CLAY LOAM OVER DISPERSIVE RED CLAY ON ROCK

General Description: *Hard setting red brown loam to clay loam overlying a red, dispersive, prismatic structured clay becoming calcareous with depth, and forming in weathering siltstone*

Landform: Slopes of undulating to rolling rises and low hills

Substrate: Weathering siltstone, calcified by soft to semi-hard carbonate leached from above

Vegetation:

Type Site: Site No.: CM036

1:50,000 sheet:	6630-2 (Apoinga)	Hundred:	Hanson
Annual rainfall:	450 mm	Sampling date:	20/05/93
Landform:	Lower slope of a gently undulating rise, 2% slope		
Surface:	Hard setting with no stones		

Soil Description:

Depth (cm)	*Description*
0-10	Red massive fine sandy clay loam. Sharp to:
10-30	Dark red very firm heavy clay with strong coarse prismatic structure. Diffuse to:
30-45	Dark red heavy clay with moderate coarse blocky structure. Clear to:
45-55	Red highly calcareous light medium clay with moderate blocky structure and 2-10% carbonate fragments. Clear to:
55-95	Red highly calcareous light medium clay with more than 50% fine carbonate segregations soft and 2-10% weathered siltstone fragments. Gradual to:
95-160	Weathering siltstone.

Classification: Hypercalcic, Mesonatric, Red Sodosol; medium, non-gravelly, clay loamy/clayey, moderate

Summary of Properties

Drainage The soil is moderately well to imperfectly drained due to the slow permeability of the dispersive sodic clay subsoil. The soil may remain wet for a week or more.

Fertility The inherent fertility of the soil is moderate, as indicated by the exchangeable cation data for the subsoil. Although the base status of the clay is high, the proportions of magnesium and sodium relative to calcium are unfavourable. Some leaching of the surface soil has occurred as a result of mild acidification, although organic carbon levels are fair. Phosphorus levels are high at the sampling site.

pH Acidic at the surface, strongly alkaline with depth.

Rooting depth 55 cm in sampling pit.

Barriers to root growth

Physical: The dispersive sodic subsoil clay has high strength which restricts root proliferation, as does the hard massive surface soil.

Chemical: High levels of boron and exchangeable sodium may affect subsoil root growth. High pH, limiting the availability of some nutrients such as zinc, also has an effect.

Water holding capacity 70 mm in root zone.

Seedling emergence Fair to poor due to the hard setting, sealing surface.

Workability Fair, due to the poor structure of the surface and its consequent limited moisture range for effective working. The soil shatters if worked too dry and puddles if worked too wet.

Erosion Potential

Water: Moderately low. On steeper slopes, these soils are highly susceptible to erosion.

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	5.7	5.1	0	0.09	0.75	1.5	71	454	-	2.1	0.9	127	45.9	0.5	8.2	3.44	1.26	0.37	0.82	4.3
0-10	5.9	5.5	0	0.10	0.76	1.3	78	428	-	2.0	0.9	117	26.0	0.5	8.1	4.05	1.20	0.45	0.74	5.6
10-30	7.4	6.6	0.1	0.20	0.88	0.9	7	678	-	15.0	1.6	15	5.9	0.1	28.5	6.89	7.89	4.39	2.07	15.4
30-45	8.7	8.1	0.4	0.59	1.75	0.5	4	771	-	24.4	1.7	7	1.9	0.1	31.2	6.96	11.53	7.15	2.19	22.9
45-55	9.0	8.4	12.4	0.86	2.91	0.6	<4	654	-	20.5	1.3	6	1.8	0.1	22.2	5.13	9.82	7.35	1.72	33.1
55-95	9.0	8.3	28.9	1.12	6.63	0.1	<4	314	-	8.9	0.4	4	1.2	<0.1	9.9	2.95	4.72	4.23	0.70	42.4

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.