RED CRACKING CLAY

General Description: *Deep reddish brown cracking clay with variable soft carbonate segregations overlying a red coarsely structured heavy clay*

Landform: Flats and lower slopes

Substrate: Reddish, coarsely structured heavy clay of Pleistocene age (Hindmarsh Clay equivalent)

Vegetation: Grassland

Type Site: Site No.: CM040

1:50,000 sheet:	6630-1 (Burra)	Hundred:	Hanson
Annual rainfall:	450 mm	Sampling date:	24/05/93
Landform:	Depression between gently undulating rises, 2% slope		
Surface:	Self-mulching surface with no stones		

Soil Description:

Depth (cm)	*Description*
0-10	Dark reddish brown medium clay with strong blocky structure. Clear to:
10-25	Dark red heavy clay with strong blocky structure and minor quartz and ironstone gravel. Diffuse to:
25-45	Dark reddish brown moderately calcareous medium clay with strong prismatic structure and minor quartz and ironstone gravel. Clear to:
45-100	Dark reddish brown moderately calcareous medium clay with strong prismatic structure and about 20% soft Class I carbonate segregations. Gradual to:
100-145	Dark red moderately calcareous heavy clay with strong coarse blocky structure (Hindmarsh Clay) and about 15% soft Class I carbonate segregations. Gradual to:
145-155	Red highly calcareous heavy clay with strong blocky structure and about 20% soft carbonate segregations.

Classification: Epicalcareous-Endohypersodic, Self-mulching, Red Vertosol

Summary of Properties

Drainage The soil is moderately well drained, and is unlikely to remain wet for more than a week or so at a time.

Fertility The soil has a very high nutrient retention capacity as indicated by the exchangeable cation data. This is attributable to the high clay content, the mineralogy of the clay and the high surface organic matter levels. Like most clay soils, it is probably deficient in zinc (very low from 10 cm). Phosphorus is adequate at the sampling site.

pH Neutral at the surface, strongly alkaline with depth.

Rooting depth 100 cm in sampling pit, but few roots below 45 cm.

Barriers to root growth

Physical: There are no physical barriers to root growth.

Chemical: The combination of high boron and exchangeable sodium from 100 cm, and high pH (inducing nutrient deficiencies) from 45 cm restricts root growth.

Water holding capacity Approximately 120 mm in root zone, but not all is available due to uneven root distribution.

Seedling emergence Good.

Workability Fair to good. The surface becomes sticky when wet, restricting accessibility.

Erosion Potential

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	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	
Paddock	6.9	6.8	0	0.13	0.60	2.2	35	927	-	2.3	2.1	22	36.7	0.5	29.5	21.31	4.49	0.22	2.44	0.7
0-10	7.2	7.2	0.2	0.12	0.57	2.0	20	829	-	2.3	2.0	16	29.4	0.4	30.1	23.39	4.17	0.21	2.20	0.7
10-25	8.0	7.8	0.2	0.11	0.31	1.1	7	520	-	3.3	1.7	13	11.1	0.1	38.4	27.01	4.44	0.48	1.49	1.3
25-45	8.5	8.0	5.4	0.19	0.37	0.7	7	384	-	2.4	1.7	17	8.7	0.1	34.7	22.55	7.08	2.01	1.00	5.8
45-100	9.2	8.3	22.2	0.35	0.43	0.5	<4	423	-	7.2	1.4	15	6.9	<0.1	26.4	10.40	9.15	4.96	1.16	18.8
100-145	9.4	8.7	16.4	0.62	1.15	0.3	4	531	-	36.1	1.5	11	4.4	0.1	28.6	6.18	11.33	8.45	1.40	29.5
145-155	9.6	8.7	18.8	0.75	1.68	0.2	9	461	-	30.6	0.9	9	2.6	0.1	23.8	4.60	8.80	8.44	1.04	35.5

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.