HARD SANDY LOAM OVER DISPERSIVE RED CLAY

General Description: *Hard setting sandy surface soil sharply overlying a hard reddish clay subsoil with columnar structure, grading to a Class III A carbonate layer on sandstone*

Landform: Slopes of undulating rises and low hills

Substrate: Weakly cemented Tertiary sandstone with pockets of mostly soft carbonate

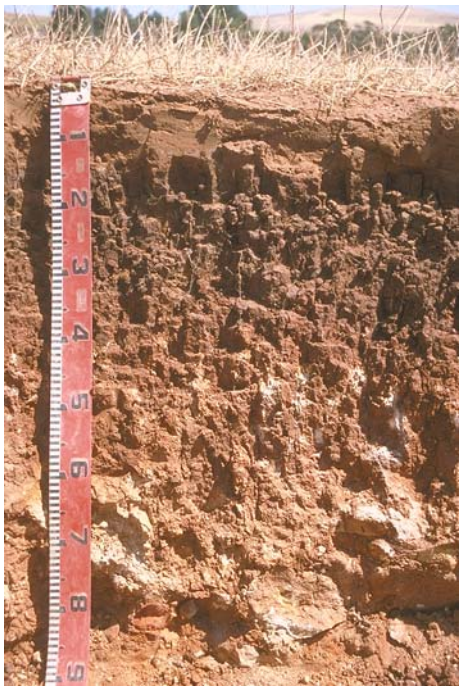
Vegetation:

Type Site: Site No.: CM047

1:50,000 sheet:	6530-3 (Lochiel)	Hundred:	Cameron
Annual rainfall:	450 mm	Sampling date:	28/10/93
Landform:	Midslope of an undulating rise, 6% slope		
Surface:	Hard setting with no stones		

Soil Description:

Depth (cm)	*Description*
0-12	Yellowish red massive sandy loam. Abrupt to:
12-40	Red medium clay with strong coarse prismatic (breaking to angular blocky) structure. Clear to:
40-50	Red highly calcareous medium clay with strong prismatic (breaking to angular blocky) structure, and 2-10% pockets of soft carbonate. Clear to:
50-75	Yellowish red very highly calcareous light medium clay with moderate blocky structure, 20-50% sandstone fragments and 10-20% pockets of soft carbonate. Clear to:
75-80	Moderately hard sandstone.



Classification: Calcic, Mesonatric, Red Sodosol; medium, non-gravelly, loamy / clayey, moderate

Summary of Properties

Drainage Moderately well drained. Water may accumulate on top of the clay layer, saturating the upper profile for a week or so.

Fertility The subsoil clay has a high natural capacity to store nutrients, but the surface soil with relatively low clay content and very low organic matter levels has a limited capacity to supply macro nutrients such as calcium and has low nitrogen status. Phosphorus and potassium levels are adequate.

pH Slightly acidic at the surface, strongly alkaline with depth.

Rooting depth 75 cm in pit, but there are very few roots below 50 cm.

Barriers to root growth

Physical: The shallow and variable depth to the sandstone prevents even and optimum root growth. The tough subsoil clay also prevents good proliferation, most roots being confined to the surfaces of the coarse clay aggregates.

Chemical: Low nitrogen status, high sodium, high pH and marginal salinity (in the subsoil) contribute to low root densities.

Water holding capacity Approximately 70 mm.

Seedling emergence Fair due to susceptibility to surface sealing, caused by sodic (dispersive) soil and low organic matter levels.

Workability Fair, due to the limited moisture range for effective working (a result of low organic matter levels).

Erosion Potential

Water: Moderate, due to the slope and high soil erodibility.

Wind: Moderately low to low (only a problem if excessively cultivated or overgrazed).

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	6.5	5.7	0	0.07	0.58	0.7	34	286	-	1.2	0.5	28	12.0	0.6	6.7	3.7	1.5	0.65	0.92	9.7
0-12	6.6	5.8	0	0.07	0.62	0.7	51	240	-	1.6	0.6	19	9.5	0.4	7.7	4.2	2.5	1.11	0.90	14.4
12-40	8.4	7.7	0	0.37	1.57	0.7	10	381	-	15.5	0.9	8	3.0	0.2	32.6	11.3	12.4	8.09	1.59	24.8
40-50	9.3	8.5	8.5	0.67	3.04	0.2	7	288	-	11.5	0.7	4	1.3	0.2	21.7	6.9	8.9	6.26	0.96	28.8
50-75	9.4	8.5	3.9	0.64	4.00	0.1	5	204	-	7.9	0.6	3	0.7	0.1	14.3	4.5	6.3	4.77	0.64	33.4

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.