

CALCAREOUS SAND

General Description: *Moderately deep sand to loamy sand comprising mainly finely crushed shells, overlying calcrete at depths of between 50 and 100 cm*

Landform: Plains to very gently undulating rises.

Substrate: Shell sand, cemented into calcrete layers of variable hardness.

Vegetation: Mallee.



Type Site: Site No.: CY040
1:50,000 sheet: 6327-1 (Coonarie) Hundred: Coonarie
Annual rainfall: 450 mm Sampling date: 10/08/01
Landform: Lower slope of a gently undulating plain, 1% gradient
Surface: Soft with occasional calcrete stones to 200 mm

Soil Description:

Depth (cm)	Description
0-12	Dark brown soft single grain very highly calcareous loamy sand. Clear to:
12-30	Light brown soft single grain very highly calcareous light loamy sand. Diffuse to:
30-60	Pinkish grey soft single grain very highly calcareous light loamy sand. Sharp to:
60-70	Strongly cemented massive calcrete pan. Clear to:
70-85	Pink soft massive very highly calcareous light loamy sand. Clear to:
85-115	Grey moderately cemented massive calcrete pan. Clear to:
115-130	Grey soft massive very highly calcareous clayey sand with more than 50% semi hard calcrete fragments.



Classification: Petrocalcic, Shelly Calcarosol; non gravelly, sandy / sandy, moderate

Summary of Properties

Drainage:	Rapidly to well drained. The soil rarely remains wet for more than a few hours following heavy or prolonged rainfall.
Fertility	The soil's natural capacity to retain nutrients is moderate in the surface layers and low in the sub surface layers as indicated by the exchangeable cation data. Nutrient availability problems (in particular manganese, phosphorus, and zinc) due to the very high carbonate content are characteristic of these soils. Surface fertility relies largely on organic matter levels which are typically high.
pH	Alkaline throughout.
Rooting depth	85 cm in pit, but few roots below the calcrete (60 cm).
Barriers to root growth	
Physical	The calcrete at 60 cm imposes a severe restriction, but some roots penetrate cracks.
Chemical	There are no chemical barriers, but low nutrient availability below the topsoil probably causes reduced root density in the major part of the profile.
Water holding capacity	Approximately 55 mm in root zone.
Seedling emergence	Satisfactory, although some degree of water repellence is likely.
Workability	The soft surface is easily worked over a range of moisture contents.
Erosion Potential	
Water	Low.
Wind	Moderate to moderately high.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	NO ₃ mg/kg	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	8.3	7.8	>90	0.25	54	3.54	63	202	12	2.7	1.2	13	3.3	2.3	-	23.04	1.30	0.20	0.52	0.8
0-12	8.4	7.8	>90	0.23	35	3.52	49	218	13	3.1	1.4	17	3.3	1.8	-	24.10	1.30	0.19	0.56	0.7
12-30	8.6	7.9	>90	0.22	33	1.48	6	198	10	2.4	0.3	8.7	0.4	0.4	-	17.13	0.93	0.50	0.51	2.6
30-60	8.8	8.1	>90	0.63	10	1.06	3	137	46	2.2	0.3	3.1	0.1	0.3	-	12.74	1.85	1.98	0.31	11.8
60-70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70-85	9.2	8.5	>90	0.58	2	0.42	1	52	46	2.9	0.2	1.2	nd	0.2	-	6.78	2.47	2.13	0.14	18.6
85-115	9.1	8.4	>90	0.98	3	0.46	1	120	69	4.5	1.4	3.2	0.1	0.4	-	8.11	5.24	4.75	0.30	25.8
115-130	9.0	8.4	>90	1.63	10	0.44	2	110	109	4.4	1.5	2.6	0.3	0.8	-	6.97	5.22	6.99	0.26	35.9

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

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. Sum of cations is used as an estimate of CEC at this site in the absence of measured CEC values.