

SHALLOW CALCAREOUS SANDY LOAM ON CALCRETE

General Description: *Shallow calcareous sandy loam grading to a nodular carbonate layer over calcrete*

Landform: Undulating linear stranded coastal dunes

Substrate: Calcreted calcarenite

Vegetation: -



Type Site: Site No.: SE094
 1:50,000 sheet: 6823-1 (Robe) Hundred: Waterhouse
 Annual rainfall: 650 mm Sampling date: 15/10/04
 Landform: Upper slope of calcreted stranded coastal dune
 Surface: Soft with 10-20% calcrete fragments

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark brown massive calcareous fine sandy loam with 10-20% nodular calcrete fragments. Gradual change to:
10-20	Dark brown massive calcareous fine sandy loam with 20-50% large calcrete nodules and fragments. Sharp change to:
20-70	Hard nodular calcrete. Clear change to:
70-220	Soft aeolianite sand with semi-hard root linings. Sharp change to:
220-240	Hard dense calcrete with dark intraclasts. Sharp change to:
240-350	Massive hard calcarenite.



Classification: Hypervescent, Petrocalcic, Supracalcic, Calcarosol; medium, gravelly, loamy / loamy, very shallow

Summary of Properties

- Drainage:** Well to rapidly drained. Site is high in the landscape and has a permeable substrate. No part of the soil is likely to stay wet for more than a day.
- Fertility:** Inherent fertility is low. Test data indicative of natural fertility levels of this soil (Site has never been used for primary production). Deficiencies of phosphorus, manganese, zinc and copper are likely due to carbonate induced fixation.
- pH:** Moderately alkaline.
- Rooting depth:** 20 cm (i.e. to calcrete).
- Barriers to root growth:**
- Physical:** Some impedance by calcrete layers. Root growth into and below the calcrete depends on density of cracks and joints.
- Chemical:** Calcareous soil will not suit all plants. Material below shallow calcrete layer is not chemically hostile, and provides potential source of additional water.
- Water holding capacity:** Approximately 25 mm unless roots can penetrate calcrete.
- Seedling emergence:** Satisfactory, although soil tends to hard setting if organic matter levels decline.
- Workability:** Soil is easily worked, but surface and shallow stone can damage or abrade equipment.

Erosion Potential

- Water:** Moderate due to slope, and shallow depth to calcrete.
- Wind:** Soil erodibility is moderately high, but stony surface will afford some protection from wind erosion.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-10	8.2	7.6	17.7	0.14	0.40	2.8	8	174	13	3.2	1.2	0.4	19.0	1.3	8.1	22.6*	20.8*	1.3	0.1	0.4	0.4
10-20	8.4	7.7	9.0	0.11	0.30	1.4	6	127	6	2.4	0.8	0.5	15.4	0.7	4.4	20.0*	18.6*	0.8	0.2	0.3	1.2

Note: * High values probably indicate that calcium carbonate removal was incomplete prior to cation extraction.

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.