

# HARD SANDY LOAM OVER SODIC CLAY ON ROCK

**General Description:** *Hard setting sandy loam over a sodic red clay grading to soft carbonate overlying weathered sandstone*

**Landform:** Slopes of undulating rises and low hills

**Substrate:** Basement sandstone mantled by soft carbonates

**Vegetation:** Mallee scrub

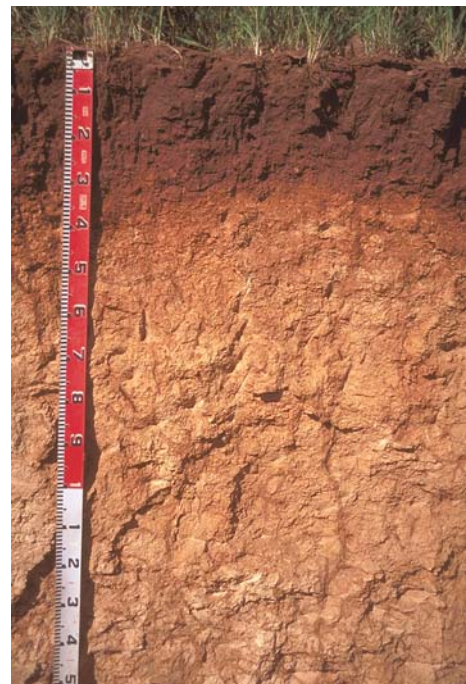


**Type Site:** Site No.: CM064

1:50,000 sheet: 6629-4 (Halbury)      Hundred: Hall  
 Annual rainfall: 425 mm      Sampling date: 23/08/95  
 Landform: Lower slope of undulating low hills, 4% slope  
 Surface: Hard setting, no stones

## Soil Description:

Depth (cm)	Description
0-6	Hard massive red brown sandy loam. Abrupt to:
6-20	Hard red medium clay with strong coarse prismatic to blocky structure. Clear to:
20-30	Red highly calcareous light medium clay with strong coarse blocky structure. Clear to:
30-55	Red very highly calcareous light clay with moderate blocky structure, more than 50% soft carbonate segregations, and 10-20% hard nodules. Gradual to:
55-100	Orange very highly calcareous massive sandy clay loam with more than 50% soft carbonate segregations, and 2-10% sandstone fragments. Diffuse to:
100-170	Orange very highly calcareous massive sandy clay loam with more than 50% soft carbonates, 10-20% hard nodules, and 2-10% sandstone fragments.



**Classification:** Hypercalcic, Mesonatric, Red Sodosol; thin, non-gravelly, loamy / clayey, deep.

## Summary of Properties

<b>Drainage</b>	Moderately well drained. The dispersive clay subsoil prevents adequate movement of water, causing temporary waterlogging at shallow depth.
<b>Fertility</b>	Natural fertility is moderate due to the low clay content at the surface, although the subsoil has good nutrient storage capacity. Organic matter is the key to surface soil fertility, but is low at this site. Major nutrients appear to be adequate, but tissue testing is needed to establish trace element levels.
<b>pH</b>	Slightly acidic at the surface, strongly alkaline with depth.
<b>Rooting depth</b>	100 cm in pit, but few roots below 55 cm.
<b>Barriers to root growth</b>	
<b>Physical:</b>	Poorly structured subsoil clay prevents good root proliferation.
<b>Chemical:</b>	High pH (more than 9.2) and sodicity (ESP more than 25%), and moderate salinity from 55 cm limit deeper root growth to old tree root channels.
<b>Water holding capacity</b>	Approximately 65 mm in root zone (moderately low).
<b>Seedling emergence</b>	Fair to poor (depending on seasonal conditions) because of the hard setting, sealing surface.
<b>Workability</b>	Fair due to the tendency of the surface to puddle when too wet and shatter if too dry.
<b>Erosion Potential</b>	
<b>Water:</b>	Soil is highly erodible. On this slope water erosion is a risk.
<b>Wind:</b>	Moderately low. Soil is pulverized by over cultivation or grazing, and will blow.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	6.6	6.3	0	0.25	1.73	0.8	54	247	123	2.3	0.75	-	9.45	0.59	11.1	8.79	2.41	0.44	0.71	4.0
0-6	6.8	6.2	0	0.07	0.40	0.7	67	261	8	1.3	-	-	-	-	7.2	4.46	1.37	0.25	0.56	3.5
6-20	8.3	7.2	0	0.15	0.53	0.5	14	384	10	5.6	-	-	-	-	25.5	12.23	8.24	2.69	1.26	10.5
20-30	9.2	8.4	4.6	0.42	1.16	0.3	7	361	52	12.0	-	-	-	-	26.7	11.23	12.95	5.23	1.36	19.6
30-55	9.5	8.5	40.0	0.80	3.19	0.2	<4	262	248	14.0	-	-	-	-	16.2	4.88	8.63	6.03	0.77	37.2
55-100	9.4	8.4	51.2	1.13	5.61	0.1	<4	215	363	7.8	-	-	-	-	13.8	3.99	7.16	6.25	0.55	45.3
100-170	9.4	8.5	43.4	1.21	6.12	<0.1	<4	238	255	8.3	-	-	-	-	15.4	3.91	7.77	7.38	0.65	47.9

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

CEC (cation exchange capacity) is 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.