

SANDY CLAY LOAM OVER SODIC RED CLAY

General Description: *Hard sandy loam to sandy clay loam over a coarsely structured sodic red clay, calcareous with depth, forming in reworked, or highly weathered, quartzitic sandstone*

Landform: Gently undulating rises.

Substrate: Mixture of quartzite gravelly clay outwash sediment, and highly weathered quartzitic sandstone, mantled by soft windblown carbonates.

Vegetation:

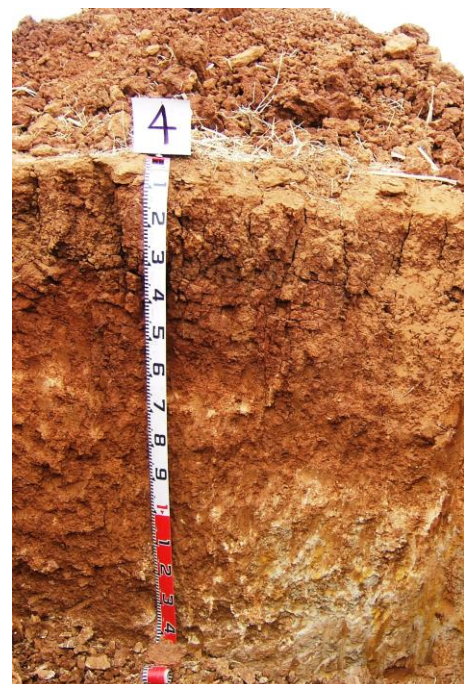


Type Site:	Site No.:	CM112	1:50,000 mapsheet:	6629-4 (Halbury)
	Hundred:	Upper Wakefield	Easting:	291380
	Section:	734	Northing:	6235380
	Sampling date:	07/02/2013	Annual rainfall:	505 mm average

Alluvial fan at base of low rise, 1% slope. Hard setting surface, no stones.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark reddish brown hard massive sandy clay loam. Abrupt to:
10-40	Dusky red very hard medium clay with strong coarse prismatic structure. Clear to:
40-60	Dark red hard moderately calcareous medium clay with strong medium angular blocky structure. Clear to:
60-100	Yellowish red hard very highly calcareous heavy clay with weak medium angular blocky structure and 2-10% soft calcareous segregations. Gradual to:
100-140	Strong brown hard highly calcareous medium clay with weak angular blocky structure and 10-20% quartzite fragments to 6 mm.



Classification: Calcic, Mesonatric, Red Sodosol; medium, non-gravelly, clay loamy / clayey, deep



Summary of Properties

- Drainage:** Moderately well to imperfectly drained. The sodic clay subsoil has restricted permeability, causing subsoil saturation for a week to several weeks following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is moderate, as indicated by the exchangeable cation data. The sandy clay loam surface has relatively low nutrient retention capacity, but the subsoil's capacity is high. There are no apparent nutrient element deficiencies, and organic carbon levels are high for this soil type / rainfall zone.
- pH:** Acidic at the surface, strongly alkaline with depth.
- Rooting depth:** Some roots to 90 cm, but most growth is shallower than 60 cm.
- Barriers to root growth:**
- Physical:** High clay strength limits root proliferation.
 - Chemical:** Elevated sodicity, pH, salinity, and boron concentration combine to limit root growth.
- Waterholding capacity:** Approximately 80 mm in potential rootzone.
- Seedling emergence:** The surface sets hard and seals when dry, affecting emerging seedlings in unfavourable weather conditions.
- Workability:** The surface soil tends to shatter if worked too dry, and puddle if worked too wet, so there is a limited moisture range for effective working.

Erosion Potential

- Water:** Moderate due to the highly erodible nature of the soil, and the position in the landscape.
- Wind:** Moderately low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	NO ₃ 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	
Paddock	5.7	4.8	0.18	0.122	1.32	1.62	8	94	369	18.7	1.0	1.09	90	59.0	0.96	7.8	4.71	1.42	0.67	0.95	8.6
0-10	5.9	5.2	0.18	0.143	1.43	1.55	8	115	268	18.1	1.0	0.91	108	53.5	0.98	6.9	3.66	1.57	0.98	0.69	14.2
10-40	8.6	7.6	0.29	0.386	1.91	1.09	4	13	480	24.1	6.9	1.54	41	9.94	0.42	31.1	12.6	10.4	6.67	1.41	21.5
40-60	9.3	8.3	6.29	0.985	4.22	0.32	< 1	4	625	234	13.9	0.90	10	0.85	0.18	44.2	13.2	14.6	14.6	1.84	32.9
60-100	9.2	8.2	18.3	1.155	5.72	0.13	< 1	3	477	326	12.2	0.71	119	84.0	1.47	37.4	12.6	11.0	12.5	1.31	33.5
100-140	9.3	8.3	7.38	0.960	5.14	0.05	1	5	378	296	11.2	1.01	200	34.3	1.10	34.1	10.2	10.7	12.2	1.03	35.7

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

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](#)

