THIN SANDY LOAM OVER HARD YELLOW CLAY

General Description: *Delved thin sandy loam with a narrow bleached band over brownish yellow very hard, very coarsely structured light clay.*

Landform: Gently undulating plains with low sand dunes.

Substrate: Tertiary age clay mantled by fine carbonates.

Vegetation:

Type Site:

Site No.:	SE122	1:50,000 mapsheet:	7025-2 (Tatiara)
Hundred:	Tatiara	Easting:	483910
Section:	453	Northing:	5986400
Sampling date:	30/10/06	Annual rainfall:	485 mm average

Crest of low rise on gently undulating plain. Soft surface with no stones. Paddock delved to 30 cm.

Soil Description:

Depth (cm)	*Description*
0-8	Very dark grey brown friable sandy loam with 10-20% (delved) clay fragments. Abundant roots. Clear to:
8-15	Light yellowish brown (bleached) soft single grain sand. Few roots. Sharp to:
15-55	Brownish yellow very hard sandy light clay with very coarse columnar, breaking to coarse angular blocky, structure. Few roots (roots common on column faces). Gradual to:
8-30	Delved zone - mix of upper three horizons along delve line. Roots common in sand, few in clay.
55-85	Brownish yellow very hard light medium clay with coarse angular blocky structure and 20-50% carbonate veins. No roots. Diffuse to:
85-140	Pale yellow and light grey hard light clay with very coarse weak prismatic structure. No roots.

Classification: Calcic, Hypernatric, Yellow Sodosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Imperfectly drained. Water is likely to perch on top of the poorly structured clay for several weeks.

Fertility: Inherent fertility is moderately low, as indicated by the exchangeable cation data, but delving has improved cation status of near surface soil. Levels of tested nutrient elements are adequate, although trace element concentrations are marginal- tissue testing required for confirmation.

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

Rooting depth: 55 cm in sampling pit.

Barriers to root growth:

Physical: The coarsely structured clay restricts root growth with low root densities inside the clay columns. The platy pans within the calcreted limestone presents a severe barrier to root penetration.

Chemical: High pH and sodicity from 55 cm restrict deeper root penetration.

Waterholding capacity: Approximately 70 mm total available water in the potential rootzone.

Seedling emergence: Satisfactory.

Workability: Good.

Erosion Potential:

Water: Low.

Wind: Moderately low, but delved clay fragments help to stabilize natural surface.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Cl mg/kg	Org.C %	NO_3 + NH_4 mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO_4-S mg/kg	React Fe mg/kg	Ext Al mg/kg	Boron 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	
0-8	6.3	5.5	0	0.11	1.26	53	1.47	8	22	286	28.7	774	0	1.0	0.7	129	5.5	0.6	9.2	5.96	2.15	0.35	0.72	3.8
8-15	7.0	6.0	0	0.05	0.61	14	0.36	2	6	29	5.2	253	0	0.4	0.2	88	1.2	0.2	1.7	0.83	0.49	0.26	0.07	15.8
15-55	8.6	7.6	0	0.30	1.49	118	0.30	2	2	378	31.6	522	0	5.1	0.2	29	10.7	0.2	18.8	3.55	9.19	5.07	1.01	26.9
55-85	9.5	8.7	7	0.76	3.31	333	0.21	2	2	366	80.3	422	0	7.8	0.3	13	1.3	0.2	24.6	6.82	9.54	7.21	1.04	29.3
85-140	9.0	8.2	0	0.73	3.51	465	0.25	3	2	393	80.9	361	0	7.5	0.3	26	15.3	0.2	22.2	2.45	10.1	8.63	1.03	38.9
8-30*	6.8	5.6	0	0.11	0.76	43	0.79	6	3	337	23.9	896	0	2.5	0.1	74	3.6	0.2	19.8	7.97	9.64	1.26	0.94	6.4
8-30**	5.7	4.3	0	0.03	0.55	16	1.61	3	24	54	8.9	672	4.7	0.7	0.2	255	1.9	0.1	3.6	2.38	0.81	0.32	0.1	8.8

Note: Sum of cations, in a neutral to alkaline soil, 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.

* Clay lumps sampled from within the zone altered by delving.
** Sand sampled from within the zone altered by delving.

Further information: DEWNR Soil and Land Program