SANDY LOAM OVER HARD DISPERSIVE RED CLAY

General Description: *Thin sandy loam over a hard coarsely structure dispersive red and brown mottled clay, calcareous with depth, grading to Tertiary sandy clay.*

Landform: Slopes of gently undulating rises.

Substrate: Fine to medium grained Tertiary age sediments.

Vegetation: Grey box – blue gum

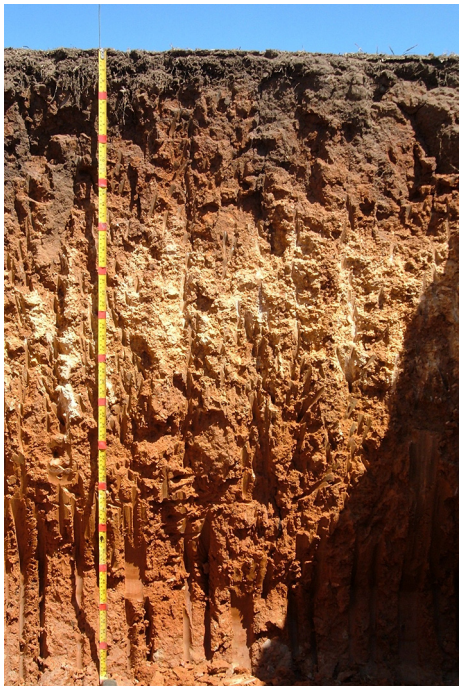
Type Site:

Site No.:	SE001B	1:50,000 mapsheet:	7025-2 (Tatiara)
Hundred:	Tatiara	Easting:	493730
Section:	867	Northing:	5980300
Sampling date:	22/02/07	Annual rainfall:	480 mm average

Mid slope of gentle rise, 3% slope. Loose (cultivated) surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-8	Very dark brown sandy loam with moderate granular structure. Soil loose when cultivated, but is naturally hard setting. Abundant roots. Clear to:
8-20	Yellowish red and reddish brown very hard sandy light medium clay with coarse prismatic, breaking to angular blocky, structure. Roots common. Diffuse to:
20-40	As for 8-20 cm, but slightly calcareous. Clear to:
40-80	Reddish yellow hard very highly calcareous sandy light medium clay with weak moderate angular blocky structure and more than 50% veins of pink fine carbonate. Few roots. Clear to:
80-120	Yellowish red and very pale brown very hard sandy light medium clay with weak prismatic structure. Few roots. Diffuse to:
120-150	Red and yellow hard massive sandy light medium clay. No roots.



Classification: Hypercalcic, Subnatric, Red Sodosol: thin, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Imperfectly drained. Water perches on the surface of the subsoil clay, saturating the lower topsoil and upper subsoil for periods of up to several weeks following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate, with increasing nutrient retention capacity at depth, as indicated by the exchangeable cation data. Soil supply of P, K and S is more than adequate for most crops and pastures. Trace element levels are probably adequate, although manganese may be low.

pH: Neutral at the surface, alkaline in the subsoil, grading to strongly alkaline with depth.

Rooting depth: 120 cm in pit, but few roots below 40 cm.

Barriers to root growth:

Physical: The hard, coarsely structured, dispersive subsoil confines most root growth to the surfaces of the aggregates, resulting in poor root distribution patterns.

Chemical: High pH from 40 cm, and high sodicity and boron levels from 80 cm limit deep root penetration.

Waterholding capacity: Approximately 50 mm in the main rootzone, with an additional 20 mm in the 40-120 cm layers.

Seedling emergence: Fair to good, depending on the degree of hard setting.

Workability: Fair due to hard surface and narrow moisture range for effective working.

Erosion Potential:

Water: Moderate. Soils with thin sandy loam and slowly permeable subsoil clays are highly erodible. Even gentle slopes are vulnerable to sheet and rill erosion.

Wind: Low to moderately low.

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	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	6.9	6.0	0	0.14	0.98	70	1.73	24	89	474	5.8	807	2.6	1.9	232	5.8	5.8	11.0	7.8	1.36	0.56	1.26	5.1
8-20	7.7	7.0	0	0.13	1.39	127	0.54	6	16	128	13.2	1000	1.7	1.4	107	0.5	0.5	17.0	8.69	6.86	1.09	0.37	6.4
20-40	8.8	8.1	0	0.21	1.31	47	0.23	5	4	139	39.1	929	4.9	1.3	68	0.5	0.5	24.7	10.2	11.7	2.42	0.40	9.8
40-80	9.5	8.5	27	0.49	2.09	131	0.23	3	3	168	127	526	9.8	0.9	14	0.4	0.4	31.0	10.8	13.8	5.98	0.50	19.3
80-120	9.5	8.8	1	0.51	2.39	241	0.08	2	2	166	141	393	15.1	1.4	24	0.5	0.5	24.3	4.63	11.5	7.65	0.52	31.4
120-150	9.0	8.1	0	0.46	3.70	361	0.08	3	2	144	127	495	11.3	0.7	28	0.4	0.4	20.1	2.5	10.4	6.82	0.41	33.9

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.

Further information: DEWNR Soil and Land Program