RED CRACKING CLAY

General Description: *Red cracking clay with cloddy surface soil and dispersive subsoil which is calcareous with depth*

Subgroup soil: E2

Landform: Level plain

Substrate: Medium heavy clay

Vegetation: Annual pasture with annual barley grass.

Type Site:

Site No:	SE140	1:50,000 mapsheet:	7025-2 (Tatiara)
Hundred:	Tatiara	Easting:	492460
Section:	915	Northing:	5965070
Sampling date:	20/10/08	Annual rainfall:	510 mm average

Non-irrigated plain.

Soil Description:

Depth (cm)	*Description*
0–11	Hardsetting, cracking, very dark grey, heavy fine sandy clay loam with weak cloddy structure.
11–25	Very dark grey and yellowish red, light clay with weak angular blocky parting to weak, fine polyhedral structure.
25–45	Slightly calcareous, yellowish red, light medium clay with weak angular blocky parting to weak, fine polyhedral structure.
45–95	Highly calcareous, light yellowish brown, yellowish red and very dark grey, medium heavy clay with weak, fine polyhedral.
95–135	Highly calcareous, olive yellow, medium heavy clay with weak subangular blocky parting to weak, fine lenticular structure.
135–170	Highly calcareous, olive yellow, medium heavy clay with weak subangular blocky parting to weak, fine lenticular structure.
Note:	Old tree roots are evident at depth.

Classification: Vertic, Calcic, Red Dermosol; medium, non-gravelly, clay loamy/clayey, moderate.

Summary of Properties

Drainage: Drainage is moderately good to imperfect.

Fertility: Inherent fertility is good, as the soil as a high capacity to retain and supply nutrients owing to high clay content.

pH: Soil pH ranges from alkaline in the surface soil to strongly alkaline in the middle to lower subsoil.

Rooting depth: Viewed in the pit: most roots occur in the top 11 cm, with some to 45 cm.

Barriers to Root Growth:

Physical: Dispersiveness and high soil strength limit root growth with depth.

Chemical: High pH, low levels and restricted availability of some nutrients (e.g. phosphorus and zinc), raised levels of salts, and probably low oxygen levels associated with wetness and high bulk density, may limit root growth with depth. Also, phosphorus and sulfur levels are low in the surface soil.

Waterholding capacity: Moderately low. Total available: approx 60 mm [(0.11x200)+(0.14x170)+(0.2x150x0.5)].

Seedling emergence: Moderate to poor. Careful surface management at optimum moisture content is required, together with maintenance and improvement of organic matter and possibly gypsum, to improve surface condition.

Workability: Moderate to poor owing to high clay content and relatively poor structure (see above).

Erosion Potential:

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO_4 -S mg/kg	Boron mg/kg	Al $CaCl_2$ mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg						Est. ESP
													Cu	Fe	Mn	Zn		Ca	Mg	Na	K	Al	H	
Paddock	8.7	7.8	1.4	0.24	1.02	1.1	11	397	70	5.3	2.8	0	1.5	80	27	1.1	22.9	16.4	5.0	0.4	1.1	0.0	0.0	2
0-11	8.3	7.5	0.3	0.15	0.68	1.2	10	402	34	4.3	2	0	1.6	105	43	1.0	19.8	13.9	4.3	0.4	1.2	0.0	0.0	2
11-25	8.4	7.4	0.3	0.13	0.86	0.5	2	243	55	4.5	2.6	0	1.3	105	35	0.4	17.9	10.8	5.6	0.8	0.7	0.0	0.0	4
25-45	9.1	8.3	0.9	0.32	1.82	0.3	2	313	159	18.7	7.8	0	1.2	60	35	0.6	19.8	10.0	7.4	1.5	0.9	0.0	0.0	8
45-95	9.5	8.5	11.6	0.55	3.67	0.2	2	416	434	69.5	11.7	0	0.9	6	3.4	0.3	35.9	23.9	8.8	2.0	1.1	0.1	0.1	6
95-135	9.4	8.6	9.2	0.81	4.09	0.1	2	437	532	92.7	11.7	0	0.9	8	3.4	0.6	27.8	17.9	7.6	1.3	0.9	0.0	0.1	5
135-170	9.3	8.6	8.7	0.97	4.83	0.1	2	461	670	91.0	12.3	0	0.9	10	4.9	0.6	26.0	14.5	7.9	2.4	1.1	0.0	0.1	9

Note: Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

Sum of cations approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.

Further information: DEWNR Soil and Land Program