

THICK BLEACHED SAND OVER BROWN CLAY

General Description: *Thick bleached sand with an organically darkened surface, abruptly overlying a brown, yellow and red mottled clay with variable ironstone gravel, becoming sandier with depth*

Landform: Gently undulating rises.

Substrate: Clayey sands to sandy clays of Tertiary age.

Vegetation: Blue gum (*Eucalyptus leucoxylon*) and hill gum (*E. fasciculosa*) woodland.



Type Site: Site No.: SE079

1:50,000 sheet: 7025-4 (Cannawigara) Hundred: Cannawigara

Annual rainfall: 450 mm Sampling date: 21/09/04

Landform: Lower slope of gently undulating rise, 1% slope

Surface: Soft with no stones

Soil Description:

Depth (cm)	Description
0-15	Brown soft single grain light loamy sand. Gradual to:
15-55	Very pale brown (bleached) soft single grain sand. Sharp to:
55-75	Strong brown, yellowish brown and red mottled hard sandy medium clay with weak coarse columnar (breaking to strong medium angular blocky) structure, and 2-10% ironstone nodules. Gradual to:
75-115	Yellowish brown, red and strong brown hard fine sandy medium clay with strong coarse angular blocky structure and 2-10% ironstone nodules. Diffuse to:
115-150	Brownish yellow, light olive brown, light grey and red hard sandy medium clay with moderate coarse prismatic (breaking to medium angular blocky) structure and 2-10% fine carbonate segregations. Diffuse to:
150-200	Yellowish brown, pale yellow and light red firm sandy clay loam with weak coarse structure and 2-10% fine carbonate segregations.



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

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. Phosphorus levels are low, but this is expected as the sampling site is in an area not used for cropping or improved pastures. These soils are susceptible to deficiencies of potassium, copper, zinc and manganese, as well as phosphorus and nitrogen.
- pH:** Neutral at surface, alkaline with depth. Note that elevated surface pH is due to lime dust from adjacent clay pit.
- Rooting depth:** Few annual plant roots below 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, apart from low nutrient availability.
- Water holding capacity:** Approximately 60 mm in potential root zone.
- Seedling emergence:** Fair, due to the susceptibility of the surface to water repellence.
- Workability:** Satisfactory. Sandy surfaces are easily worked over a range of moisture conditions.

Erosion Potential

- Water:** Moderately low.
- Wind:** Moderate.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	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				Est ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-15	8.2	7.4	0.5	0.06	0.35	1.61	10	74	13	5.8	0.9	0.55	49	0.70	10.3	4.5	3.4	0.77	0.11	0.2	2.5
15-55	7.7	7.2	0	0.03	0.28	0.16	3	32	2	2.1	0.4	0.08	19	0.05	3.09	1.2	0.76	0.27	0.08	0.08	na
55-75	7.0	6.1	0	0.11	0.59	0.41	3	367	44	23	1.6	0.19	38	0.11	0.91	16.7	5.47	8.55	1.67	0.97	10.0
75-115	7.0	6.2	0	0.11	1.12	0.23	1	412	191	11	2.1	0.15	18	0.14	1.99	17.5	5.3	9.12	1.97	1.1	11.3
115-150	8.9	7.9	0.5	0.28	1.84	0.13	3	299	160	18	3.2	0.15	22	0.35	1.31	16.6	6.14	7.63	2.08	0.75	12.5
150-200	9.0	7.9	0.5	0.28	1.78	0.10	3	281	168	25	4.3	0.21	18	0.26	2.04	16.0	4.35	8.4	2.54	0.7	15.9

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 estimated by dividing the exchangeable sodium value by the sum of cations.