

## STONY LOAM OVER RED CLAY

**General Description:** *Hard setting reddish brown stony sandy loam to clay loam overlying a strongly structured dark reddish brown clay with soft calcareous segregations at depth, forming in gravelly fine grained alluvium*

**Landform:** Gently to moderately inclined slopes below basement rock hills

**Substrate:** Fine textured alluvium with gravel and stone beds, mantled by fine carbonates

**Vegetation:**



**Type Site:** Site No.: CM056

1:50,000 sheet:	6630-1 (Burra)	Hundred:	Kooringa
Annual rainfall:	440 mm	Sampling date:	02/08/94
Landform:	Lower slope of a gently inclined alluvial fan, 4% slope		
Surface:	Hard setting with 10-20% quartzite stones		

### Soil Description:

Depth (cm)	Description
0-11	Reddish brown hard setting loam with weak granular structure and 2-10% shale gravel. Clear to:
11-27	Red clay loam with weak polyhedral structure and 2-10% shale gravel. Clear to:
27-40	Red clay loam with weak polyhedral structure and 10-20% shale gravel. Abrupt to:
40-70	Dark red medium heavy clay with strong coarse prismatic breaking to angular blocky structure and 2-10% shale gravel. Gradual to:
70-130	Dark red and orange light clay with strong subangular blocky structure, 2-10% shale gravel and 2-10% soft and nodular (Class I) carbonate.



**Classification:** Sodic, Calcic, Red Chromosol; thick, gravelly, loamy / clayey, deep

## Summary of Properties

**Drainage** Moderately well drained. The tight, dispersive clay subsoil has low permeability and causes the soil to remain wet for a week or so after heavy rain.

**Fertility** Natural fertility is moderately high. Phosphorus is marginal at the site. Zinc is probably also marginally deficient. Organic matter levels are substantially less than optimum, so nitrogen deficiency may be a regular problem.

**pH** Neutral at the surface, alkaline with depth.

**Rooting depth** 70 cm in pit, but very few roots below 40 cm.

### Barriers to root growth

**Physical:** The hard dispersive clay subsoil and a strongly developed plough pan restrict root proliferation.

**Chemical:** Expected high sodium levels from 70 cm and high pH prevent good root growth at depth.

**Water holding capacity** Approximately 75 mm in the root zone.

**Seedling emergence** Good to fair due to the hard setting surface - sealing may be a problem in some seasons.

**Workability** Fair. The hard poorly structured surface has a limited moisture range for effective cultivation. Quartzite stones rapidly abrade implements.

### Erosion Potential

**Water:** Moderately low on this slope, although the soil is highly erodible.

**Wind:** 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 (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.1	6.5	0	0.07	0.55	1.0	25	421	9.0	0.9	-	-	-	-	8.9	5.72	1.96	0.12	0.83	1.3
0-11	7.4	6.7	0	0.06	0.51	1.0	30	408	5.2	0.6	-	-	-	-	9.2	5.71	2.19	0.09	0.84	1.0
11-27	7.4	6.7	0	0.04	0.24	0.4	10	237	3.5	0.2	-	-	-	-	7.6	4.77	2.00	0.06	0.46	0.8
27-40	7.7	6.9	0	0.04	0.23	0.2	7	198	3.2	0.1	-	-	-	-	7.3	4.31	2.22	0.17	0.30	2.3
40-70	7.9	7.0	0	0.06	0.22	0.4	3	367	4.3	0.4	-	-	-	-	27.2	11.6	10.7	1.28	1.15	4.7
70-130	9.1	8.1	1.7	0.15	0.55	0.2	2	384	6.0	1.5	-	-	-	-	17.2	7.78	7.57	1.77	0.85	10.3

**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.