BROWN CRACKING CLAY

General Description: *Brown cracking clay formed on fine grained alluvium*

Landform: Valley flats, often with gilgai (crabhole) microrelief

Substrate: Brown and red alluvial clay with variable calcareous segregations

Vegetation:

Type Site: Site No.: CU027

1:50,000 sheet:	6631-4 (Jamestown)	Hundred:	Belalie
Annual rainfall:	440 mm	Sampling date:	25/02/93
Landform:	Valley flat, 0% slope		
Surface:	Hard setting, seasonally cracking with gilgai (crabhole) microrelief, no stones		

Soil Description:

Depth (cm)	*Description*
0-8	Dark brown hard (dry) medium heavy clay with strong coarse prismatic, breaking to strong granular structure. Clear to:
8-30	Brown friable heavy clay with weak coarse blocky, breaking to strong granular structure, and 2-10% fine carbonate nodules. Diffuse to:
30-55	Brown friable heavy clay as for the 8-30 cm layer. Gradual to:
55-95	Dark brown firm slightly calcareous heavy clay with weak coarse prismatic structure. Diffuse to:
95-140	Dark brown firm moderately calcareous heavy clay with slickensides. Clear to:
140-160	Dark brown firm very highly calcareous medium clay with 10-20% carbonate nodules.

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

Summary of Properties

Drainage The soil is moderately well to imperfectly drained, due to its high clay content and low position in the landscape. The profile may remain wet for a week or more following rain.

Fertility The inherent fertility of the soil is high, as indicated by the high CEC values and the high proportion of exchangeable calcium. These soils have a high capacity to retain nutrients. There are no apparent deficiencies at the type site, with the possible exception of zinc which is commonly deficient in high pH clay soils.

pH Neutral at the surface, grading to alkaline with depth.

Rooting depth 140 cm in pit, but there are very few roots below 95 cm.

Barriers to root growth

Physical: The clay may be hard when not fully wet and restrict root growth. There may also be some inhibition due to temporary waterlogging.

Chemical: The only apparent chemical limitation is zinc deficiency.

Water holding capacity Approximately 150 mm in the root zone (very high), most of which is available to plants. The soil, being clayey, has a high wilting point, and in some years, the plant available capacity may not fill.

Seedling emergence Good, provided the surface does not dry out at the critical time.

Workability Fair. The surface is too hard to work until moist, and becomes sticky when wet.

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	7.3	6.8	0	0.12	0.49	2.1	33	1034	-	2.2	1.7	30	27.3	2.7	31.1	20.57	5.26	0.22	3.16	0.7
0-8	7.5	6.9	0.1	0.13	0.50	2.3	24	1171	-	2.2	1.7	29	19.4	0.6	32.2	24.47	4.54	0.20	3.28	0.6
8-30	7.9	7.6	2.1	0.13	0.31	0.5	5	662	-	2.6	1.5	15	3.7	0.1	38.2	25.33	6.65	0.17	2.20	0.4
30-55	8.0	7.7	2.8	0.14	0.27	0.5	5	699	-	2.6	1.4	15	2.9	0.2	33.8	23.26	8.17	0.31	1.41	0.9
55-95	8.1	7.7	2.4	0.15	0.33	0.4	5	653	-	2.9	1.4	16	3.5	0.2	37.0	19.67	11.06	0.75	1.79	2.0
95-140	8.3	7.8	4.4	0.17	0.27	0.3	4	630	-	4.3	1.3	15	2.4	0.1	38.7	18.55	12.87	1.20	2.18	3.1
140-160	8.5	7.8	41.0	0.16	0.34	0.1	6	544	-	4.3	0.7	10	1.3	0.1	22.8	10.91	7.78	0.75	1.34	3.3

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.