CLAY LOAM OVER RED CLAY

General Description: *Red brown clay loam overlying a red brown well structured clay grading to a highly calcareous layer of either soft carbonate or rubble in a clay matrix, forming in heavy clay with abundant quartzite stone*

Landform: Slopes and crests of undulating to rolling low hills

Substrate: Stony red strongly structured heavy clay, probably formed from the weathering of basement quartzite

Vegetation: Peppermint box / sheoak woodland

Type Site:

Site No.:	CM031	1:50,000 mapsheet:	6530-2 (Blyth)
Hundred:	Everard	Easting:	249050
Section:	315	Northing:	6236300
Sampling date:	14/05/93	Annual rainfall:	445 mm average

Crest of a rolling low hill, with a slope of 3%, a hard setting surface and 2-10% surface quartzite.

Soil Description:

Depth (cm)	*Description*
0-5	Dark reddish brown massive light clay loam. Sharp to:
5-22	Dark reddish brown medium heavy clay with strong prismatic breaking to polyhedral structure. Abrupt to:
22-35	Yellowish red massive very highly calcareous light clay with 30% carbonate rubble (Class III B carbonate). Clear to:
35-85	Reddish yellow massive very highly calcareous sandy light clay with 15% carbonate rubble and quartzite stones. Gradual to:
85-120	Yellowish red highly calcareous medium heavy clay with strong blocky structure (Class I carbonate) and 10% quartzite stones. Diffuse to:
120-160	Red heavy clay with strong blocky structure, 5% soft carbonate segregations and 20% quartzite stones.

Classification: Sodic, Supracalcic, Red Chromosol; thin, non-gravelly, clay loamy / clayey, deep

Summary of Properties

Drainage: The soil is well drained and although the clay subsoil impedes water movement to some extent, the profile is unlikely to remain saturated for more than a few days.

Fertility: The soil has a high nutrient retention capacity as indicated by the exchangeable cation data. This is a function of high clay content and favourable organic matter levels. Phosphorus is low at sampling site.

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

Rooting depth: 85 cm in sampling pit.

Barriers to root growth:

Physical: The deep subsoil clay (ie below 85 cm) has high strength and would restrict growth of any roots that penetrated that far.

Chemical: Poor subsoil root growth conditions are due to toxic levels of boron from 85 cm, high pH and carbonate content (inducing trace element deficiencies) from 35 cm, and high ESP from 35 cm.

Waterholding capacity: Approximately 110 mm in rootzone.

Seedling emergence: Fair, due to the tendency of the surface to seal.

Workability: Fair. The surface has a narrow moisture range for effective working. It should respond to gypsum application.

Erosion Potential:

Water: Moderately low, although on a steeper slope (where they commonly occur), this soil would have high erosion potential.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 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	7.9	7.7	0.7	0.18	0.75	1.9	18	967	-	5.0	1.4	7	8.2	0.7	33.1	25.11	2.76	0.26	2.11	0.8
0-5	7.8	7.6	0.4	0.19	0.90	2.3	23	1236	-	4.7	1.3	6	9.4	0.8	33.0	24.58	3.41	0.15	2.90	0.5
5-22	8.0	7.7	0.2	0.14	0.40	1.0	7	646	-	5.0	1.7	10	5.5	0.1	36.9	25.89	4.97	0.66	1.78	1.8
22-35	8.6	8.0	45.3	0.30	1.28	0.5	8	245	-	4.5	1.6	7	3.0	0.2	19.2	13.00	4.28	1.41	0.49	7.3
35-85	9.4	8.1	63.4	0.66	3.77	0.3	9	275	-	14.3	1.7	4	1.0	0.1	11.1	3.45	5.19	3.65	0.52	32.9
85-120	9.5	8.6	38.4	0.97	3.54	0.1	6	440	-	29.2	0.7	7	1.1	0.2	19.6	2.88	8.47	7.77	1.09	39.6
120-160	9.5	8.8	5.2	1.10	2.56	0.2	5	510	-	35.7	0.8	12	1.2	0.2	26.9	3.22	11.32	10.27	1.15	38.2

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.

Further information: DEWNR Soil and Land Program