HARD SANDY LOAM OVER SODIC RED CLAY

General Description: *Hard setting sandy loam overlying a coarsely structured hard red clay with soft carbonate at depth*

Landform: Lower slopes and flats associated with undulating rises and low hills

Substrate: Clays derived from Tertiary deposits

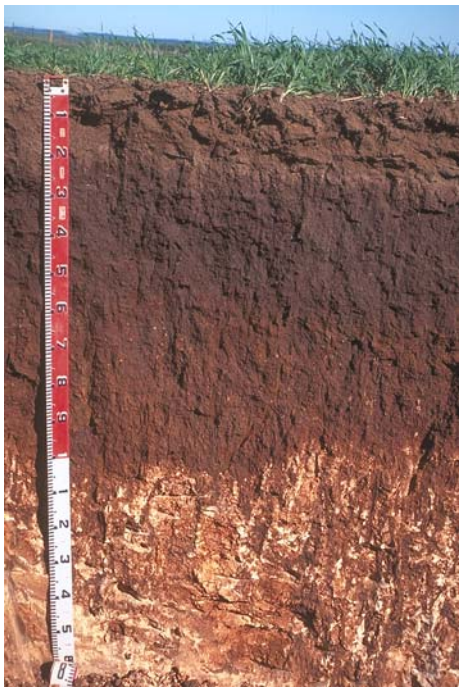
Vegetation:

Type Site: Site No.: CM061

1:50,000 sheet:	6530-1 (Koolunga)	Hundred:	Koolunga
Annual rainfall:	425 mm	Sampling date:	18/08/95
Landform:	Lower slope of undulating rise, 3% slope		
Surface:	Hard setting with no stones		

Soil Description:

Depth (cm)	*Description*
0-15	Hard massive dark brown sandy loam. Abrupt to:
15-20	Pink massive very hard sandy clay loam. Diffuse to:
20-40	Dark red medium clay with strong coarse prismatic structure. Diffuse to:
40-60	Dark red medium clay with strong coarse prismatic structure. Gradual to:
60-100	Red and dark reddish brown moderately calcareous light medium clay with strong prismatic structure and minor soft carbonate segregations. Gradual to:
100-160	Yellowish red highly calcareous light clay with strong blocky structure and 20-50% soft carbonate segregations.



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

Summary of Properties

Drainage Moderately well drained. The lower topsoil and upper subsoil may remain wet for a week or so due to water "perching" on top of the dispersive clay.

Fertility The natural fertility of the soil is moderate; organic matter is essential for nutrient retention at the surface as the clay content is low. All elements except sulphur are in good supply. Organic carbon levels are satisfactory but should not fall any lower.

pH Neutral at the surface, strongly alkaline with depth.

Rooting depth 100 cm in pit, but few roots below 60 cm.

Barriers to root growth

Physical: Tight sodic clay prevents good root proliferation.

Chemical: High pH (more than 9.2) and high sodicity (more than 30% ESP) from 60 cm limit root development.

Water holding capacity Approximately 70 mm in root zone (moderate).

Seedling emergence Fair due to hard setting, sealing surface.

Workability Fair due to limited period during which surface soil is at ideal moisture content.

Erosion Potential

Water: Moderate potential, due to the slope and the very high erodibility of the poorly structured sandy surface soil.

Wind: Moderately low, but surface will blow if left unprotected and pulverized.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	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	6.8	0	0.11	0.75	0.9	48	371	6	1.4	0.93	-	21.4	1.45	11.7	8.46	2.54	0.61	0.96	5.2
0-15	6.6	6.2	0	0.05	0.33	0.9	35	379	6	0.9	-	-	-	-	9.2	7.19	1.44	0.24	0.94	2.6
15-20	7.3	6.7	0.1	0.04	0.35	0.4	12	225	7	0.7	-	-	-	-	5.8	4.66	1.25	0.36	0.48	6.2
20-40	8.2	7.2	0.1	0.10	0.29	0.7	6	334	6	4.4	-	-	-	-	30.9	17.93	9.84	3.51	1.34	11.4
40-60	8.9	8.1	0.3	0.26	0.49	0.5	5	297	9	7.1	-	-	-	-	29.0	13.23	10.39	5.14	1.19	17.7
60-100	9.3	8.4	1.2	0.43	0.88	0.4	4	318	23	11.4	-	-	-	-	26.2	9.11	9.76	7.67	1.19	29.3
100-160	9.3	9.0	24.9	0.74	2.80	0.0	7	227	200	6.0	-	-	-	-	13.9	5.96	5.47	5.52	0.69	39.7

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.