

## 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 quartz gravelly clayey outwash sediments*

**Landform:** Gently undulating rises.

**Substrate:** Quartz gravelly alluvial clay outwash (locally derived from weathering quartzitic sandstone) mantled by soft windblown carbonates.

**Vegetation:**



<b>Type Site:</b>	Site No.:	CM115	1:50,000 mapsheet:	6630-1 (Burra)
	Hundred:	Kingston	Easting:	311080
	Section:	392	Northing:	6288450
	Sampling date:	12/02/2013	Annual rainfall:	415 mm average

Upper slope of alluvial fan, 3% slope. Hard setting surface, with 2-10% quartz gravel.

### Soil Description:

<i>Depth (cm)</i>	<i>Description</i>	
0-15	Reddish brown hard coarse sandy clay loam with weak granular structure. Clear to:	
15-20	Yellowish red hard massive coarse sandy clay loam with 20-50% quartz fragments to 20 mm. Abrupt to:	
20-50	Dark reddish brown very hard medium clay with strong coarse prismatic, breaking to coarse angular blocky structure. Clear to:	
50-65	Yellowish red hard slightly calcareous medium clay with moderate medium polyhedral structure and 10-20% quartz fragments (often carbonate coated). Gradual to:	
65-100	Yellowish red hard slightly calcareous medium clay with moderate medium polyhedral and 2-10% carbonate coated quartz. Gradual to:	
100-140	Yellowish red highly calcareous light clay with moderate medium polyhedral structure, more than 50% quartz fragments to 60 mm, and minor calcrete nodules.	

**Classification:** Hypocalcic, Mesonatric, Red Sodosol; medium, slightly 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, other than a marginal zinc levels. Organic carbon levels are a little low for this soil type / rainfall zone.
- pH:** Acidic at the surface, alkaline with depth.
- Rooting depth:** 60 cm.
- Barriers to root growth:**
- Physical:** High clay strength limits root proliferation.
  - Chemical:** Elevated sodicity and salinity limit root growth.
- Waterholding capacity:** Approximately 70 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 low. Soil is erodible, but slope is gentle.
  - Wind:** Low.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC 1:5 dS/m	ECe dS/m	Org.C %	NO <sub>3</sub> mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> -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	6.1	5.1	0	0.131	1.16	1.26	9	50	382	9.4	0.9	1.43	27	91.9	0.81	7.4	4.08	1.82	0.60	0.91	8.1
0-15	6.6	5.9	0	0.102	0.62	1.61	8	50	400	8.2	0.8	1.25	20	78.6	0.89	6.4	3.89	1.21	0.44	0.89	6.8
15-20	6.6	5.6	0	0.042	0.35	0.73	2	20	265	5.8	0.8	1.31	17	46.4	0.30	5.8	3.26	1.54	0.50	0.49	8.6
20-50	8.8	7.8	1.7	0.621	3.00	0.55	<1	2	409	125	10.2	1.35	8	2.41	0.18	30.8	10.2	12.9	6.66	1.05	21.6
50-65	7.9	6.9	0.2	0.250	0.65	0.83	2	2	385	28.6	5.3	1.54	10	4.04	0.22	27.5	9.66	12.3	4.50	1.08	16.4
65-100	8.8	7.8	0.5	0.707	3.34	0.28	<1	<2	396	142	9.8	1.19	8	1.77	0.21	31.6	8.93	13.4	8.30	1.02	26.3
100-140	8.3	7.9	5.8	1.25	6.15	0.23	<1	<2	343	202	5.9	0.84	8	1.52	0.23	32.9	10.6	12.2	9.09	0.88	27.7

**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](#)

