HARD GRADATIONAL RED CLAY

General Description: Hard clay loam to light clay grading to a poorly structured red clay, calcareous with depth

Landform: Undulating plains and rises.

Substrate: Gravelly alluvial outwash

fan clay.





Type Site: Site No.: CU007

1:50,000 sheet: 6533 - 4 (Willochra) Hundred: Yarrah Annual rainfall: 325 mm Sampling date: 03/09/91

Landform: Lower slope of outwash fan. 4% slope

Surface: Hard setting with 2-10% quartzite (60-200 mm)

Soil Description:

Depth (cm) Description

0-15 Dark reddish brown firm sandy light clay with

fine polyhedral structure and 2-10% quartzite

gravel (60-200 mm). Clear to:

15-35 Dark reddish brown friable slightly calcareous

medium clay with strong polyhedral structure.

Gradual to:

35-50 Dark reddish brown firm moderately calcareous

medium heavy clay with strong polyhedral structure and minor fine carbonate segregations.

Diffuse to:

50-100 Reddish yellow firm highly calcareous medium

clay with strong coarse subangular blocky

structure and 20-50% fine carbonate segregations.

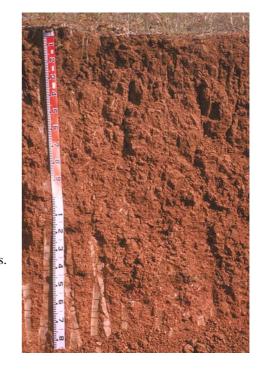
Diffuse to:

Red very hard moderately calcareous heavy clay

with strong coarse subangular blocky structure,

10-20% gypsum crystals and minor

manganiferous veins.



Classification: Sodic, Calcic, Red Dermosol; medium, slightly gravelly, clayey / clayey, very deep

Summary of Properties

Drainage Moderately well drained. Soil rarely remains wet for more than a week following

heavy or prolonged rainfall.

Fertility Inherent fertility is high, as indicated by the exchangeable cation data. However,

regular phosphorus applications are needed (levels are very low at sampling site). Relatively low organic carbon levels suggest low nitrogen reserves as well. Zinc

levels become marginally low over time.

pH Alkaline at the surface, strongly alkaline with depth.

Rooting depth Not recorded. Estimate 35 cm in pit, but most roots will be in the top 15 cm.

Barriers to root growth

Physical: Hard consistence throughout impedes root growth to some extent.

Chemical: High pH from 15 cm, high boron concentrations and high sodicity severely restrict

root growth.

Water holding capacity Approximately 30 mm in potential root zone. Profile holds considerably more, but

most not accessible to agricultural plants. Native perennials are adapted to these soil

conditions.

Seedling emergence: Fair due to hard setting sealing surface.

Workability: Fair. Surface soil becomes sticky when wet and shatters when dry.

Erosion Potential

Water: Moderate

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaC1 ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	K		Boron mg/kg	Trace Elements mg/kg (DTPA)			CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg			ESP		
							mg/Kg	mg/kg			Cu	Fe	Mn	Zn	(1)/116	Ca	Mg	Na	K	
0-15	8.2	7.9	1.2	0.44	1.9	1.03	5	439	-	2.7	1.3	10.4	4.0	0.3	25.9	18.9	4.3	0.87	0.94	3.4
15-35	9.3	8.5	6.9	0.30	0.9	0.30	< 4	182	-	4.8	1.5	5.5	5.3	0.1	31.0	16.7	9.8	5.02	0.54	16.2
35-50	9.4	8.7	6.8	0.52	1.7	0.23	< 4	207	-	15.2	1.9	4.7	5.7	0.2	31.0	12.1	11.3	8.47	0.61	27.3
50-100	9.1	8.6	4.4	1.43	7.6	0.21	< 4	257	-	39.5	1.6	3.0	4.2	0.2	30.8	11.2	12.1	11.98	0.79	38.9
100-180	8.2	8.1	3.3	4.83	13.0	0.09	< 4	251	-	32.8	1.1	1.1	3.6	0.2	33.9	14.0	11.6	12.68	0.71	37.4

Note: 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.