

HARD SANDY LOAM OVER SODIC RED CLAY ON ROCK

General Description: *Reddish brown hard setting sandy loam to sandy clay loam overlying a red coarsely structured clay, calcareous with depth grading to weathering sandstone*

Landform: Gentle to moderate slopes

Substrate: Weathering sandstone with soft secondary carbonate

Vegetation:



Type Site: Site No.: CM052

1:50,000 sheet:	6630-1 (Burra)	Hundred:	Kingston
Annual rainfall:	400 mm	Sampling date:	02/08/94
Landform:	Very gently inclined lower slope of an undulating low hill, 2% slope		
Surface:	Hard setting with 2-10% quartzite stones		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-9	Dark reddish brown sandy loam with weak very coarse prismatic structure and minor quartzite gravel. Abrupt to:
9-18	Red sandy clay loam with weak very coarse prismatic structure and 10-20% shale and quartzite gravel. Sharp to:
18-45	Red medium heavy clay with very coarse prismatic, breaking to coarse angular blocky structure. Clear to:
45-75	Red medium heavy clay with extremely coarse prismatic, breaking to coarse angular blocky structure. Clear to:
75-105	Red moderately calcareous medium clay with medium angular blocky structure and 10-20% fine carbonate segregations. Gradual to:
105-140	Red and orange medium clay with medium angular blocky structure, 20-50% highly weathered sandstone fragments and 10-20% fine carbonate.



Classification: Hypercalcic, Subnatric, Red Sodosol; medium, slightly gravelly, loamy / clayey, deep

Summary of Properties

- Drainage** Moderate. The tight sodic clay subsoil transmits water slowly so that some parts of the profile are prone to saturation for a week or so following rain.
- Fertility** Natural fertility is moderately high. Phosphorus and potassium are adequate, sulphur and possibly zinc are marginal. Organic matter and therefore nitrogen reserves are below optimum.
- pH** Neutral at the surface, strongly alkaline with depth.
- Rooting depth** 105 cm in pit, but few roots below 75 cm.
- Barriers to root growth**
- Physical:** Hard setting surface soil and tight dispersive clay subsoil restrict root proliferation.
 - Chemical:** High pH, moderate salinity and probably high sodicity from 75 cm combine to limit root growth.
- Water holding capacity** Approximately 100 mm in root zone, but effectively less because of poor root distributions and low permeability of clay.
- Seedling emergence** Fair due to hard setting surface (tendency to seal over).
- Workability** Fair due to narrow moisture range for effective working.
- Erosion Potential**
- Water:** Moderately low. Soil is highly erodible, but slope is gentle.
 - 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	7.0	5.7	0	0.08	0.48	1.0	36	383	5.3	1.1	-	-	-	-	6.8	3.55	1.15	0.14	1.05	2.1
0-9	6.6	5.5	0	0.05	0.35	1.1	25	396	3.3	1.1	-	-	-	-	6.7	3.10	1.17	0.15	1.02	2.2
9-18	7.0	6.1	0	0.05	0.37	0.5	10	348	4.3	1.3	-	-	-	-	5.5	2.85	1.34	0.29	0.95	5.3
18-45	7.9	6.8	0	0.11	0.55	0.8	3	821	4.5	3.3	-	-	-	-	26.9	7.40	9.72	3.91	2.83	14.5
45-75	9.2	8.2	0.4	0.53	2.16	0.5	3	653	36.4	8.2	-	-	-	-	25.2	7.17	13.5	6.09	1.87	24.2
75-105	9.4	8.3	20.2	0.70	4.32	0.2	2	441	120	6.2	-	-	-	-	20.1	7.12	10.7	4.21	1.25	20.9
105-140	9.1	8.2	20.9	1.12	7.18	0.1	3	410	213	3.5	-	-	-	-	20.1	5.16	11.4	6.49	1.40	32.0

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.