

RED CRACKING CLAY

General Description: *Red strongly structured and seasonally cracking clay becoming coarsely structured and calcareous with depth*

Landform: Slopes and crests of gently undulating to undulating rises

Substrate: Pleistocene age clays probably deposited on the beds of ancient lakes

Vegetation:



Type Site: Site No.: CU015
 1:50,000 sheet: 6531-1 (Laura) Hundred: Booyoolie
 Annual rainfall: 450 mm Sampling date: 31/08/92
 Landform: Lower slope of gently undulating rise, 2% slope
 Surface: Firm, seasonally cracking with no stones

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-9	Dark reddish brown strongly granular light clay. Clear to:
9-30	Red moderately calcareous heavy clay with coarse blocky structure and 10% soft carbonate segregations. Gradual to:
30-50	Red highly calcareous heavy clay with coarse blocky structure and 10% soft carbonate segregations. Gradual to:
50-100	Red and yellowish brown mottled moderately calcareous medium heavy clay with strong lenticular structure and slickensides (smooth clay faces). Diffuse to:
100-180	As for 50-100 cm.



Classification: Epicalcareous-Epihypersodic, Self-mulching, Red Vertosol; non-gravelly, fine / very fine, deep

Summary of Properties

Drainage	Moderately well to imperfectly drained due to the low permeability of the sodic subsoil clay. Soil may remain wet for up to several weeks in most seasons.
Fertility	High natural fertility, as indicated by the high clay content and the high CEC. There are no apparent surface soil deficiencies, but zinc is often deficient in clay soils.
pH	Mildly to moderately alkaline throughout.
Rooting depth	100 cm at type site, but root density below 50 cm is sparse.
Barriers to root growth	
Physical:	There are no physical barriers to root growth in the upper 50 cm, but below that the clay strength increases and has some effect on satisfactory root proliferation. Cracking in the soil may damage roots during a dry spring.
Chemical:	Boron levels are toxic (>15 mg/kg) from 30 cm. Salt levels are high from 50 cm. High pH and high exchangeable sodium from 30 cm may also have a suppressing effect on root growth by reducing nutrient availability.
Water holding capacity	120 mm in root zone (high), but a proportion of this below 50 cm will be unused due to low root density.
Seedling emergence	Good, due to well structured surface soil, low in exchangeable sodium and high in organic matter.
Workability	Fair to good, depending on how quickly the soil wets at the opening of the season. These soils are very sticky and difficult to work when they are too wet.
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 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	8.0	7.8	0.7	0.17	0.49	1.8	41	1194	-	2.5	1.1	12	8.3	0.7	30.0	25.4	4.0	0.42	2.33	1.4
0-9	8.0	7.7	0.3	0.15	0.58	1.8	46	813	-	3.8	1.2	13	11	0.8	32.5	26.0	4.1	0.52	2.30	1.6
9-30	8.8	8.2	9.2	0.25	0.46	0.4	<5	256	-	8.7	1.2	11	2.6	0.2	31.7	17.0	11.5	3.68	0.89	12
30-50	9.1	8.5	10.3	0.66	1.73	0.3	<5	407	-	27	1.3	11	1.8	0.2	28.9	8.2	13.5	8.53	1.03	29
50-100	8.9	8.6	4.5	1.70	7.15	0.2	<5	469	-	61	1.1	9	1.2	0.3	30.2	8.5	13.3	11.1	1.32	37
100-180	8.9	8.5	3.5	1.96	7.54	0.2	<5	2132	-	61	0.9	11	1.1	0.3	31.6	8.9	12.4	11.2	1.32	36

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.