

THICK BLEACHED SAND OVER CLAY

General Description: *Delved thick sand with a bleached subsurface layer over a coarsely structured brown clay*

Landform: Gently undulating plains and low rises.

Substrate: Tertiary age sandy clay.

Vegetation:



Type Site:	Site No.:	SE126	1:50,000 mapsheet:	7025-4 (Cannawigara)
	Hundred:	Pendleton	Easting:	463310
	Section:	59	Northing:	5999940
	Sampling date:	30/10/06	Annual rainfall:	480 mm average

Slight rise, 1% slope, in a landscape of gently undulating plains and rises. Loose surface with no stones. Paddock delved to 65 cm.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-12	Dark greyish brown loose weakly granular loamy sand. Abundant roots. Clear to:
12-18	Dark greyish brown loose single grain sand. Many roots. Clear to:
18-40	Very pale brown (bleached) loose single grain sand. Few roots. Diffuse to:
40-65	Very pale brown (bleached) loose single grain sand. Very few roots. Sharp to:
12-65	Delved zone - slight mixing of sandy horizons. Roots common.
65-80	Light yellowish brown, yellowish brown and brown mottled firm sandy light clay with very coarse columnar, breaking to coarse angular blocky, structure. Occasional silcrete pan on column faces. No roots. Horizon very hard and dry under delve line, with roots few to common. Diffuse to:
80-120	Olive yellow firm moist light medium clay with very coarse prismatic structure. No roots.



Classification: Eutrophic, Mottled-Mesonatric, Brown Sodosol; very thick, non-gravelly, sandy / clayey, deep



Summary of Properties

Drainage: Moderately well drained. Water is likely to perch on top of the clay subsoil for a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is low to very low, as indicated by the exchangeable cation data. The bleached subsurface layers 18-40 cm and 40-65 cm represent a major limitation to root growth due to very low nutrient retention capacities. Delving has marginally improved cation status of these layers (compare original subsurface layers 18-65 cm with delved sand layer 12-65 cm). Surface soil test data indicate that potassium levels are marginal, with concentrations of other tested elements satisfactory.

pH: Neutral at the surface, alkaline in the subsoil.

Rooting depth: 40 cm in sampling pit, with a very few roots to 65 cm.

Barriers to root growth:

Physical: The coarsely structured clay subsoil restricts root growth, confining most roots to the surfaces of the aggregates. Delving was not deep enough to affect the clay.

Chemical: Very low subsurface nutrient retention capacity is the main limitation.

Waterholding capacity: Approximately 40 mm total available water in the topsoil. Delving has potential to increase this to 60 mm.

Seedling emergence: Satisfactory.

Workability: Satisfactory. Sandy surface soils are easily worked.

Erosion Potential:

Water: Low.

Wind: Moderate.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Cl mg/kg	Org.C %	NO ₃ + NH ₄ mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S mg/kg	React Fe mg/kg	Ext Al mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
															Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-12	7.2	6.6	0	0.07	0.72	10	1.37	16	21	117	7.7	302	0	0.9	1.78	80	15.1	5.76	8.5	6.95	1.15	0.11	0.27	1.3
12-18	7.6	6.7	0	0.04	0.45	9	0.80	9	11	35	5.1	181	0	0.5	1.24	78	2.34	2.24	4.2	3.63	0.39	0.09	0.06	2.2
18-40	7.0	6.6	0	0.03	0.33	6	0.25	5	13	31	3.3	148	0	0.3	0.52	75	0.64	0.37	1.8	1.46	0.18	0.08	0.06	4.5
40-65	7.4	7.1	0	0.03	0.38	5	0.11	6	2	24	2.2	131	0	0.4	0.31	44	0.35	0.12	1.1	0.68	0.19	0.12	0.06	11.4
65-80	8.7	7.3	0	0.11	1.08	31	0.42	7	2	391	3.0	839	0	2.8	1.77	80	1.99	0.71	16.6	4.61	8.37	2.56	1.01	15.5
80-120	9.1	7.6	0	0.16	0.87	46	0.23	9	2	642	9.9	677	0	8.0	1.9	42	5.17	0.75	23.5	5.78	10.9	5.10	1.78	21.7
12-65 *	7.7	7.2	0	0.05	0.58	11	0.19	8	7	16	5.8	158	0	0.4	2.11	100	2.81	2.56	3.2	2.29	0.63	0.2	0.06	6.3

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.

* Sand sampled from within the zone altered by delving.

Further information: [DEWNR Soil and Land Program](#)

