

SANDY LOAM OVER POORLY STRUCTURED DARK CLAY

General Description: *Sandy surface soil, bleached at base, sharply overlying a dark grey and yellowish brown mottled, coarsely columnar clayey subsoil, calcareous with depth*

Landform: Lower slopes and valley flats of the north eastern Mount Lofty Ranges

Substrate: Variable calcified clayey sand to sandy clay alluvial sediments

Vegetation: Red gum woodland



Type Site: Site No.: CH037

1:50,000 sheet:	6728-4 (Angaston)	Hundred:	Moorooroo
Annual rainfall:	650 mm	Sampling date:	11/12/92
Landform:	Lower slope of very low rise, 2% slope		
Surface:	Firm with no stone		

Soil Description:

Depth (cm)	Description
0-10	Dark brown soft sandy loam with weak granular structure. Clear to:
10-25	Grey brown soft massive loamy sand. Gradual to:
25-43	Very pale brown, with dark brown stainings, soft massive loamy sand. Abrupt to:
43-75	Very dark grey brown and yellowish brown mottled heavy clay with strong coarse columnar structure. Gradual to:
75-95	Yellowish brown, brown and dark grey mottled sandy medium clay with strong, coarse prismatic structure. Clear to:
95-115	Greyish brown and olive brown mottled massive moderately cemented calcareous sandy medium clay. Clear to:
115-140	Yellow, brown and dark grey massive clayey sand, with 10% quartz gravel.



Classification: Vertic, Mottled-Subnatric, Black Sodosol; thick, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage	Imperfectly to poorly drained, due to the slowly permeable clayey subsoil and the low lying position of the soil. The profile may remain wet for weeks to months, depending on the season.
Fertility	Natural fertility is moderate, as indicated by the exchangeable cation data. There are cation imbalances with magnesium deficient in the surface soil, but dominating the exchange complex in the subsoil. Zinc and boron are marginally deficient, and other tested elements are in adequate supply. Organic carbon levels are high.
pH	Acidic at the surface, alkaline with depth. Dolomitic lime is needed to correct the pH problem.
Rooting depth	140 cm in pit, but few roots below 75 cm.
Barriers to root growth	
Physical:	Waterlogging and the tough sodic clay subsoil retard root growth to some extent. Rapid drying of the 25-43 cm layer may also prevent downward root growth in a quick finish following a wet winter.
Chemical:	The only apparent chemical barriers to root growth appear to be the possible adverse effects of high pH at depth, and marginal acidity.
Water holding capacity	150 mm in root zone (high), but up to 60 mm is effectively unavailable due to low root density.
Seedling emergence	Good to fair. Surface will set hard if organic matter levels decline.
Workability	Good to fair, depending on surface structure (related to organic matter content).
Erosion Potential	Low, for both wind and water.

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	5.2	4.7	0	0.08		2.2	91	380	-	0.3	2.92	410	20.6	1.78	5.6	5.76	0.71	0.11	0.20	2.0
0-10	5.1	4.6	0	0.07	0.39	1.7	78	160	-	0.2	-	-	-	-	4.0	4.06	0.58	0.08	0.12	2.0
10-25	5.5	4.9	0	0.03	0.13	0.24	29	200	-	0.2	-	-	-	-	1.4	1.75	0.47	0.10	0.07	n.a.
25-43	6.2	5.8	0	0.03	0.22	0.04	6	160	-	0.1	-	-	-	-	0.6	0.97	0.54	0.13	0.06	n.a.
43-75	8.1	7.2	1	0.18	0.73	0.21	<2	400	-	2.3	-	-	-	-	31.6	5.40	20.4	3.01	0.52	9.5
75-95	8.6	7.9	1	0.32	1.67	0.06	<2	350	-	2.4	-	-	-	-	15.2	3.02	11.7	2.37	0.31	15.6
95-115	9.2	8.5	11	0.36	1.88	0.02	6	400	-	1.1	-	-	-	-	13.4	2.57	10.5	2.14	0.26	16.0
115-140	8.8	8.2	<1	0.28	1.88	0.01	<2	270	-	0.8	-	-	-	-	12.0	2.16	9.41	1.76	0.27	14.6

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.