

SANDY LOAM OVER POORLY STRUCTURED BROWN CLAY

General Description: *Thick sandy to loamy topsoil with a bleached subsurface layer overlying a brown, grey and red mottled clayey subsoil grading to medium to coarse grained alluvium*

Landform: Lower slopes and valley flats of the eastern Mt. Lofty Ranges

Substrate: Micaceous medium to coarse grained alluvium derived from Kanmantoo Group rocks

Vegetation: Red and blue gum woodland



Type Site: Site No.: CH087

1:50,000 sheet:	6628-2 (Onkaparinga)	Hundred:	Kanmantoo
Annual rainfall:	600 mm	Sampling date:	19/01/96
Landform:	Valley flat between undulating rises, 2% slope		
Surface:	Hard setting with no stones		

Soil Description:

Depth (cm)	Description
0-10	Dark greyish brown hard weakly structured fine sandy loam. Gradual to:
10-25	Brown (bleached when dry), massive hard fine sandy loam. Abrupt to:
25-40	Dark yellowish brown, grey brown and orange mottled light medium clay with strong coarse prismatic structure. Clear to:
40-65	Yellowish brown, brown and orange mottled fine sandy light clay with weak coarse prismatic structure. Sharp to:
65-90	Light brown, olive brown and yellow mottled soft massive light clayey sand. Abrupt to:
90-110	Greyish brown, olive brown and orange mottled soft massive light clayey sand. Clear to:
110-175	Brown, red, yellowish brown and olive brown mottled soft light sandy loam.



Classification: Eutrophic, Mottled-Subnatric, Brown Sodosol; medium, non-gravelly, loamy / clayey, moderate

Summary of Properties

Drainage	Imperfect. The clayey subsoil causes water to "perch" on top, saturating the upper profile for some weeks after prolonged rain.
Fertility	Natural fertility is moderate as indicated by the exchangeable cation data. Test results indicate that phosphorus and magnesium are deficient, and calcium is marginal. Iron is very high and will lock up phosphate. Organic carbon levels are very high.
pH	Acidic at the surface, alkaline with depth. Lime is required to correct pH.
Rooting depth	110 cm in pit, but few roots below 90 cm.
Barriers to root growth	
Physical:	The tight subsoil clay and near surface waterlogging restrict satisfactory root growth.
Chemical:	Marginal fertility status and acidity are the main limitations. Salinity is not a problem.
Water holding capacity	Approximately 100 mm in rootzone (high), but not all available to plants because of poor root densities.
Seedling emergence	Fair due to hard setting surface soil which tends to seal over after rain.
Workability	Fair to good, provided that organic matter levels are maintained.
Erosion Potential	
Water:	Moderately low, provided that run-on water is controlled.
Wind:	Surface will pulverize if overgrazed, leading to erosion by wind.

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 (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	5.5	4.9	0	0.13	0.72	4.7	11	379	14	0.9	3.3	1300	120	6.0	12.9	6.25	1.37	0.17	0.64	1.4
0-10	5.6	4.9	0	0.10	0.49	4.8	8	580	17	0.8	-	-	-	-	13.2	7.16	1.60	0.16	0.87	1.2
10-25	5.7	4.8	0	0.05	0.30	2.6	5	320	13	0.8	-	-	-	-	10.1	5.16	1.25	0.20	0.52	2.0
25-40	6.4	5.4	0	0.06	0.26	0.5	<4	292	16	1.1	-	-	-	-	11.1	5.27	3.22	0.52	0.55	4.7
40-65	6.8	6.3	0	0.43	3.04	0.2	<4	183	68	1.0	-	-	-	-	5.6	2.49	1.80	0.94	0.24	16.8
65-90	8.5	7.7	0	0.23	2.66	0.1	<4	147	32	0.6	-	-	-	-	2.8	1.43	0.82	0.58	0.12	na
90-110	8.5	7.7	0	0.29	2.50	<0.1	<4	160	36	0.9	-	-	-	-	3.9	2.05	1.28	0.86	0.19	na
110-175	8.3	7.7	0	0.41	3.77	<0.1	<4	172	40	0.8	-	-	-	-	4.0	2.01	1.31	0.74	0.20	na

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.