

GRADATIONAL CLAY SOIL OVER ROCK

General Description: *Well structured reddish brown clay, becoming more clayey and calcareous with depth, over weathering basement rock*

Landform: Undulating low hills.

Substrate: Fine grained schists of the Mangalo Formation, capped by windblown carbonates

Vegetation:



Type Site: Site No.: EE220
 1:50,000 sheet: 6130-1 (Rudall) Hundred: Campoona
 Annual rainfall: 425 mm Sampling date: 18/09/01
 Landform: Midslope of undulating low hills, 3% slope.
 Surface: Firm, sealed surface.

Soil Description:

Depth (cm)	Description
0-5	Dark reddish brown light clay with moderate granular structure and 5% quartz gravel. Clear to:
5-23	Yellowish red medium heavy clay with strong polyhedral structure. Gradual to:
23-70	Yellowish brown highly calcareous massive medium clay with 30% schist fragments. Gradual to:
70-130	Weathering schist with 20% pockets of non calcareous clay (as above).



Classification: Sodic, Calcic, Red Dermosol; thin, slightly gravelly, clayey / clayey, moderate

Summary of Properties

- Drainage:** Moderately well to well drained. The soil is unlikely to remain wet for more than a week or so following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is high, as indicated by the exchangeable cation data. Concentrations of all tested nutrient elements are satisfactory.
- pH:** Slightly alkaline at the surface, strongly alkaline with depth.
- Rooting depth:** 70 cm in pit, but few roots below 40 cm.

Barriers to root growth:

- Physical:** Depth to hard rock is the only likely physical barrier. At this site, depth is adequate.
- Chemical:** High alkalinity from 23 cm restricts root growth. At this site, alkalinity is sufficiently severe from 40 cm to limit root growth. This may be a nutrient fixation effect due to high pH.

Water holding capacity: Approximately 70 mm in the potential root zone.

Seedling emergence: Satisfactory except where surface seals develop.

Workability: Satisfactory, although surface tends to become sticky when wet.

Erosion Potential

Water: Moderately low due to the low slope and low inherent erodibility of the soil.

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	Org.C %	NO ₃ mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO ₄ mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum of cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-5	7.8	6.9	nd	0.098	1.7	6	38	344	2.9	1.3	3.1	13.6	7.6	3.7	19.9	14.0	4.85	0.25	0.84	1.8
5-23	8.5	8.1	nd	0.123	0.53	3	6	248	2.9	1.2	20.4	11.6	7.4	1.3	30.7	19.2	10.0	0.86	0.61	2.8
23-70	9.3	8.5	nd	0.202	0.27	3	3	209	3.9	1.9	2.0	8.0	1.6	1.3	20.6	9.96	7.97	2.16	0.53	10.5
70-130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Sum of cations in neutral to alkaline soils is an approximation of cation exchange capacity (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 sum of cations.