SHALLOW SANDY LOAM ON CALCRETE

General Description: *Red brown calcareous loamy sand to loam with abundant calcrete fragments, overlying massive sheet calcrete at shallow depth, grading to soft very highly calcareous yellowish clayey sand to sandy clay.*

Landform: Stony flats and low benches

Substrate: Sheet calcrete (Ripon or Bakara Formations), underlain by Hindmarsh Clay equivalent

Vegetation: Mallee scrub

Type Site: Site No.: CM035

1:50,000 sheet:	6530-3 (Lochiel)	Hundred:	Cameron
Annual rainfall:	350 mm	Sampling date:	14/05/93
Landform:	Flat, 0% slope		
Surface:	Soft with about 20% surface calcrete fragments to 20 cm diameter		

Soil Description:

Depth (cm)	*Description*
0-10	Dark reddish brown highly calcareous fine sandy loam with 20% calcrete fragments. Abrupt to:
10-25	Dark reddish brown highly calcareous fine sandy clay loam with moderate blocky structure and 60% calcrete fragments. Abrupt to:
25-60	Massive calcrete pan (Class II carbonate). Clear to:
60-130	Reddish yellow very highly calcareous semi-consolidated clayey sand with 10% calcrete fragments. Gradual to:
130-150	Red moderately calcareous medium clay (Hindmarsh Clay equivalent) with strong coarse prismatic structure and sporadic soft calcareous segregations.

Classification: Endohypersodic, Petrocalcic, Lithocalcic Calcarosol; medium, moderately gravelly, loamy / clay loamy, shallow

Summary of Properties

Drainage The soil is rapidly drained and is unlikely to remain wet for more than a few hours.

Fertility The natural fertility of the soil is moderate to low, a large part of its nutrient retention capacity being attributable to organic matter. Maintenance of organic matter levels is vital for fertility in these soils. Phosphorus levels at the sampling site are moderately low.

pH Alkaline at the surface grading to strongly alkaline with depth.

Rooting depth Most roots occur above the calcrete pan (25 cm). Very few roots penetrate.

Barriers to root growth

Physical: The massive, relatively unfractured calcrete is a major barrier to root growth. The calcrete is usually not uniform across paddocks, so better growth can be expected where the calcrete is fractured or is in rubble form.

Chemical: The only chemical barriers to root growth (viz. induced nutrient deficiency caused by high pH and high sodicity) are below the calcrete, so are not relevant.

Water holding capacity Approximately 30 mm in root zone. This is highly dependent on the depth to the calcrete and its form (i.e. the potential for roots to penetrate).

Seedling emergence Good.

Workability Good to fair, due to stoniness.

Erosion Potential

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	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	
Paddock	8.0	7.7	2.0	0.22	1.57	2.1	21	788	-	2.8	0.6	6	10.4	0.6	19.0	15.52	1.65	0.09	1.86	0.5
0-10	8.0	7.7	2.5	0.23	1.45	2.1	18	772	-	2.9	0.6	6	10.6	0.4	20.3	16.50	1.70	0.07	1.91	0.4
10-25	8.3	7.9	8.1	0.16	0.64	1.7	10	393	-	3.0	0.9	10	5.0	0.6	18.3	14.79	1.91	0.20	1.05	1.1
25-60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60-130	9.5	8.4	72.0	0.37	1.95	0.2	4	147	-	3.8	0.4	2	0.4	0.1	7.3	2.46	3.82	1.96	0.44	26.8
130-150	9.6	8.6	-	0.61	1.03	-	<4	444	-	10.0	0.6	6	0.9	0.1	19.8	4.01	7.17	8.35	1.29	42.2

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.