

## SAND OVER BROWN CLAY ON CALCRETE

**General Description:** *Medium to thick sand to loamy sand with a bleached subsurface layer, over a brown coarsely structured clay on calcrete capped semi-hard carbonate within 100 cm, and often within 50 cm*

**Landform:** Very gently undulating plains

**Substrate:** Calcreted calcareous clayey sand to sandy clay of the Padthaway Formation.

**Vegetation:**

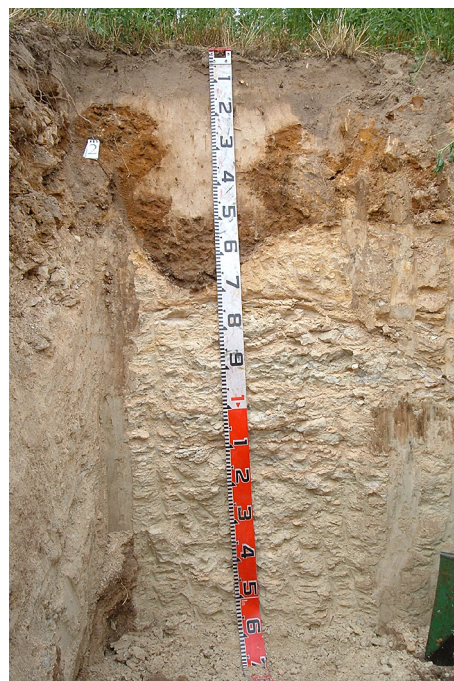


<b>Type Site:</b>	Site No.:	SE155B	1:50,000 mapsheet:	7025-4 (Cannawigara)
	Hundred:	Pendleton	Easting:	460960
	Section:	125	Northing:	5997220
	Sampling date:	13/12/2007	Annual rainfall:	485 mm average

Very gently undulating plain. Soft surface with no stones. Irrigated lucerne.

### Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-13	Very dark greyish brown soft single grain loamy sand. Clear to:
13-48#	Light yellowish brown (bleached) soft single grain sand. Sharp to:
48-68	Strong brown, dark brown and yellowish brown mottled firm sandy light medium clay with weak coarse subangular blocky structure. Sharp to:
68-73	Calcrete pan. Abrupt to:
73-135*	Fractured calcrete. Gradual to:
135-160	Semi-hard carbonate.
#	Note variation in depth to clay (18-48 cm)
*	Note variation in depth to carbonate (50-68 cm). Description applies to a solution hole.



**Classification:** Eutrophic, Petrocalcic, Brown Sodosol; thick, non-gravelly, sandy / clayey, moderate



## Summary of Properties

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

**Fertility:** Inherent fertility is low, as indicated by the exchangeable cation data. This is due to the low clay and low organic matter contents of the surface layers. Laboratory data indicate potassium deficiency.

**pH:** Alkaline throughout. High surface pH is due to effects of alkaline irrigation water (compare with site SE155A).

**Rooting depth:** 68 cm in sampling pit.

### Barriers to root growth:

**Physical:** The calcrete cap on the carbonate layer imposes a significant barrier to root growth depending on the degree of fracturing. It can be disrupted by deep ripping, but the semi-hard carbonate below is still restrictive.

**Chemical:** Low nutrient availability is the main chemical barrier in the natural soil. This is attributable to low clay content of the topsoil, and high carbonate content of the lower subsoil. Under irrigation, substantial increases in salinity / chloride and exchangeable sodium (compare with site SE155A) affect sensitive species

**Waterholding capacity:** (Estimates for potential rootzone of irrigated crops)

Total available: 65 mm (above calcrete)

Readily available: 30 mm (above calcrete)

**Seedling emergence:** Satisfactory to fair, depending on degree of water repellence.

**Workability:** Sandy surface soils are easily worked.

### Erosion Potential:

**Water:** Low.

**Wind:** Moderate.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC1:5 dS/m	ECe dS/m	Cl mg/kg	Org.C %	NO <sub>3</sub> + NH <sub>4</sub> mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> -S mg/kg	React Fe 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		
0-13	8.0	7.6	0	0.40	6.61	562	0.85	7	31	87	31.2	168	1.3	3.05	68	21.3	6.04	8.8	4.09	2.66	1.87	0.22	21.2	
13-48	8.0	7.2	0	0.12	1.41	106	0.10	-	5	37	7.0	198	-	-	-	-	-	2.6	1.03	0.85	0.56	0.13	na	
48-68	8.5	7.7	0	0.76	6.18	1037	0.61	-	18	335	64.0	880	-	-	-	-	-	21.4	7.80	7.96	4.62	1.00	21.5	
68-73	9.0	8.0	0	1.31	10.2	2267	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
73-135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
135-160	9.0	8.0	-	1.00	6.83	1158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

**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.

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

