SANDY LOAM OVER RED CLAY

General Description: *Medium thickness hard red brown sandy loam with a paler coloured subsurface, over a red coarsely structured clay, calcareous with depth*

Landform: Alluvial plain

Substrate: Brown and red alluvial sandy clay

Vegetation:

Type Site:

Site No.:	CH170	1:50,000 mapsheet:	6627-2 (Milang)
Hundred:	Alexandrina	Easting:	306550
Section:	78	Northing:	6078260
Sampling date:	30/03/2009	Annual rainfall:	465 mm average

Flat plain. Hard setting surface, no stones.

Soil Description:

Depth (cm)	*Description*
0-10	Dark reddish brown firm massive sandy loam. Clear to:
10-18	Reddish brown, with sporadic bleaching, very hard massive light sandy clay loam. Sharp to:
18-40	Dark reddish brown very hard medium heavy clay with coarse prismatic breaking to medium angular blocky structure and 2-10% carbonate concretions. Gradual to:
40-80	Reddish brown very hard moderately calcareous medium clay with coarse angular blocky structure, 20-50% soft carbonate and 2-10% carbonate nodules. Diffuse to:
80-100	Brown, strong brown and yellowish red very hard light medium clay with strong fine angular blocky structure and 2-10% soft manganese segregations. Clear to:
100-115	Brown, reddish yellow and yellowish red very hard sandy medium clay with weak coarse angular blocky structure and 20-50% soft carbonate. Clear to:
115-150	Red, strong brown and yellowish brown very hard weakly structured sandy light clay

Classification: Sodic, Hypercalcic, Red Chromosol; medium, non-gravelly, loamy / clayey, moderate

Summary of Properties

Drainage: Moderately well drained. Water is likely to perch on top of the clay subsoil for periods of a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. Note that the subsoil has a high capacity to retain nutrients (sum of cations greater than 15 cmol(+)/kg), so leaching losses are likely to be minimal. Test data indicate marginal phosphorus levels, but concentrations of other nutrients appear to be adequate.

pH: Slightly alkaline at the surface, strongly alkaline with depth. Surface pH may be higher than normal due to effects of dust from nearby lime-rubbled road.

Rooting depth: 100 cm in test pit, but few roots below 80 cm.

Barriers to root growth:

Physical: The clayey subsoil is hard and dense, imposing a root growth restriction. Roots are more likely to grow around the coarse aggregates, rather than inside them, thereby reducing water use efficiency.

Chemical: High pH, sodicity and boron levels from the 40-80 cm zone restrict root growth. Any roots below 80 cm are not likely to be effective.

Waterholding capacity: Approximately 110 mm (high) in the potential rootzone.

Seedling emergence: Hard setting and sealing surface may cause patchy emergence depending on early season rainfall patterns.

Workability: Fair. Hard surface soil prone to shattering if worked too dry, and puddling if worked too wet.

Erosion Potential:

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	CO_3 %	EC 1:5 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	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
													Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-10	7.7	7.1	0	0.11	0.88	67	2.52	13	20	313	5.4	1.2	0.74	21	4.52	2.42	13.8	11.3	1.51	0.33	0.70	2.4
10-18	8.0	7.3	0	0.09	0.82	49	1.24	8	8	163	4.7	0.9	0.96	17	2.47	1.77	10.6	8.6	1.39	0.23	0.37	2.2
18-40	8.6	7.9	1	0.17	0.84	47	0.53	14	2	165	11.1	2.1	0.91	16	1.36	0.44	25.9	16.1	8.06	1.25	0.44	4.8
40-80	9.5	8.3	8	0.26	1.15	73	0.13	6	2	134	7.2	8.0	0.83	11	1.41	0.30	24.5	9.06	11.1	3.88	0.47	15.9
80-100	9.5	8.3	1	0.36	1.45	89	0.05	12	2	161	13.8	12.5	0.72	10	1.22	0.25	16.9	4.29	7.12	5.02	0.47	29.7
100-115	9.8	8.3	6	0.41	1.93	125	0.05	5	6	182	8.9	12.7	0.60	7	0.42	0.25	16.5	4.83	5.72	5.52	0.45	33.4
115-150	9.6	8.3	1	0.44	3.46	261	0.10	6	1	171	38.6	11.5	0.48	6	0.32	0.35	14.1	3.17	4.76	5.72	0.41	40.7

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.

Further information: DEWNR Soil and Land Program