

HARD LOAM OVER SODIC RED CLAY

General Description: *Hard setting loamy surface abruptly overlying a coarsely structured red clay, calcareous with depth*

Landform: Gently sloping pediments and plains

Substrate: Well structured red alluvial clay with minor carbonate accumulations

Vegetation:



Type Site: Site No.: CU047

1:50,000 sheet:	6532-1 (Willowie)	Hundred:	Willowie
Annual rainfall:	315 mm	Sampling date:	02/11/94
Landform:	Level plain, 0.5% slope		
Surface:	Hard setting with minor quartzite stones		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark reddish brown massive hard fine sandy clay loam. Abrupt to:
10-20	Red hard medium clay with strong very coarse prismatic structure (breaking to strong polyhedral). Abrupt to:
20-45	Red firm highly calcareous medium clay with strong very coarse prismatic structure (breaking to strong polyhedral) and 2-10% soft carbonate. Gradual to:
45-80	Red firm highly calcareous medium clay with strong coarse prismatic structure and 2-10% soft carbonate. Gradual to:
80-160	Red very firm highly calcareous medium clay with strong coarse lenticular structure, slickensides and 2-10% soft carbonate.



Classification: Calcic, Subnatric, Red Sodosol; medium, non-gravelly, clay loamy / clayey, moderate

Summary of Properties

Drainage	The high clay content and high sodicity indicate low permeability. The soil is moderately well drained, but after prolonged rainfall waterlogging would be expected.
Fertility	High natural fertility as indicated by the cation data - due to high clay content. Organic carbon (a measure of nitrogen retention) could be marginally higher. Measured elements are all at satisfactory levels.
pH	Alkaline at the surface, strongly alkaline with depth.
Rooting depth	125 cm in pit, but few roots below 80 cm.
Barriers to root growth	
Physical:	Tight sodic subsoil clay prevents even root distribution.
Chemical:	High exchangeable sodium (ESP) and pH from 45 cm.
Water holding capacity	Approximately 100 mm (high)
Seedling emergence:	Fair to good. Surface tends to seal over, especially at low organic matter levels.
Workability:	Fair. Narrow moisture range for effective working.
Erosion Potential	
Water:	Low
Wind:	Low

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S 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	8.0	7.2	0	0.11	0.59	1.0	21	727	-	1.1	1.38	5	16.9	3.15	20.0	14.39	3.32	0.14	2.26	0.7
0-10	8.1	7.3	0	0.08	0.58	0.9	19	585	-	0.9	1.24	4	11.7	0.96	17.8	12.82	3.00	0.22	1.78	1.2
10-20	8.4	7.7	0.1	0.13	0.48	0.5	<4	434	-	1.5	1.85	5	5.02	0.27	25.5	17.25	7.72	2.96	0.88	11.6
20-45	9.1	8.0	6.3	0.23	0.73	0.6	<4	175	-	2.4	2.10	5	4.33	0.26	26.2	17.45	8.03	2.96	0.81	11.3
45-80	9.2	8.2	5.7	0.74	4.23	0.4	11	175	-	5.6	1.49	6	3.05	0.24	25.5	11.79	8.88	7.07	0.86	27.7
80-160	8.7	8.1	2.4	1.62	10.95	0.2	16	252	-	8.6	1.32	5	1.50	0.26	26.6	12.06	9.47	7.72	1.11	29.0

Note: Paddock sample bulked from 20 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.