

GRADATIONAL RED CLAY LOAM

General Description: *Dark brown clay loam to clay overlying a dark reddish brown well structured clay becoming highly calcareous with depth and grading to weathered quartzitic basement rock*

Landform: Slopes of undulating to rolling low hills

Substrate: Fine grained quartzite or quartzitic siltstone mantled by soft carbonate

Vegetation:



Type Site: Site No.: CM048

1:50,000 sheet: 6530-3 (Lochiel)

Hundred:

Cameron

Annual rainfall: 450 mm

Sampling date:

22/12/93

Landform: Midslope of rolling low hills, 8% slope

Surface: Firm with 10-20% quartzite stones

Soil Description:

Depth (cm)	Description
0-10	Dark reddish brown light clay with weak subangular structure and 2-10% quartzite stones. Abrupt to:
10-25	Dark reddish brown medium heavy clay with strong fine polyhedral structure. Abrupt to:
25-35	Dark reddish brown highly calcareous light clay with strong fine polyhedral structure. Clear to:
35-70	Yellowish red very highly calcareous light medium clay with weak subangular blocky structure, 20-50% soft carbonate segregations and minor quartzite fragments. Diffuse to:
70-110	Yellowish red very highly calcareous medium clay with weak subangular blocky structure, 20-50% soft carbonate segregations and 10-20% quartzite fragments.



Classification: Sodic, Hypercalcic, Red Dermosol; medium, slightly gravelly, clayey / clayey, deep

Summary of Properties

Drainage	The soil is well drained, having a well structured profile and being on an 8% slope. However the clayey soil remains wet for up to a week after heavy rain.
Fertility	Inherent fertility is very high as indicated by the high cation exchange capacity (CEC) and the high levels of exchangeable calcium (Ca) and organic carbon, (indicating good nitrogen reserves). Phosphorus and potassium levels are high, but zinc is marginal (critical level is 0.5 mg/kg).
pH	Slightly alkaline at the surface grading to alkaline with depth. Surface pH is probably elevated as a result of the deposition of carbonate dust.
Rooting depth	There are roots to 110 cm in the pit, but very few below 70 cm. Below 35 cm roots are largely confined to vertical channels in the soil.
Barriers to root growth	
Physical:	There are no apparent barriers above the quartzite, the depth to which will vary across the landscape.
Chemical:	No chemical barriers. Salt and boron levels are low, the pH is less than 9 and exchangeable sodium is less than 25%.
Water holding capacity	Approximately 110 mm in the root zone.
Seedling emergence	Fair to good. If organic carbon levels decline, the surface may tend to seal over.
Workability	Fair to good. The surface becomes sticky after rain, restricting accessibility.
Erosion Potential	
Water:	Moderate, due to the 8% slope. The soil itself is relatively stable.
Wind:	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	
Paddock	7.5	7.3	2.6	0.31	0.97	3.1	58	932	-	2.6	1.1	8	13.7	0.6	40.0	31.9	3.8	0.38	5.03	1.0
0-10	7.6	7.4	1.1	0.31	1.51	3.4	76	1238	-	3.0	0.8	5	10.3	0.7	41.8	34.8	3.3	0.34	6.16	0.8
10-25	8.0	7.7	0.5	0.15	0.64	1.6	17	481	-	2.4	1.1	7	4.1	0.3	42.2	36.8	3.7	0.70	1.92	1.7
25-35	8.2	7.8	23.4	0.15	0.47	1.0	12	163	-	1.1	1.0	8	3.2	0.3	29.3	26.9	3.2	0.74	0.79	2.5
35-70	8.3	7.7	46.4	0.16	0.55	0.7	9	108	-	1.1	1.0	5	2.7	0.2	22.5	19.1	3.1	0.65	0.53	2.9
70-110	8.6	7.8	49.6	0.34	1.46	0.6	6	112	-	1.7	1.0	5	1.6	0.2	23.2	13.2	8.6	2.09	0.37	9.0

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.