

ACIDIC SANDY LOAM OVER BROWN CLAY

General Description: *Sandy loam overlying a well structured brown or red clay grading to highly weathered kaolinitic sandstone*

Landform: Slopes of undulating to rolling low hills

Substrate: Proterozoic sandstones, deeply weathered and kaolinitic

Vegetation: Blue gum / stringybark woodland



Type Site: Site No.: CH073

1:50,000 sheet:	6627-4 Noarlunga)	Hundred:	Kuitpo
Annual rainfall:	830 mm	Sampling date:	24/11/94
Landform:	Lower slope of rolling low hills, 12% slope		
Surface:	Hard setting with no stone		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-9	Dark brown loam with weak granular structure and 2-10% ironstone gravel. Abrupt to:
9-16	Pink massive light sandy clay loam with 10-20% quartz and ironstone gravel. Clear to:
16-40	Orange and brown medium clay with strong polyhedral structure. Gradual to:
40-70	Yellow, brown and red medium clay with strong polyhedral structure. Diffuse to:
70-100	Brown, olive and red light clay with strong coarse polyhedral structure and 2-10% quartz gravel. Diffuse to:
100-170	Pale yellow, brownish yellow and red silty loam (kaolinized fine sandstone) with moderate coarse prismatic structure and 10-20% quartz gravel.



Classification: Bleached-Sodic, Eutrophic, Red Kurosol; medium, slightly gravelly, loamy/clayey, deep

Summary of Properties

Drainage Moderate. Water accumulates on top of the clayey subsoil, despite the slope, and may saturate the near surface layers for a week or so at a time.

Fertility The natural fertility of the soil is moderately high, but leaching of cations associated with soil acidification has reduced fertility. Phosphorus, potassium and copper are low, and there have been substantial losses of calcium and magnesium. Sulphur and the other trace elements are adequate. Organic carbon levels are very high.

pH Acidic at the surface, slightly acidic at depth. At 4.3-4.4 in calcium chloride, the surface pH needs correction. As both magnesium and calcium levels are low, correction of acidity with dolomitic lime should be considered.

Rooting depth 100 cm in pit.

Barriers to root growth

Physical: Soil structure is satisfactory, although the 9-16 cm layer sets hard and restricts root development in a patchy opening.

Chemical: Marginal fertility, low pH and aluminium toxicity.

Water holding capacity Approximately 120 mm in root zone (high).

Seedling emergence Good to fair (surface tends to seal over).

Workability Good, provided organic matter levels are maintained; otherwise the soil will either puddle or shatter depending on moisture levels.

Erosion Potential

Water: Moderate, due to the 12% slope. Adequate precautions must be taken during pasture renovation and late summer grazing.

Wind: Low.

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 -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP	Ext Al mg/kg
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
Paddock	5.3	4.4	0	0.05	0.25	4.0	9	93	8.0	0.8	0.41	331	30.5	1.93	11.1	3.89	0.99	0.17	0.24	1.5	8
0-9	5.3	4.3	0	0.08	0.33	7.9	20	187	15.1	1.2	-	-	-	-	16.6	7.61	1.53	0.20	0.54	1.2	8
9-16	5.3	4.3	0	0.03	0.19	1.6	<4	18	5.7	0.8	-	-	-	-	7.4	1.92	0.51	0.11	0.09	1.5	8
16-40	5.2	4.6	0	0.04	0.15	1.2	<4	48	19.7	2.1	-	-	-	-	16.2	5.37	4.15	0.28	0.21	1.7	2
40-70	5.6	5.1	0	0.03	0.07	0.4	<4	29	147	2.1	-	-	-	-	14.4	3.81	5.83	0.31	0.31	2.2	<1
70-100	5.9	4.9	0	0.04	0.10	0.3	<4	38	131	2.2	-	-	-	-	14.1	2.72	6.30	0.43	0.16	3.0	<1
100-170	6.0	4.8	0	0.11	0.58	0.1	<4	19	40.1	1.0	-	-	-	-	11.0	1.51	5.93	1.04	0.09	9.5	<1

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.