RED CRACKING CLAY

General Description: *Red crumbly clay with a lichen crust, becoming finer textured, harder, and more calcareous and coarsely structured with depth*

Landform: Gilgai plain (patterned plain) with shelf and hollow microrelief and variable scalding

Substrate: Heavy clay with well developed slickensides

Vegetation: Grassland with some perennial shrubs. Dominant species:
Eragrostis setifolia
Sclerolaena diacantha
Panicum decompositum

Type Site:

Site No.:	CU034		
1:50,000 sheet:	7033-4	Hundred:	Out of Hundreds
Annual rainfall:	200 mm	Sampling date:	08/02/94
Landform:	Gilgai depression on flat plain, 0% slope		
Surface:	Cracking, lichen encrusted with minor quartz gravel		

Soil Description:

Depth (cm)	*Description*
0-10	Red light clay with strong granular structure and minor quartz gravel. Abrupt to:
10-30	Dark red moderately calcareous heavy clay with moderate very coarse polyhedral structure and minor quartz gravel. Gradual to:
30-60	Dark reddish brown highly calcareous heavy clay with strong very coarse polyhedral structure and minor quartz gravel. Diffuse to:
60-100	Dark red highly calcareous heavy clay with strong very coarse polyhedral structure and minor quartz gravel. Gradual to:
100-130	Red highly calcareous heavy clay with strong very coarse lenticular structure and 2-10% soft carbonate segregations.

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

Summary of Properties

Drainage This soil becomes temporarily waterlogged (a few days) after heavy rain due to its high clay content.

Fertility The exchangeable cation data indicate that the soil has a very high capacity to store plant nutrients, right to the surface. This condition is helped by the relatively high organic carbon content at the surface.

pH Alkaline to strongly alkaline throughout.

Rooting depth 100 cm in pit. There are very few roots below this depth.

Barriers to root growth

Physical: The high strength of the clay may impede the development of the roots of some species.

Chemical: The sodium content (ESP) is high, but unlikely to be a problem because the calcium levels are very high. The boron concentration is very high (by agricultural standards) from 60 cm and this may affect root growth. Very high pH from 30 cm and high salt content from 100 cm, affect some species. The soil has a low carbonate (lime content) and high clay content, which affect species suitability.

Water holding capacity Approximately 120 mm. The high clay content gives this soil a high wilting point - a high percentage of rainfall is bound on to the clay and is not available for plant uptake.

Seedling emergence Good.

Erosion Potential This soil has a low potential for erosion, and will absorb substantial amounts of water except in heavy rain storms.

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	8.9	8.0	0.8	0.21	0.65	0.7	18	450	-	1.7	1.1	7	7.1	0.8	24.4	15.8	4.75	2.13	2.52	8.5
0-10	8.7	7.9	0.3	0.14	0.44	0.5	14	558	-	2.1	1.2	7	4.3	0.6	29.2	21.5	5.68	1.17	2.16	3.8
10-30	9.0	8.0	0.9	0.16	0.39	0.3	7	338	-	2.7	1.2	7	3.3	0.3	31.0	23.1	6.43	1.64	1.32	5.0
30-60	9.6	8.4	1.5	0.37	0.54	0.2	<4	269	-	12.4	1.3	9	3.8	0.3	32.2	18.5	6.84	5.60	1.21	17.4
60-100	9.6	8.6	1.9	0.74	1.87	0.2	5	266	-	34.0	1.4	8	3.3	0.2	33.7	15.6	6.67	7.73	1.20	24.8
100-130	8.1	8.0	3.7	5.57	13.8	0.1	14	243	-	57.3	1.3	5	1.4	0.3	34.4	18.1	6.79	9.04	1.02	25.9

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.