

## BLEACHED SAND OVER YELLOWISH BROWN CLAY LOAM AND CALCRETE

**General Description:** *Sandy topsoil with a bleached sandy subsurface layer over brownish clay loam and thin sheet calcrete*

**Subgroup soil:** B7

**Landform:** Dunefield

**Substrate:** Buried soil

**Vegetation:** Irrigated lucerne.

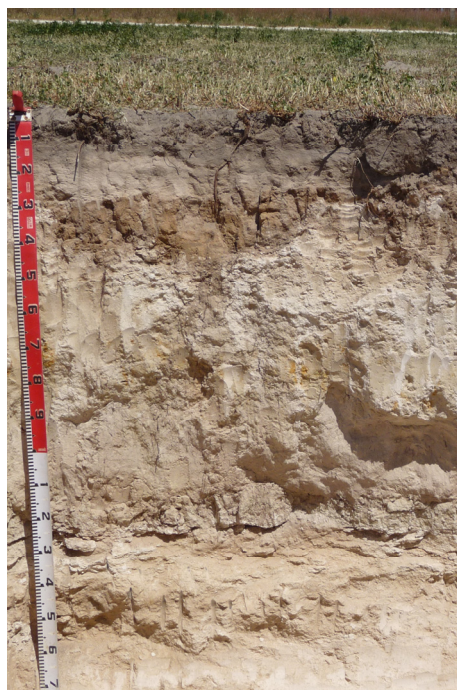


<b>Type Site:</b>	Site No:	SE146	1:50,000 mapsheet:	6926-3 (Tintinara)
	Hundred:	Coombe	Easting:	427870
	Section:	104	Northing:	6021030
	Sampling date:	22/10/08	Annual rainfall:	475 mm average

The site is in a flat, swale area, set-up as a flood-irrigation bay.

### Soil Description:

Depth (cm)	Description
0–12	Loose, strongly water repellent, very dark greyish brown, loamy sand with single grain structure.
12–30	Bleached, loamy sand with massive structure.
30–40	High-strength, yellowish brown, heavy fine sandy clay loam with large moderate columnar structure (5–10 cm across).
40–50	Laminar calcrete.
<i>Buried Soil</i> .....	
50–90	Highly calcareous, light yellowish brown, sandy clay loam with massive and abundant soft to semi-hard carbonate.
90–120	Highly calcareous, light brownish grey, sandy loam with massive to single grain structure.
120–140	Laminar calcrete.
140–160	Massive calcrete.
160–180	Very highly calcareous, white, heavy clay loam with massive structure and abundant fine carbonate.



**Classification:** Eutrophic, Petrocalcic, Brown Sodosol; thick, non-gravelly, sandy/clay loamy, deep.



## Summary of Properties

- Drainage:** Drainage is good.
- Fertility:** Inherent fertility is relatively low in the topsoil (especially in the bleached subsurface layer), but somewhat raised in the subsoil. The sandy topsoil has limited capacity to retain and provide nutrients. Most of the soil's natural fertility is provided by the organic matter present in the surface soil. Maintenance and improvement of surface soil organic matter and residues is important for maintenance of fertility and protection against erosion.
- pH:** Soil pH is alkaline throughout, with alkalinity increasing with depth to 120 cm.
- Rooting depth:** Viewed in the pit: root growth was observed to 120 cm.
- Barriers to Root Growth:**
- Physical:** The high-strength and dispersive subsoil (30–40 cm), and calcrete layers, limit root growth to some extent.
- Chemical:** Low inherent fertility sandy soil may limit root growth. Surface soil phosphorus levels in the pit are marginal; there is also evidence of phosphorus leaching. Low levels of zinc and possibly other nutrients may limit root growth with depth. There is some likelihood of a seasonal perched watertable and associated low oxygen conditions (which would be exacerbated by irrigation), but this is unlikely to persist for very long. Levels of salts are raised in the subsoil (30–40 cm), moderate levels occur below the upper calcrete layer, while levels are high at depth (>160 cm).
- Waterholding capacity:** High. Total available: approx 130 mm  
 $[(0.12 \times 110) + (0.18 \times 90) + (0.1 \times 150) + (0.4 \times 140) + (0.3 \times 100)]$ .
- Seedling emergence:** Good. Water repellence is an issue with respect to even surface soil wetting.
- Workability:** Good.
- Erosion Potential:**
- Water:** Low.
- Wind:** Moderate to moderately high. Residue retention and maintenance of surface cover are crucial for protection against erosion.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO <sub>4</sub> -S mg/kg	Boron mg/kg	Al CaCl <sub>2</sub> 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	Al	H	
Paddock	8.0	7.3	0.4	0.24	1.13	1.4	30	169	84	13.1	1.6	0	1.6	46	27	2.9	5.4	3.2	1.8	0.2	0.2	0.0	0.0	4
0-12	8.4	7.3	0.3	0.09	0.76	1.1	20	137	25	6.0	1.1	0	1.4	30	21	2.4	3.7	2.1	1.3	0.2	0.1	0.0	0.0	5
12-30	8.6	7.6	0.3	0.05	0.52	0.2	4	113	4	1.6	0.5	0	0.6	30	4.0	0.4	1.8	0.8	0.6	0.2	0.1	0.0	0.0	11
30-40	8.9	8.1	0.4	0.28	2.20	0.3	11	307	50	8.1	2.1	0	0.5	44	1.4	0.2	12.6	4.9	6.0	0.9	0.8	0.0	0.0	7
40-50																								
50-90	9.0	8.4	1.8	0.81	7.80	0.2	3	109	1037	57.4	1.4	0	0.4	9	2.0	0.2	16.2	12.7	2.9	0.3	0.2	0.1	0.1	2
90-120	9.1	8.4	1.2	0.89	10.33	0.2	2	102	1067	59.3	1.5	0	0.4	7	0.9	0.2	14.9	10.4	3.7	0.5	0.2	0.0	0.1	3
120-140																								
140-160																								
160-180	8.5	8.1	10.1	2.81	29.0	0.2	2	130	3815	230	1.0	0	0.3	5	2.0	0.1	32.5	24.4	7.1	0.7	0.1	0.0	0.1	2

**Note:** Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

Sum of cations 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.

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

