

## DEEP SILICEOUS SAND

**General Description:** *Deep sandy soil with a very thick bleached subsurface layer*

**Subgroup soil:** H3

**Landform:** Jumbled dunefield.

**Substrate:** Siliceous sand.

**Vegetation:** Irrigated lucerne.



<b>Type Site:</b>	Site No:	MM166	1:50,000 mapsheet:	6926-3 (Tintinara)
	Hundred:	Coombe	Easting:	414340
	Section:	76	Northing:	6028740
	Sampling date:	16/08/2005	Annual rainfall:	480 mm average

The site is in on a dunecrest (about 2 m higher in elevation than soil characterisation site MM165). Irrigation water comes from an underlying aquifer, approximately 80 m below shallow saline groundwater (which is at roughly 6 m depth?).

### Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0–15	Soft, water repellent, very dark greyish brown, loamy sand with single grain structure.
15–60	Bleached, loamy sand with single grain structure.
60–100	Bleached, relatively coarse loamy sand with single grain structure.
100–120	Bleached, relatively coarse loamy sand with single grain structure and some lamellae.



**Classification:** Basic, Argic, Bleached-Orthic Tenosol; medium, non-gravelly, sandy / sandy, deep.



## Summary of Properties

- Drainage:** Drainage is excessive (rapid).
- Fertility:** Inherent fertility is low (as the sandy soil has limited capacity to retain and provide nutrients). This is evidenced by very low cation exchange capacity (which is approximated by the sum of cations), particularly below the surface soil where levels are extremely low. 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 extremely important for maintenance of fertility as well as protection against erosion.
- pH:** Soil pH is slightly alkaline to neutral throughout (pH has probably been raised from a naturally acidic state by alkaline irrigation water).
- Rooting depth:** Viewed in the pit: root growth was observed to 120 cm (the base of the excavated pit), with most in the surface soil.
- Barriers to Root Growth:**
- Physical:** There are no physical limitations to root growth in the top 120 cm.
- Chemical:** Low fertility may limit root growth (e.g. low to marginal phosphorus, potassium, sulfur and boron levels). Zinc and copper levels below the surface soil may also limit root growth with depth. Surface organic carbon level is low.
- Waterholding capacity:** Moderately low. Total available: approx 60 mm (to 120 cm depth) [(0.15x80)+(0.45x50)+(0.4x40)+(0.2x50)].
- Seedling emergence:** Good.
- Workability:** Good.
- Erosion Potential:**
- Water:** Low.
- Wind:** Moderately high to moderate. 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	
0-15	7.4	6.8	0.2	0.07	0.73	0.8	12	68	30	8.6	0.8	0	1.8	42	10.2	3.3	3.4	2.2	0.9	0.2	0.0	0.0	0.0	6
15-60	7.5	6.9	0.2	0.04	0.54	0.1	3	26	19	2.9	0.3	0	0.4	26	1.4	0.5	1.0	0.5	0.2	0.2	0.0	0.0	0.0	23
60-100	7.4	6.9	0.2	0.03	0.44	0.1	3	23	16	1.9	0.3	0	0.3	21	1.5	0.2	0.6	0.3	0.1	0.2	0.0	0.0	0.0	29
100-120	7.2	6.9	0.2	0.05	0.80	0.0	2	25	34	3.0	0.3	0	0.4	31	2.7	0.4	0.7	0.3	0.2	0.2	0.0	0.0	0.0	28

**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](#)

