

SHALLOW LOAMY SAND OVER CALCRETE

General Description: *Shallow loamy sand overlying hard calcreted calcarenite*

Landform: Undulating to rolling rises, usually with abundant surface calcrete and sheet rock outcrop

Substrate: Weakly to moderately consolidated shell sand (Bridgewater Formation), indurated to a calcrete pan in its upper part.

Vegetation: Coastal mallee



Type Site: Site No.: CH084

1:50,000 sheet: 6626-1 (Goolwa)

Hundred:

Nangkita

Annual rainfall: 450 mm

Sampling date:

02/06/95

Landform: Lower slope of an undulating rise, 9% slope

Surface: Soft with 2-10% calcrete stone

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-15	Dark brown soft massive loamy sand. Clear to:
15-28	Dark reddish brown soft massive loamy sand. Sharp to:
28-50	Very hard massive calcrete pan. Clear to:
50-100	Pink very highly calcareous weakly indurated massive shell sand with 5-10% infilled solution holes.



Classification: Basic, Petrocalcic, Leptic Tenosol; medium, slightly gravelly, sandy/sandy, shallow

Summary of Properties

Drainage	Well drained. The soil is never saturated except where the calcrete has no cracks, in which case it will hold up water for a short time.
Fertility	The natural fertility of the soil is low due to the low nutrient holding capacity of sandy materials. Much of the capacity in this soil is due to its organic matter. At this site, phosphorus and magnesium are low. Copper and iron also appear to be deficient.
pH	Neutral in the surface, alkaline with depth.
Rooting depth	In the pit there was abundant root growth to the top of the calcrete (28 cm), with very low densities below that depth.
Barriers to root growth	
Physical:	The sheet calcrete is a major physical barrier.
Chemical:	There is no problem with salt, boron or sodicity.
Water holding capacity	25 mm in root zone (above calcrete). Fractures and solution holes in the calcrete allow roots to grow into the underlying shell sand and extract water from it, thereby substantially increasing the effectively available water.
Seedling emergence	Good
Workability	Good
Erosion Potential	
Water:	Moderately low. Although the site is sloping the soil is permeable and only likely to wash when bare and with heavy rain.
Wind:	Moderate due to the sandy nature of the soil. It should not be left bare.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	6.9	6.9	0	0.09	0.64	1.4	11	157	7.3	1.3	0.96	53.5	60.9	2.36	5.5	6.32	0.90	0.17	0.67	3.1
											*0.3		*8.5	*1.5						
0-15	7.1	7.1	0	0.06	0.59	1.4	10	248	6.9	1.3	-	-	-	-	5.3	5.48	0.84	0.14	0.58	2.6
15-28	7.4	7.3	0	0.05	0.51	0.9	<4	167	5.8	1.2	-	-	-	-	4.8	3.78	0.47	0.14	0.47	2.9
28-50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50-100	9.0	8.4	41.1	0.13	0.96	0.4	<4	20	23.4	0.6	-	-	-	-	1.0	1.82	0.41	0.23	0.06	na

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

* DTPA trace element analyses for "paddock" sample.

CEC (cation exchange capacity) is 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.