7.6	6.7	<1	0.28	2.01	0.08	2	160	-	1.7	-	-	-	-	7.5	0.89	4.57	2.37	0.26	31.6

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.