HARD SANDY LOAM OVER SODIC RED CLAY

General Description: *Hard sandy loam to clay loam abruptly overlying a red coarsely structured clay, calcareous with depth*

Landform: Outwash fans and flats

Substrate: Alluvial clay (Pooraka Formation) mantled by soft carbonate

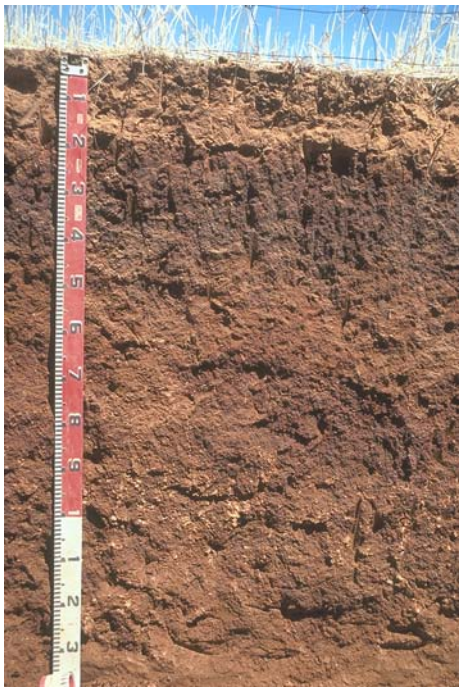
Vegetation:

Type Site: Site No.: CM088

1:50,000 sheet:	6631-2 (Hallett)	Hundred:	Ayers
Annual rainfall:	430 mm	Sampling date:	27/02/97
Landform:	Upper slope of gently inclined alluvial fan, 4% slope		
Surface:	Hard setting with 2-10% quartzite stone		

Soil Description:

Depth (cm)	*Description*
0-9	Reddish brown hard massive fine sandy loam. Abrupt to:
9-16	Yellowish red hard massive fine sandy loam. Sharp to:
16-40	Dark reddish brown medium clay with coarse prismatic structure breaking to angular blocky. Clear to:
40-70	Red light medium clay with moderate polyhedral structure and 2-10% quartzite stone. Gradual to:
70-110	Reddish brown very highly calcareous light medium clay with moderate polyhedral structure, 10-20% soft carbonate and 2-10% quartzite stone. Diffuse to:
110-140	Orange and yellowish red highly calcareous light clay with moderate polyhedral structure and 2-10% soft and hard fragmented carbonate.



Classification: Calcic, Mesonatric, Red Sodosol; medium, slightly gravelly, loamy / clayey, deep

Summary of Properties

Drainage Moderately well drained. Water will "perch" on top of the clay for a week or so following prolonged rainfall.

Fertility Natural fertility is moderately high. Test results indicate that with the possible marginal deficiencies of copper and zinc (check with tissue test), nutrient levels are satisfactory, although there has been some cation leaching, resulting in lower than normal levels of calcium and magnesium. The other main feature of note is the low organic carbon level.

pH Slightly acidic at the surface, strongly alkaline with depth.

Rooting depth 110 cm in pit.

Barriers to root growth

Physical: Hard, dispersive (sodic) subsoil clay, and massive poorly structured surface soil.

Chemical: Possible manganese toxicity if acidity increases. Moderate salinity from 70 cm.

Water holding capacity Approximately 125 mm in root zone.

Seedling emergence: Fair, due to hard setting, sealing surface. Gypsum response almost certain.

Workability: Fair, due to low moisture range for effective working - soil is either too wet or too dry.

Erosion Potential

Water: Moderate, due to the slope and high soil erodibility.

Wind: Low.

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 (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	6.3	5.3	0	0.07	-	0.7	35	353	8.0	1.0	1.7	114	293	1.3	6.4	3.0	1.3	0.19	0.70	3.0
0-9	5.9	5.0	0	0.07	-	0.8	38	359	8.1	0.9	1.5	133	276	1.0	5.9	2.8	0.9	0.19	0.70	3.2
9-16	6.1	5.1	0	0.04	-	0.3	17	246	4.9	0.7	1.8	93	516	1.3	5.4	2.6	1.0	0.28	0.36	5.2
16-40	8.4	7.0	0	0.11	-	0.4	4	307	5.1	4.0	3.8	58	303	1.3	22.6	7.4	7.9	3.89	0.79	17.2
40-70	9.3	8.4	0.5	0.47	-	0.1	5	332	48	8.5	2.9	39	308	2.0	16.7	4.1	6.7	4.22	0.74	25.3
70-110	9.2	8.4	10.4	1.01	-	0.1	14	370	163	8.1	1.3	4.7	5.2	3.2	19.8	5.1	8.1	5.40	0.94	27.3
110-140	9.0	8.3	7.6	1.22	-	0.1	6	355	173	4.1	1.4	4.2	6.3	3.0	19.3	4.9	8.1	5.45	0.87	28.2

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.