

GRADATIONAL CLAY (Clayey red brown earth)

General Description: *Clay loam to light clay grading to a well structured red or brown clay, calcareous with depth*

Landform: Undulating rises.

Substrate: Tertiary clay.

Vegetation:



Type Site: Site No.: EE044

1:50,000 sheet: 6130-1 (Rudall)

Hundred: Campoona

Annual rainfall: 360 mm

Sampling date: 14/04/89

Landform: Midslope of rise

Surface: Hard setting with no stones

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-8	Dark yellowish brown moderately calcareous light medium clay with weak medium subangular blocky structure. Clear to:
8-25	Brown medium clay with moderate medium subangular blocky structure. Clear to:
25-55	Orange highly calcareous medium clay with medium subangular blocky structure. Clear to:
55-90	Orange very highly calcareous massive medium clay. Gradual to:
90-150	Yellowish brown highly calcareous massive medium clay.



Classification: Sodic, Hypercalcic, Brown Dermosol; thin, non-gravelly, clayey / clayey, moderate

Summary of Properties

Drainage	Moderately well drained. Soil may remain wet for up to a week following heavy or prolonged rainfall.
Fertility	Inherent fertility is high, as indicated by the exchangeable cation data and high surface clay content. Apart from phosphorus and nitrogen, most likely nutrients to be deficient are sulphur and zinc.
pH	Alkaline at the surface, strongly alkaline with depth.
Rooting depth	Not recorded. Estimate that most growth is in the upper 25 cm of the pit.
Barriers to root growth	
Physical:	The clayey subsoil imposes a slight restriction on growth.
Chemical:	High pH, sodicity and boron from 25 cm restrict deeper growth.
Water holding capacity	Theoretical capacity is very high (over 100 mm) but in the effective root zone for crops, capacity is approximately 40 mm.
Seedling emergence:	Fair due to clayey surface.
Workability:	Fair. Surface may become sticky when wet, reducing time available for effective working.

Erosion Potential

Water:	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 -S 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	
0-8	8.2	7.7	4	0.32	1.72	-	-	-	-	3.9	1.91	25.8	32.7	0.69	35.0	?	9.30	0.80	1.70	2.3
8-25	8.6	7.7	2	0.40	2.13	-	-	-	-	7.6	2.20	29.6	3.94	0.20	31.0	?	14.00	2.80	1.20	9.0
25-55	9.7	8.8	18	1.00	4.92	-	-	-	-	23.3	4.00	22.2	2.04	0.19	31.0	?	18.00	9.40	1.40	30.3
55-90	9.9	9.1	33	1.32	7.06	-	-	-	-	13.2	1.53	12.4	1.76	0.19	29.0	?	12.00	9.99	0.84	34.4
90-150	9.4	8.9	25	1.50	7.20	-	-	-	-	8.5	1.40	13.2	1.95	0.33	32.0	?	15.00	9.99	0.79	31.2

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

* Exchangeable calcium (Ca) values not presented because the laboratory procedure used was inappropriate for very highly calcareous samples.