

SHALLOW CALCAREOUS SANDY LOAM ON CALCRETE (Shallow Wiabuna soil)

General Description: *Calcareous sandy loam grading to a very highly calcareous sandy clay loam over calcrete within 50 cm*

Landform: Dunefield of low to moderate parallel sandhills.

Substrate: Calcrete capping very highly calcareous clayey sand over Tertiary clay.

Vegetation: Mallee.



Type Site: Site No.: EC058

1:50,000 sheet: 6031-3 (Kopi)

Hundred: Warrambo

Annual rainfall: 325 mm

Sampling date: 11/03/88

Landform: Stony swale between sandhills

Surface: Soft

Soil Description:

Depth (cm)	Description
0-15	Dark brown single grain soft moderately calcareous sandy loam. Abrupt to:
15-23	Dark brown massive highly calcareous fine sandy clay loam. Abrupt to:
23-35	Dark yellowish brown massive very highly calcareous fine sandy clay loam with 20-50% carbonate nodules (Class III B carbonate). Sharp to:
35-55	Calcrete (Class II carbonate). Clear to:
55-120	Yellow massive very highly calcareous clayey coarse sand. Gradual to:
120-190	Strong brown massive very highly calcareous coarse sandy clay. Gradual to:
190-230	Yellowish red moderately well structured medium heavy clay.



Classification: Ceteric, Petrocalcic, Supracalcic Calcarosol; medium, non-gravelly, loamy / clay loamy, shallow

Summary of Properties

Drainage	Well drained. Soil rarely remains wet for more than a day or so following heavy or prolonged rainfall, except where there are no fractures in the calcrete.
Fertility	Natural fertility is moderately low. Nutrient retention capacity is reasonable, but high carbonate levels reduce availability of phosphorus, zinc, copper and manganese. Regular phosphorus applications are essential. Nitrogen levels depend on legume content of pastures and cropping history. Zinc and copper levels are marginal at sampling site.
pH	Alkaline at the surface, strongly alkaline with depth.
Rooting depth	35 cm in pit.
Barriers to root growth	
Physical:	The calcrete prevents most deeper root growth. Some roots penetrate through cracks.
Chemical:	Very high pH and sodicity below the calcrete prevent further growth of any roots that do penetrate through cracks.
Water holding capacity	Approximately 45 mm in the root zone.
Seedling emergence:	Satisfactory.
Workability:	Soft surface is easily worked, although surface stone interferes with and abrades equipment.
Erosion Potential	
Water:	Low.
Wind:	Moderately low.

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 -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	
0-15	8.2	8.0	7	0.22	0.57	-	-	-	-	1.0	0.26	2.4	5.36	0.28	6.8	4.91	1.04	0.06	0.67	0.1
15-23	8.4	8.0	12	0.18	0.46	-	-	-	-	2.0	0.60	2.7	4.24	0.19	14.8	12.93	2.53	0.11	1.40	0.7
23-35	8.7	8.2	24	0.20	0.46	-	-	-	-	3.1	1.05	2.3	3.33	0.17	14.0	11.32	5.34	0.22	0.85	1.6
35-55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55-120	10.0	8.0	48	0.34	2.09	-	-	-	-	4.9	1.03	1.1	0.24	0.26	3.2	1.03	1.48	1.58	0.45	na
120-190	9.8	8.4	48	0.70	4.61	-	-	-	-	14.5	1.85	1.8	1.33	0.52	9.0	1.40	3.11	4.04	1.22	45
190-230	8.8	8.1	87	1.16	4.47	-	-	-	-	37.4	0.87	2.0	3.51	0.25	20.5	1.43	6.65	8.50	2.50	41

Note: 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.