

LOAM OVER RED CLAY ON ROCK

General Description: *Reddish brown loamy surface soil overlying a well structured dark reddish brown clay subsoil forming in weathering rock with minor soft calcareous segregations*

Landform: Slopes of undulating to rolling rises and low hills of the eastern Mt. Lofty Ranges

Substrate: Metamorphosed siltstones or phyllites of the Kanmantoo Group

Vegetation: Blue gum woodland



Type Site:	Site No.:	CH059	1:50,000 mapsheet:	6728-3 (Tepko)
	Hundred:	Kanmantoo	Easting:	320750
	Section:	1797	Northing:	6127250
	Sampling date:	19/01/94	Annual rainfall:	510 mm average

Lower slope of an undulating rise. Hard setting surface, 8% slope.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark reddish brown massive fine sandy loam with 2-10% sandstone gravel. Clear to:
10-25	Reddish brown massive fine sandy loam with 2-10% sandstone gravel. Abrupt to:
25-55	Dark reddish brown medium clay with strong polyhedral structure and 10-20% sandstone gravel. Clear to:
55-75	Soft weathering rock with 20% pockets of dark reddish brown light medium clay with moderate polyhedral structure and minor soft carbonate segregations. Gradual to:
75-130	Weathering metamorphosed micaceous fine sandstone.



Classification: Sodic, Calcic, Red Chromosol; medium, slightly gravelly, loamy / clayey, moderate



Summary of Properties

- Drainage:** The soil is well drained; waterlogging is unlikely to be a limitation.
- Fertility:** The clay subsoil has a high capacity to retain and supply nutrients, but the surface (due to relatively low clay content) does not. Magnesium deficiency is sufficient to cause grass tetany in cattle. Copper and zinc are marginally deficient. Phosphorus and potassium levels are adequate. Organic carbon levels are moderately low.
- pH:** Acidic at the surface, alkaline with depth. Dolomite is needed to correct pH.
- Rooting depth:** 75 cm in pit, but very few roots below 55 cm.
- Barriers to root growth:**
- Physical:** Bedrock is the main barrier and reduces potential root growth where it occurs at depths shallower than 50 cm.
 - Chemical:** There are no apparent barriers. Salt and boron levels are insignificant.
- Waterholding capacity:** Approximately 70 mm (moderate) at pit site.
- Seedling emergence:** Fair, due to hard setting surface caused by high content of fine sand with 15-20% clay, rather than high sodium (ESP) or low organic matter (Org.C). Gypsum response is likely, but less marked than on many other soils.
- Workability:** Fair; surface has limited moisture range for effective working.
- Erosion Potential:**
- Water:** Moderate, due to high soil erodibility and surface slope.
 - Wind:** Low wind erosion potential, unless overgrazed.

Laboratory Data

Depth cm	pH H ₂ O	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 (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	5.2	4.4	0	0.06	0.51	1.4	32	361	-	0.9	1.1	134	34.7	1.4	7.0	3.41	0.57	0.13	0.68	1.9
											-	-	-	-						
0-10	6.4	5.5	0	0.07	0.39	1.5	12	942	-	0.9	1.1	55	13.4	1.7	8.4	6.02	1.03	0.43	0.82	5.1
10-25	6.7	5.6	0	0.04	0.25	0.7	6	229	-	0.8	0.8	13	8.3	0.5	6.8	4.92	0.89	0.44	0.49	6.5
25-55	7.4	6.2	0	0.05	0.19	0.7	4	278	-	2.6	1.5	7	1.0	0.2	26.2	14.27	4.72	0.75	1.12	2.9
55-75	8.6	7.9	0.8	0.11	0.35	0.1	<4	128	-	0.7	0.5	4	1.1	0.2	6.7	5.14	1.34	0.54	0.23	8.1
75-130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

* EDTA trace element analyses for "paddock" sample.

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.

Differences between paddock and pit surface analyses with regard to pH, phosphorus and exchangeable calcium are caused by pit being close to fence.

Further information: [DEWNR Soil and Land Program](#)

