

# HARD SANDY LOAM OVER RED CLAY

**General Description:** *Thick reddish brown massive clay loam overlying a dark reddish brown strongly structured clay, calcareous with depth*

**Landform:** Valley flats and very gently sloping alluvial fans

**Substrate:** Clayey alluvium (Pooraka Formation) mantled by soft carbonate

**Vegetation:**



**Type Site:** Site No.: CM087

1:50,000 sheet: 6630-4 (Spalding)

Hundred: Ayers

Annual rainfall: 450 mm

Sampling date: 27/02/97

Landform: Valley flat, 0% slope

Surface: Hard setting with stones

## Soil Description:

Depth (cm)	Description
0-10	Reddish brown fine sandy loam with weak granular structure. Abrupt to:
10-17	Pink (bleached) hard massive fine sandy loam. Sharp to:
17-40	Dark reddish brown medium clay with strong polyhedral structure. Clear to:
40-55	Red medium clay with strong polyhedral structure. Clear to:
55-90	Reddish brown highly calcareous light medium clay with 20-50% semi hard carbonate fragments. Diffuse to:
90-120	Red highly calcareous light medium clay with 10-20% fine carbonate. Gradual to:
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	Buried soil
120-160	Dark reddish brown medium clay with strong polyhedral structure. Gradual to:
160-190	Reddish brown very highly calcareous light medium clay with moderate polyhedral structure and 20-50% soft carbonate.



**Classification:** Bleached-Sodic, Hypercalcic, Red Chromosol; medium, non-gravelly, loamy / clayey, deep

## Summary of Properties

<b>Drainage</b>	Imperfect. Water will "perch" on top of the clay subsoil for up to several weeks following prolonged rainfall.
<b>Fertility</b>	Natural fertility is moderately high. Test results do not indicate any deficiencies in the elements measured, although copper and zinc are marginal (to be confirmed by tissue test). There has been some cation leaching associated with acidification, resulting in lower than normal levels of calcium and magnesium. Organic carbon levels are slightly below desirable for the soil type and rainfall.
<b>pH</b>	Acidic at the surface, strongly alkaline with depth.
<b>Rooting depth</b>	190 cm in pit, but few roots below 120 cm.
<b>Barriers to root growth</b>	
<b>Physical:</b>	Hard clayey subsoil
<b>Chemical:</b>	Low pH (on point of being a problem), and possible manganese toxicity (will get worse if pH falls further). Very high pH from 90 cm usually restricts root growth. Salinity levels are moderate in the deep subsoil and boron is at toxic levels from 55 cm. This means that from the lime layer downwards, roots are not functioning properly and water uptake is reduced.
<b>Water holding capacity</b>	Approximately 120 mm in root zone.
<b>Seedling emergence:</b>	Fair, due to hard setting, sealing surface. Gypsum response likely.
<b>Workability:</b>	Fair to poor due to limited moisture range and susceptibility to compaction.
<b>Erosion Potential</b>	
<b>Water:</b>	Low.
<b>Wind:</b>	Low.

## 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> -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP	Ext Al mg/kg
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
Paddock	5.6	4.8	0	0.18	-	1.4	61	615	18.8	1.7	1.8	178	216	1.7	8.4	3.5	1.3	0.14	1.44	1.7	1.2
0-10	5.6	5.1	0	0.11	-	1.5	71	541	9.8	1.3	1.6	175	193	1.7	8.0	3.4	1.3	0.13	1.01	1.6	-
10-17	5.9	5.1	0	0.05	-	0.5	25	439	5.3	1.3	2.3	167	454	0.8	6.9	3.0	1.4	0.15	0.83	2.2	-
17-40	7.4	6.6	0	0.07	-	0.5	10	722	6.6	10.0	4.9	70	444	1.5	19.7	6.5	10.4	0.79	2.22	4.0	-
40-55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55-90	9.3	8.3	14.8	0.24	-	0.1	23	506	9.4	16.2	1.2	6.9	8.4	3.4	12.1	2.6	9.3	2.03	1.18	16.8	-
90-120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120-160	8.7	8.2	0.7	1.44	-	0.1	15	647	125	5.9	3.9	86	454	2.7	25.7	3.3	14.0	5.34	1.65	20.8	-

**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.