

HARD RED CLAY

General Description: *Hard red clay overlying a very coarsely structured red heavy clay, calcareous with depth*

Landform: Flats and very gently undulating pediments

Substrate: Red well structured alluvial clay with soft carbonate accumulations

Vegetation:



Type Site: Site No.: CU048

1:50,000 sheet:	6632-4 (Orroroo)	Hundred:	Coomooroo
Annual rainfall:	340 mm	Sampling date:	03/11/94
Landform:	Lower slope of an undulating rise		
Surface:	Hard setting with minor quartzite stone		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-9	Hard reddish brown fine sandy light clay with very coarse blocky structure. Abrupt to:
9-15	Dark reddish brown very hard medium clay with moderate very coarse prismatic structure. Abrupt to:
15-40	Dark reddish brown firm medium heavy clay with strong prismatic breaking to polyhedral structure and 2-10% quartzite gravel. Clear to:
40-60	Red hard medium heavy clay with strong prismatic breaking to blocky structure and 2-10% quartzite gravel. Clear to:
60-90	Red hard highly calcareous medium heavy clay with strong coarse polyhedral structure, 20-50% soft carbonate and 2-10% quartzite gravel. Diffuse to:
90-150	Red hard highly calcareous medium clay with strong coarse polyhedral structure and 10-20% soft carbonate.



Classification: Haplic, Hypercalcic, Red Dermosol; thin, slightly gravelly, clayey / clayey, very deep

Summary of Properties

Drainage Although the clay content is high throughout, the soil is well drained. Waterlogging is only likely after prolonged rains.

Fertility The natural fertility is high as indicated by the high CEC and high proportion of exchangeable calcium. This is due to the content and nature of the clay. Organic carbon (and therefore nitrogen and sulphur reserves) is marginal - aim for 1.4%. All elements tested are adequate.

pH Neutral at the surface, alkaline with depth.

Rooting depth 90 cm in pit.

Barriers to root growth

Physical: Hardness of clay restricts root elongation if soil is slightly dry.

Chemical: There are no apparent chemical barriers other than a marginally high deep subsoil pH. Salinity (measured by EC), sodicity (measured by ESP) and boron are low.

Water holding capacity Approximately 100 mm in the root zone (high).

Seedling emergence: Fair due to the hard setting surface which tends to seal over.

Workability: Fair due to the narrow moisture range for effective working; ie soil tends to pass from being too wet to too dry fairly quickly.

Erosion Potential

Water: Moderately low

Wind: Low

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ 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	6.9	6.1	0	0.05	0.32	1.1	17	597	-	1.0	2.24	8	26.3	0.60	15.7	9.51	3.38	0.16	1.77	1.0
0-9	7.3	6.9	0	0.13	0.62	1.4	18	580	-	0.8	2.37	9	27.6	2.23	15.8	9.23	2.90	0.10	1.62	0.6
9-15	7.0	6.0	0	0.03	0.17	0.8	12	445	-	0.9	2.66	9	25.2	0.38	17.8	11.31	3.07	0.11	1.40	0.6
15-40	8.1	7.2	0	0.04	0.22	0.7	12	269	-	1.0	2.32	5	5.79	0.22	24.9	20.34	3.96	0.20	1.00	0.8
40-60	8.3	7.6	0	0.08	0.29	0.6	<4	207	-	1.2	2.63	4	2.96	0.24	28.7	24.58	5.32	0.33	1.01	1.1
60-90	8.7	7.9	23.1	0.11	0.27	0.2	<4	152	-	1.2	1.64	3	1.77	0.20	18.1	14.33	4.15	0.43	0.65	2.4
90-150	9.0	8.0	15.1	0.14	0.33	0.1	<4	185	-	1.6	1.24	3	1.66	0.34	15.1	10.34	4.83	0.77	0.66	5.1

Note: Paddock sample bulked from 20 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.