

HARD SANDY CLAY LOAM OVER RED CLAY

General Description: *Hard setting red brown sandy to loamy surface overlying a reddish structured clay containing soft or rubbly carbonate with depth, formed in soft sandstone*

Landform: Slopes of undulating low hills

Substrate: Soft massive sandstone of Tertiary age

Vegetation:

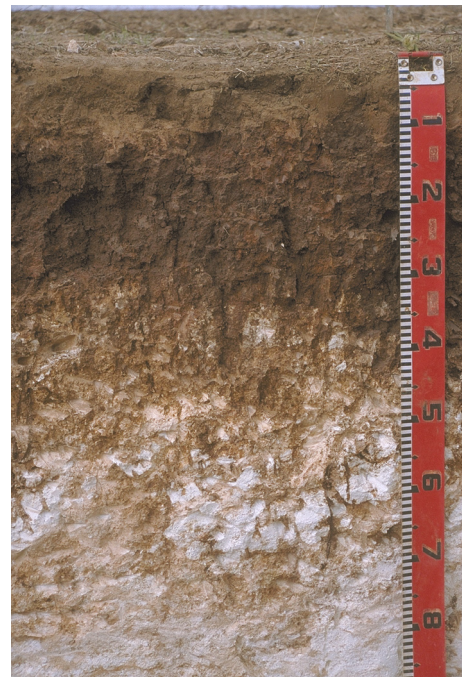


Type Site:	Site No.:	CM028	1:50,000 mapsheet:	6530-1 (Koolunga)
	Hundred:	Hart	Easting:	265300
	Section:	459	Northing:	6272450
	Sampling date:	13/05/93	Annual rainfall:	505 mm average

Upper slope of an undulating low hill with a slope of 8%, hard setting surface and 2-10% surface quartz stones.

Soil Description:

Depth (cm)	Description
0-8	Dark reddish brown massive sandy clay loam. Abrupt to:
8-10	Reddish yellow massive sandy clay loam. Sharp to:
10-35	Dark reddish brown and red sandy medium clay with strong blocky structure. Clear to:
35-50	Dark reddish brown weakly structured moderately calcareous sandy medium clay with minor soft carbonate segregations and 10-20% sandstone fragments. Gradual to:
50-80	Red massive sandy light clay with more than 50% sandstone fragments. Gradual to:
80-170	White massive sandstone.



Classification: Sodic, Calcic, Red Chromosol; medium, non-gravelly, clay loamy / clayey, moderate



Summary of Properties

Drainage: The soil is well drained, although water perches on top of the clay subsoil after heavy or prolonged rainfall. The profile is unlikely however to remain wet for more than a few days in most seasons.

Fertility: The inherent fertility of the soil is moderate, as indicated by the exchangeable cation data. The clay subsoil has a high nutrient retention capacity, but most of the surface soil's capacity is associated with organic matter. Organic carbon is low at the sampling site (1.6% is desirable).

pH: Acidic at the surface, strongly alkaline with depth.

Rooting depth: 70 cm at sampling site, but there are few roots below 50 cm.

Barriers to root growth:

Physical: The high strength of both the surface and subsoil restricts root development, particularly at low moisture content. The depth to sandstone determines maximum rooting depth.

Chemical: There are no apparent chemical barriers to root growth.

Waterholding capacity: Approximately 85 mm in the rootzone, due to the relatively shallow depth over sandstone.

Seedling emergence: Moderate to poor, depending on the degree of hard setting and surface sealing. Sandier types with low organic matter are the most likely to present problems.

Workability: Fair. The poorly structured surface is liable to shatter if worked too dry and puddle if worked too wet. Gypsum will improve the soil's workability.

Erosion Potential:

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

Wind: Low to moderately 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	6.0	5.7	0	0.16	1.13	1.3	79	369	-	2.6	0.8	48	8.2	1.4	11.2	4.66	1.84	0.29	0.60	2.6
0-8	5.7	5.3	0	0.12	0.99	1.4	71	345	-	2.0	0.6	45	6.7	0.6	10.2	4.80	1.59	0.17	0.57	1.7
10-35	7.2	6.6	0	0.10	0.33	0.8	11	326	-	6.3	0.6	8	3.6	0.2	21.8	10.11	8.07	1.00	0.80	4.6
35-50	8.9	8.4	9.6	0.39	1.38	0.3	6	243	-	6.8	0.6	4	1.2	0.2	14.8	5.80	7.78	1.76	0.39	11.9
50-80	9.2	8.7	2.0	0.44	2.63	0.1	5	153	-	4.3	0.2	2	0.5	0.1	7.8	2.61	4.41	1.76	0.21	22.6

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.

Further information: [DEWNR Soil and Land Program](#)

