

HARD SANDY LOAM OVER SODIC RED CLAY

General Description: *Hard sandy loam with a bleached subsurface layer, over a red coarsely structured clay, calcareous with depth, forming in weathering quartzitic sandstone*

Landform: Undulating low hills.

Substrate: Weathered quartzitic sandstone containing segregations of windblown carbonates.

Vegetation:

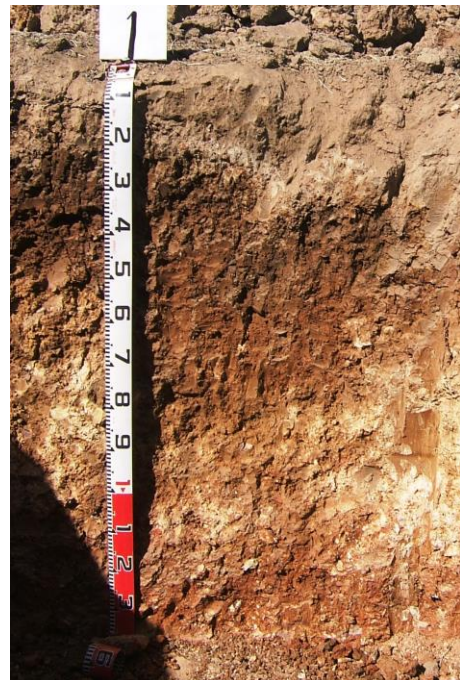


Type Site:	Site No.:	CM109	1:50,000 mapsheet:	6630-2 (Apoinga)
	Hundred:	Stanley	Easting:	293100
	Section:	311	Northing:	6242090
	Sampling date:	07/02/2013	Annual rainfall:	555 mm average

Midslope of low hill, 4% slope. Hard setting surface with no stones.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-15	Dark reddish brown hard massive coarse sandy loam. Abrupt to:
15-20	Pinkish grey hard and compact massive coarse sandy loam. Abrupt to:
20-42	Reddish brown hard heavy clay with strong coarse angular blocky structure. Clear to:
42-78	Yellowish red hard highly calcareous heavy clay with moderate coarse angular blocky structure. Abrupt to:
78-90	Yellowish red hard very highly calcareous heavy clay with 10-20% soft calcareous segregations and weak subangular blocky structure. Clear to:
90-140	Yellowish red hard moderately calcareous medium clay with 20-50% quartz and sandstone fragments.



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



Summary of Properties

- Drainage:** Imperfectly to moderately well drained. The sodic clay subsoil has low permeability causing saturation of subsurface layers (in some seasons) for up to several weeks following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is moderate, as indicated by the exchangeable cation data. The sandy loam surface has relatively low nutrient retention capacity, but the subsoil's capacity is very 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, alkaline with depth.
- Rooting depth:** Moderate root growth in the upper 80 cm, with no roots observed below this depth.
- Barriers to root growth:**
- Physical:** High clay strength limits root proliferation.
 - Chemical:** High pH and sodicity in a clay matrix effectively prevent root growth deeper than 80 cm.
- Waterholding capacity:** Approximately 90 mm in potential rootzone.
- Seedling emergence:** The hard setting, sealing surface can severely impair seedling emergence if the soil dries out at the critical time post germination.
- Workability:** Limited opportunities for effective cultivation. The hard setting surface tends to shatter if worked too dry, and puddle if worked too wet.
- Erosion Potential**
- Water:** Moderate due to the highly erodible surface soil on a 4% slope.
 - Wind:** Low to 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	5.2	4.4	0	0.171	1.76	2.34	11	102	240	10.5	0.8	0.71	286	25.1	1.43	5.1	2.91	0.97	0.74	0.52	14.4
0-15	5.5	4.6	0	0.113	0.86	2.40	11	97	254	8.7	0.7	0.67	273	19.7	1.45	5.7	3.49	1.01	0.59	0.65	10.3
15-20	6.8	5.9	0	0.058	0.54	0.70	1	14	129	2.2	0.7	0.36	93	4.32	0.40	5.7	3.31	1.34	0.74	0.30	13.0
20-42	9.1	8.1	2.9	0.438	1.52	0.33	< 1	3	267	22.9	9.5	0.74	24	4.13	0.48	31.8	13.0	11.6	6.50	0.75	20.4
42-78	9.1	8.1	18.4	0.621	2.33	0.17	< 1	3	211	66	8.3	0.52	5	1.12	0.53	27.0	11.6	8.61	6.26	0.54	23.2
78-90	9.2	8.2	26.2	0.738	2.64	0.12	< 1	2	187	104	8.5	0.44	8	1.04	0.56	28.2	11.6	8.81	7.33	0.48	26.0
90-140	9.0	8.0	6.8	0.781	2.77	0.06	< 1	2	236	115	9.9	0.33	10	2.23	0.48	28.7	10.8	9.25	8.06	0.61	28.1

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](#)

