

CALCAREOUS SANDY LOAM OVER CLAY (Minnipa / Wiabuna soil)

General Description: *Calcareous sandy loam grading to a very highly calcareous sandy clay loam over rubbly carbonate with clayey substrate within 120 cm*

Landform: Gently undulating rises.

Substrate: Tertiary clay capped by Woorinen Formation carbonates.

Vegetation: Mallee



Type Site: Site No.: EC054

1:50,000 sheet:	5932-3 (Minnipa)	Hundred:	Minnipa
Annual rainfall:	350 mm	Sampling date:	17/01/92
Landform:	Lower slope of gently undulating rise, 1% slope		
Surface:	Soft with no stone		

Soil Description:

Depth (cm)	Description
0-10	Dark brown soft slightly calcareous sandy loam with weak granular structure. Clear to:
10-25	Dark brown firm massive moderately calcareous fine sandy loam. Clear to:
25-42	Yellowish red very highly calcareous light sandy clay loam with moderate subangular blocky structure. Gradual to:
42-70	Orange very highly calcareous light sandy clay loam with 20-50% Class III B carbonate nodules. Clear to:
70-90	Reddish yellow very highly calcareous hard laminar Class III C carbonate. Diffuse to:
90-130	Reddish yellow highly calcareous light clay with minor ironstone concretions. Diffuse to:
130-200	Reddish yellow firm light clay with weak coarse angular blocky structure.



Classification: Endohypersodic, Regolithic, Lithocalcic Calcarosol; thick, non-gravelly, loamy / clay loamy, deep

Summary of Properties

Drainage	Well drained. The soil rarely remains wet for more than a day or so following heavy or prolonged rainfall.
Fertility	Natural fertility is moderate as indicated by the exchangeable cation data. Phosphorus availability is somewhat suppressed by the calcareous soil, and regular applications are essential. Nitrogen levels depend on legume content of pastures and cropping history. Zinc and copper deficiencies may occur from time to time, but levels at sampling site are adequate. Organic carbon concentrations are adequate.
pH	Slightly alkaline at the surface, strongly alkaline with depth.
Rooting depth	130 cm in pit, but few roots below 70 cm.
Barriers to root growth	
Physical:	There are no physical barriers to root growth above the laminar carbonate layer which severely restricts further growth.
Chemical:	High boron levels from 42 cm, and high sodicity and pH from 90 cm restrict deeper root growth.
Water holding capacity	Approximately 100 mm in the root zone.
Seedling emergence:	Satisfactory.
Workability:	Soft surface is easily worked.
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	
0-10	7.7	7.4	1	0.3	1.4	0.98	36	-	-	3.2	0.25	-	6.8	1.5	13.9	10.72	1.58	0.11	2.79	0.8
10-25	8.2	7.8	4	0.1	1.1	<0.1	7.7	-	-	3.0	0.34	-	5.2	0.33	15.7	11.72	2.36	0.17	2.63	1.1
25-42	8.3	7.8	14	0.2	3.4	0.37	5.2	-	-	3.7	0.38	-	3.0	0.19	14.1	9.77	4.04	0.35	1.35	2.5
42-70	8.7	8.0	54	0.2	11.6	0.33	4.3	-	-	31.0	0.36	-	1.8	0.48	8.9	4.07	5.40	0.64	0.58	7.2
70-90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90-130	9.6	8.5	52	0.5	9.7	0.13	3.5	-	-	41.0	0.21	-	0.60	<0.1	9.8	1.38	4.58	5.15	0.94	52.6
130-200	9.5	8.4	37	0.4	10.5	<0.1	3.3	-	-	38.0	0.19	-	2.1	0.12	8.5	1.04	4.04	3.23	1.15	38.0

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.