

## HARD LOAM OVER DISPERSIVE RED CLAY

**General Description:** *Medium to thick hard setting fine sandy loam to loam abruptly overlying a coarsely structured red clay, calcareous with depth, grading to clayey alluvium*

**Landform:** Outwash fans and plains

**Substrate:** Clayey alluvium mantled by soft carbonate

**Vegetation:**



**Type Site:** Site No.: CL005

1:50,000 sheet: 6629-2 (Kapunda)      Hundred: Nuriootpa  
 Annual rainfall: 450 mm      Sampling date: 09/03/92  
 Landform: Midslope of a very gently inclined outwash fan with a slope of 2%  
 Surface: Hard setting with no stones

### Soil Description:

Depth (cm)	Description
0-10	Hard massive reddish brown loam. Abrupt to:
10-76	Dark reddish brown hard coarsely prismatic medium clay. Clear to:
76-135	Yellowish red highly calcareous weakly structured medium clay with 2-10% soft carbonate segregations. Gradual to:
135-150	Reddish brown weakly structured highly calcareous medium clay.



**Classification:** Calcic, Hypernatric, Red Sodosol; medium, non-gravelly, loamy / clayey, deep

## Summary of Properties

- Drainage:** Moderately well drained. Dispersive, sodic subsoil prevents free drainage and perches water for up to a week following heavy or prolonged rainfall
- Fertility:** Natural fertility is moderately high. The subsoil has a high nutrient retention capacity, as indicated by the exchangeable cation data. Relatively low organic carbon values limit the retention capacity of the surface soil. All tested nutrient elements are in adequate supply.
- pH:** Slightly acidic at the surface, strongly alkaline in the deep subsoil.
- Rooting depth:** 76 cm in pit.
- Barriers to root growth:**
- Physical:** Hard massive surface soil and dispersive clayey subsoil both inhibit optimal root development.
- Chemical:** Very high pH, boron and sodicity from 76 cm inhibit root growth. Soluble salt levels are also moderately high in the deep subsoil. Manganese toxicity is likely if soil acidifies.
- Water holding capacity:** Approximately 90 mm in the root zone (moderately high).
- Seedling emergence:** Fair. Hard setting surface will prevent uniform establishment.
- Workability:** Fair. Hard setting, slightly sodic surface soil has a narrow moisture range for effective working. Gypsum will help to improve surface soil condition.

## Erosion Potential

- Water:** Moderately low. Soil is highly erodible, but slope is slight.
- 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	6.7	5.6	0.4	0.08	-	0.98	72	380	-	-	1.0	114	25.4	0.79	7.3	4.21	1.2	0.36	0.98	4.9
0-10	6.4	5.2	1.1	0.08	0.8	0.93	66	360	-	-	1.1	93	31.5	0.77	6.5	3.58	1.3	0.44	0.95	6.8
10-76	9.0	7.6	2.6	0.36	1.6	0.39	4	410	-	12.4	1.2	7.0	7.7	0.10	16.8	4.65	7.8	4.49	1.32	26.7
76-135	9.5	8.5	8.6	1.09	5.8	0.21	3	630	-	20.6	1.0	3.9	0.8	0.11	29.5	3.79	12.9	11.6	2.26	39.2
135-150	9.5	8.5	6.1	1.26	6.7	0.19	3	650	-	15.4	1.0	4.1	1.1	0.12	24.6	3.87	12.4	11.4	2.22	46.3

- 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.