RED CRACKING CLAY

General Description: *Red well structured seasonally cracking clay, becoming more clayey, more coarsely structured and calcareous with depth.*

Landform: Undulating rises.

Substrate: Coarsely structured red and brown heavy clay (Hindmarsh Clay equivalent).

Vegetation:

Type Site: Site No.: CM099

1:50,000 sheet:	6630-2 (Apoinga)	Hundred:	Stanley
Annual rainfall:	550 mm	Sampling date:	12/05/04
Landform:	Lower slope of undulating rise, 4% slope		
Surface:	Seasonally cracking with minor quartzite stones (20-60 mm)		

Soil Description:

Depth (cm)	*Description*
0-10	Dark reddish brown hard medium heavy clay with strong polyhedral structure and minor siltstone gravel. Clear to:
10-35	Dark reddish brown extremely hard heavy clay with strong coarse prismatic breaking to medium polyhedral structure, and minor siltstone gravel. Diffuse to:
35-60	Dark reddish brown very hard heavy clay with strong medium prismatic breaking to coarse lenticular structure. Diffuse to:
60-90	Red very hard moderately calcareous heavy clay with strong coarse prismatic breaking to coarse lenticular structure and 10-20% fine carbonate segregations. Diffuse to:
90-125	Red and dark yellowish brown mottled very hard slightly calcareous heavy clay with strong coarse prismatic breaking to coarse lenticular structure and 20-50% fine carbonate. Diffuse to:
125-140	Red, reddish yellow and strong brown hard massive sandy medium clay with 2-10% fine carbonate segregations.

Classification: Endocalcareous, Epipedal, Red Vertosol; non-gravelly, medium fine / very fine, deep

Summary of Properties

Drainage: Moderately well drained. The clayey texture restricts water movement after the cracks have closed, so that saturation is likely for periods of a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is high, as indicated by the exchangeable cation data. Cracking clays have a very high capacity to store and release nutrients. However, high productivity can in time lead to zinc deficiencies, particularly where zinc free high analysis fertilizers are used. Regular nitrogen and phosphorus inputs are required.

pH: Neutral at the surface, strongly alkaline with depth.

Rooting depth: 125 cm in pit, but few roots below 90 cm.

Barriers to root growth:

Physical: The coarsely structured clay imposes some restrictions on root growth – most development occurring between the aggregates, rather than inside them.

Chemical: High pH and boron concentrations in the deep subsoil will impact on sensitive crops, but at this site hostile conditions are below the main rootzone.

Water holding capacity: Approximately 140 mm (total available) for annual crop and pasture plants. Approximately 20 mm (readily available) in potential grape vine rootzone of 30 cm.

Seedling emergence: Satisfactory.

Workability: Fair. Soil is too cloddy when dry, and becomes very sticky when wet.

Erosion Potential

Water: Moderately low potential for sheet erosion, due to stability of clayey surface soil. These soils are highly susceptible to gully erosion where water flow is channelled.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	CO_3 %	EC 1:5 dS/m	ECe dS/m	Cl mg/kg	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-10	6.9	6.3	0	0.16	1.107	61	2.23	66	627	20	1.3	-	-	-	-	28.1	20.9	5.28	0.40	1.57	1.4
10-35	7.8	7.0	0	0.12	0.215	8	1.27	7	365	20	1.5	-	-	-	-	35.2	25.8	7.79	0.53	1.01	1.5
35-60	8.4	7.6	1.1	0.18	0.331	17	0.75	5	275	21	1.4	-	-	-	-	38.5	24.9	11.7	1.18	0.80	3.1
60-90	9.1	8.0	10.9	0.19	0.319	9	0.37	5	264	15	2.8	-	-	-	-	31.3	16.1	12.5	1.95	0.71	6.2
90-125	9.3	8.2	6.8	0.20	0.500	9	0.23	3	271	12	8.5	-	-	-	-	29.3	11.9	13.8	2.95	0.74	10.1
125-140	9.0	8.1	0.4	0.25	0.767	40	0.45	13	248	24	12	-	-	-	-	18.3	7.76	7.61	2.29	0.68	12.5

Note: Sum of cations is an estimate of cation exchange capacity, a measure of the soil's capacity to store and release nutrient elements.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the sum of cations.