

GRADATIONAL SANDY CLAY LOAM OVER ROCK

General Description: *Reddish brown sandy loam to sandy clay loam overlying a reddish clayey subsoil, highly calcareous with depth, grading to quartzitic coarse grained rock*

Landform: Slopes of undulating to rolling rises and low hills

Substrate: Quartzites or quartzitic sandstones, capped by soft to hard carbonate

Vegetation:



Type Site:	Site No.:	CU039	1:50,000 mapsheet:	6532-2 (Booleroo)
	Hundred:	Booleroo	Easting:	255800
	Section:	105S	Northing:	6361950
	Sampling date:	06/06/1994	Annual rainfall:	400 mm average

Lower slope (3% gradient) of a gently undulating rise. Hard setting surface with minor quartz and quartzite stones.

Soil Description:

Depth (cm)	Description
0-8	Dark reddish brown sandy clay loam with moderate coarse subangular blocky structure and minor quartzite gravel. Abrupt to:
8-15	Dark reddish brown sandy light clay with moderate subangular blocky structure and minor quartzite gravel. Abrupt to:
15-35	Dark red with reddish brown inclusions heavy clay with strong coarse prismatic structure and 2-10% quartzite fragments. Sharp to:
35-36	Hard massive calcrete pan. Sharp to:
36-80	Pinkish white massive very highly calcareous sandy clay loam with pockets of clay (as above) and 10-20% quartzite fragments. Diffuse to:
80-120	Weathering quartzitic sandstone with 20-50% soft carbonate segregations.



Classification: Haplic, Lithocalcic, Red Dermosol; thin, non-gravelly, clay loamy / clayey, moderat



Summary of Properties

- Drainage:** The soil is moderately well drained. The heavy clay subsoil has low permeability and restricts water movement, causing the soil to remain wet for a week or so after rain.
- Fertility:** The soil has a high nutrient storage capacity, as indicated by the high CEC values. The levels of all major and trace elements appear to be satisfactory although phosphorus is marginally low. Organic carbon, and therefore total nitrogen store, is also marginally low (1.3% OC should be the target in this rainfall zone).
- pH:** Slightly acidic at the surface, alkaline with depth.
- Rooting depth:** 80 cm in pit, but most roots below the calcrete pan are confined to clay pockets in the carbonate.
- Barriers to root growth:**
- Physical:** The calcrete pan has the potential to limit growth but as it is broken, roots usually find their way through.
- Chemical:** There are no chemical barriers to root growth; salinity, sodicity and boron concentrations all being acceptable.
- Waterholding capacity:** Approximately 100 mm but up to a third of this is effectively unavailable due to low root densities in the carbonate layer.
- Seedling emergence:** Fair. The surface soil tends to set hard and seal over.
- Workability:** Fair. The surface soil has only a limited moisture range for effective working.
- Erosion Potential:**
- Water:** Moderately low. Although the soil itself is highly erodible, the slope is gentle.
- 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	6.2	0	0.11	0.72	1.0	25	267	-	1.6	0.9	10	14.2	0.6	13.8	7.4	3.5	1.04	0.70	7.5
0-8	6.5	6.3	0	0.06	0.34	1.2	27	307	-	1.0	0.9	13	15.3	0.7	15.0	9.6	2.7	0.11	0.74	0.7
8-15	6.3	5.9	0	0.06	0.52	1.0	9	209	-	1.2	0.8	10	15.8	0.4	17.4	11.4	3.2	0.18	0.57	1.0
15-35	7.2	6.9	0	0.09	0.39	0.8	<4	144	-	2.1	0.5	6	5.3	0.7	24.4	16.9	4.0	0.23	0.46	0.9
35-36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36-80	8.6	7.9	43.4	0.14	0.58	0.4	<4	58	-	0.8	0.6	3	0.8	0.2	10.9	8.5	2.1	0.19	0.14	1.7
80-120	9.1	8.1	21.5	0.10	0.46	0.1	<4	52	-	0.5	0.3	3	0.8	0.2	9.8	6.3	2.6	0.22	0.12	2.2

- 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.

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

