ACIDIC LOAM OVER BROWN CLAY ON ROCK

General Description: *Loamy surface soil overlying a brown, grey and red firm clay subsoil forming in fine grained metamorphic rock*

Landform: Slopes of undulating to rolling low hills of the central Mount Lofty Ranges

Substrate: Slates, phyllites, fine grained schists or micaceous siltstones of Proterozoic age

Vegetation: Red gum and blue gum woodland

Type Site:

Site No.:	CH043	1:50,000 mapsheet:	6628-2 (Onkaparinga)
Hundred:	Onkaparinga	Easting:	308700
Section:	5260	Northing:	6130800
Sampling date:	14/01/93	Annual rainfall:	790 mm average

Lower slope of undulating low hills, 6% slope.

Soil Description:

Depth (cm)	*Description*
0-10	Black loam with moderate granular structure. Gradual to:
10-25	Dark brown loam with weak granular structure. Clear to:
25-35	Very pale brown massive fine sandy clay loam with 2-10% quartz gravel. Abrupt to:
35-55	Orange and greyish brown medium clay with strong coarse blocky, breaking to fine polyhedral structure, and 2-10% phyllite fragments. Gradual to:
55-70	Dark yellowish brown, brownish grey and red light medium clay with strong fine polyhedral structure and 20-50% phyllite fragments. Gradual to:
70-120	Weathering phyllite with clay in cracks and bedding planes.

Classification: Bleached-Sodic, Eutrophic, Brown Chromosol; thick, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Moderately well drained. The soil may remain wet for a week or so, due to water lying on top of the clay subsoil.

Fertility: Inherent fertility is moderately high, as indicated by the exchangeable cation data. Surface soil fertility is partly dependent on organic carbon levels being maintained at about 2%. Phosphorus and potassium are high, and levels of other tested nutrient elements are adequate. Neutral pH values help maintain the soil's capacity to retain nutrients.

pH: Slightly acidic at the surface, neutral to slightly alkaline with depth.

Rooting depth: 70 cm in pit, but few roots below 55 cm.

Barriers to root growth:

Physical: No apparent barriers above the bedrock.

Chemical: No apparent barriers. Roots have little need to extend to the full profile depth under irrigation.

Waterholding capacity: 125 mm in profile to bedrock.

Seedling emergence: Good, provided that surface structure is maintained through organic matter inputs.

Workability: Good to fair. Loss of structure on these soils results in puddling or shattering if soil is worked too wet or too dry respectively.

Erosion Potential:

Water: Moderate, due to the 6% slope.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	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	6.1	5.8	<1	0.13	0.66	1.6	52	230	-	1.0	3.83	360	248	13.0	9.6	8.30	2.00	0.36	0.34	3.8
0-10	6.2	5.9	<1	0.13	0.69	1.6	47	250	-	0.9	-	-	-	-	8.8	7.56	2.07	0.45	0.44	5.1
10-25	6.5	5.9	<1	0.07	0.30	0.75	23	200	-	0.8	-	-	-	-	6.8	5.86	1.47	0.33	0.27	4.9
25-35	6.8	6.2	<1	0.05	0.17	0.59	9	210	-	0.9	-	-	-	-	7.5	5.74	2.68	0.23	0.35	3.1
35-55	6.9	6.5	1	0.09	0.27	0.23	6	310	-	2.0	-	-	-	-	17.4	11.2	6.81	0.37	0.78	2.1
55-70	7.2	6.7	2	0.10	0.29	0.18	5	200	-	1.5	-	-	-	-	14.7	11.6	7.01	0.75	0.43	5.1
70-120	7.5	6.7	3	0.07	0.25	0.07	14	94	-	0.6	-	-	-	-	6.8	7.73	4.16	1.58	0.04	23.2

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.

Further information: DEWNR Soil and Land Program