

VERY THICK HIGHLY LEACHED SAND OVER BROWN CLAY

General Description: *Very thick highly leached acid sand over poorly structured brown clay becoming mottled with depth. Iron-organic layer present in lower sandy horizons.*

Landform: Poorly drained plain with very slight undulations.

Substrate: Mottled clays of the Padthaway Formation.

Vegetation: Brown stringybark (*Eucalyptus. baxteri*), yakka (*Xanthorrhoea* sp)



Type Site: Site No.: SE103
 1:50,000 sheet: 7023-3(Monbulla) Hundred: Monbulla
 Annual rainfall: 700 mm Sampling date: 18/07/05
 Landform: Very gently undulating plain
 Surface: Soft with no stones

Soil Description:

Depth (cm)	Description
0-21	Loose black single grain loamy sand. Gradual to:
21-35	Very dark grey single grain sand. Diffuse to:
35-50	Dark greyish brown single grain sand. Diffuse to:
50-65	Greyish brown single grain sand. Diffuse to:
65-77	Light brownish grey (bleached when dry) single grain sand. Sharp to:
77-88	Reddish black massive sandy loam. Abrupt to:
88-112	Yellowish brown single grain sand. Sharp to:
112-130	Yellowish brown and light yellowish brown mottled massive sandy clay loam. Clear to:
130-150	Yellowish brown and light grey mottled massive, wet medium clay.



Classification: Melacic, Humosesquic, Semiaquic Podsol; thick, non-gravelly, sandy / loamy, moderate

Summary of Properties

Drainage: The sandy upper part of the profile is highly permeable, but water perches on top of the clay from 60 cm. The clay becomes moderately waterlogged and is slow to drain. Drainage is further restricted by the low flat topography.

Fertility: Inherent fertility is very low. P levels are low, with high levels in the iron/organic layer (77-88 cm) indicative of the high leaching through the sand above. K status is very low in the upper profile. Sulphur and trace copper, manganese and zinc are low. Organic carbon is high, probably relating to the infertile, acid conditions and subsequent low microbial activity.

pH: Moderately acidic at the surface. Strongly acidic from 21 cm to 88 cm.

Rooting depth: 88 cm in pit, with most roots in the 0-50 cm depth range.

Barriers to root growth:

Physical: No physical barriers

Chemical: Low fertility and strong acidity are the main limitations to root development.

Water holding capacity: 60 mm in potential root zone.

Seedling emergence: Water repellence is a potential problem.

Workability: Sandy surfaces are easily worked.

Erosion Potential

Water: Low

Wind: Moderate potential if surface vegetation cover is not maintained.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	NO ₃ mg/kg	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Exch Al
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-21	5.8	5.0	16	0.066	0.68	2.10	10	21	9	5.6	0.4	0.07	60	1.17	0.27	5.6	4.99	0.46	0.09	0.06	0.03
21-35	4.7	4.0	3	0.03	0.31	0.68	2	15	8	3.0	0.2	0.07	16	<0.1	0.23	0.7	0.57	0.04	0.03	0.03	0.08
35-50	4.7	4.1	3	0.024	0.26	0.34	2	15	6	2.3	<0.1	0.10	15	<0.1	0.0	0.3	0.20	0.02	0.03	0.03	0.06
50-65	4.7	4.1	3	0.019	0.22	0.30	2	15	4	2.2	0.2	0.10	9	0.30	0.20	0.2	0.16	0.02	0.03	0.03	0.06
65-77	5.4	4.3	3	0.037	0.20	0.19	2	16	4	2.0	0.1	0.0	5	1.00	0.11	0.2	0.12	0.01	0.02	0.03	0.06
77-88	4.9	4.1	15	0.065	0.57	4.55	26	15	11	10.0	0.3	0.05	198	0.39	0.05	2.4	2.13	0.10	0.09	0.05	3.50
88-112	6.4	5.8	3	0.018	0.21	0.18	2	15	4	4.1	<0.1	0.0	26	0.35	0.0	0.5	0.33	0.06	0.10	0.03	0.25
112-130	6.6	5.7	1	0.056	0.54	0.19	2	25	15	11.4	0.3	0.08	19	0.57	0.12	3.5	1.58	1.32	0.48	0.08	0.00
130-150	6.5	5.9	1	0.112	0.40	0.13	2	72	39	58.2	1.0	0.17	10	1.02	0.21	10.7	4.92	4.46	1.09	0.24	0.00

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), but this approximation is invalid in this acidic soils due to unknown levels of exchangeable hydrogen.