GREY CRACKING CLAY

General Description: *Strongly structured dark cracking clay grading to a coarsely structured dark grey heavy clay with variable soft carbonate, over heavy clay*

Landform: Plains, slopes and high level flats in an undulating landscape

Substrate: Heavy Tertiary age clay with coarse lenticular structure

Vegetation:

Type Site: Site No.: CL007

1:50,000 sheet:	6629-2 (Kapunda)	Hundred:	Light
Annual rainfall:	450 mm	Sampling date:	10/03/92
Landform:	Flat in a gently undulating landscape, 1% slope		
Surface:	Seasonally cracking with no stones		

Soil Description:

Depth (cm)	*Description*
0-23	Dark greyish brown moderately calcareous medium clay with strong subangular blocky structure. Clear to:
23-95	Dark grey moderately calcareous heavy clay with strong coarse prismatic structure. Diffuse to:
95-150	Light brown highly calcareous heavy clay with strong coarse lenticular structure.

Classification: Epicalcareous-Endohypersodic, Epipedal, Grey Vertosol

Summary of Properties

Drainage: Moderately well drained. The cracking soil accepts water readily when dry, but after the cracks close, water moves slowly through the soil. Saturation may last up to a week following heavy or prolonged rainfall.

Fertility: Natural fertility is very high, as indicated by the exchangeable cation data. Nutrient retention capacity is very high throughout due to the clayey textures. The data indicate that phosphorus levels are marginal and that zinc may be deficient, as is often the case on the dark cracking clays.

pH: Alkaline at the surface, strongly alkaline in the subsoil.

Rooting depth: About 100 cm in the pit.

Barriers to root growth:

Physical: The coarse structural aggregates of the soil prevent optimum root distribution, but this is a minor limitation until the underlying light brown clay is encountered. Its lenticular structure is very hostile to roots.

Chemical: High pH, high boron and high sodicity from 100 cm prevent any further root growth.

Water holding capacity: Approximately 105 mm in root zone (high). Although capacities are high, large amounts of water must be absorbed by clayey soils before any is available to plants.

Seedling emergence: Good, although emergence is delayed due to the time needed to wet the soil.

Workability: Fair to good. Surface becomes sticky once soil is wet. Gypsum helps overcome this condition.

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	8.7	7.8	5.1	0.11	-	1.16	33	460	-	-	0.95	6.1	1.8	0.31	27.2	27.3	4.37	0.32	1.72	1.2
0-23	8.7	7.9	5.8	0.11	0.3	0.87	14	320	-	-	0.94	7.6	1.9	0.18	26.7	26.3	4.64	0.41	1.23	1.5
23-95	9.2	7.9	2.0	0.10	0.3	0.40	4	150	-	2.1	0.95	8.0	2.0	0.07	15.8	13.4	4.17	1.63	0.50	10.3
95-150	9.8	8.6	7.6	0.68	2.0	0.11	2	290	-	27.6	0.64	5.0	0.6	0.08	28.7	8.63	11.2	16.7	1.22	58.2

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.