

THICK BLEACHED SAND OVER BROWN CLAY, DELVED

General Description: *Thick bleached sand with an organically darkened surface, abruptly overlying a brown mottled clay. Soil has been recently delved, with the surface incorporated to a depth of 18 cm*

Landform: Gently undulating rises.

Substrate: Clayey sands to sandy clays of Tertiary age.

Vegetation: Blue gum (*Eucalyptus leucoxyton*) and/or hill gum (*E. fasciculosa*) woodland



Type Site: Site No.: SE104

1:50,000 sheet: 7025-4 (Cannawigara) Hundred: Cannawigara
Annual rainfall: 450 mm Sampling date: 21/07/05
Landform: Lower slope of gently undulating rise, 1% slope
Surface: Soft with no stones

Soil Description:

Depth (cm)	Description
0-18	Soft dark grey single grain loamy sand with evenly distributed aggregates of brown clay of approximately <1 mm to 20 mm diameter. Clear to:
18-48	Heterogeneously distributed mix of light grey single grain sand, dark grey single grain loamy sand, and irregularly shaped aggregates of brown clay of approximately 20 mm to 150 mm diameter. Sharp to:
48-70	Strong brown mottled sandy light medium clay with strong medium angular blocky structure.



Classification: Mesotrophic, Mottled-Subnatric, Brown Sodosol; thick, non-gravelly, sandy / clayey, moderate

Summary of Properties

- Drainage:** Well drained. Water perches on top of the clayey subsoil for a few days following heavy or prolonged rainfall. This is unlikely to present problems for annual plants due to the thickness of the topsoil.
- Fertility:** Inherent fertility is low, as indicated by the low clay content of the surface soil and the exchangeable cation data. The soil has a heterogeneous distribution of clayey aggregates throughout the topsoil. These increase the cation exchange capacity of the topsoil, enabling greater retention of applied nutrients, compared with the surrounding sandy matrix. Phosphorus levels are marginal. These soils are susceptible to deficiencies of copper, zinc and manganese, as well as phosphorus and nitrogen. Potassium content of the delved clay is relatively high.
- pH:** Neutral to slightly acidic throughout.
- Rooting depth:** The disturbance created by the delving should encourage strong root development within the top 48 cm, and may enhance root development into the clay subsoil. Total potential root zone is more than 70 cm.
- Barriers to root growth:**
- Physical:** The moderate strength of the clay subsoil restricts root densities.
- Chemical:** There are no apparent chemical barriers to root growth, and low nutrient availability in the A2 is likely to be less restrictive due to the clay within the sandy matrix.
- Water holding capacity:** Approximately 80 mm in potential root zone.
- Seedling emergence:** Good. Increased clay content at surface should reduce water repellence.
- Workability:** Satisfactory. Sandy surfaces are easily worked over a range of moisture conditions.
- Erosion Potential**
- Water:** Moderately low.
- Wind:** Moderately low to moderate.

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				ESP
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-18	6.4	5.8	19	0.079	0.96	0.89	17	72	11	5.2	0.6	2.02	36.7	9.29	2.37	4.24	2.65	1.18	0.18	0.23	4.2
18-48 [*]	7.0	6.1	27	0.141	1.16	0.34	3	390	36	13.9	1.7	0.39	17.0	2.08	0.40	11.60	4.34	5.38	0.92	0.96	7.9
18-48 [◊]	7.2	6.3	9	0.047	0.85	0.29	9	69	11	3.5	0.2	0.18	26.3	2.54	0.07	2.72	2.06	0.39	0.09	0.18	3.3
18-48 [*]	6.8	5.7	16	0.068	0.83	0.72	10	73	13	5.3	0.5	1.53	47.6	7.11	1.38	2.98	1.81	0.81	0.19	0.17	6.4
48-70	7.9	6.8	7	0.174	0.96	0.30	2	459	56	9.4	3.0	0.17	24.7	4.42	0.24	13.27	3.83	6.89	1.45	1.10	10.9

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.

^{*} Analysis from **clay only**, brought up by delving within this layer.

[◊] Analysis of bleached sand sampled from this layer from a section of the pit unaffected by the delving.

^{*} Analysis of a bulked sample from the delve-affected soil in this layer including mix of original 0-48 cm.