SANDY LOAM OVER BROWN SODIC CLAY

General Description: *Hard loamy sand to sandy clay loam over a brown mottled coarsely structured dispersive clay*

Landform: Level plains.

Substrate: Medium to fine textured unconsolidated sedimentary deposit.

Vegetation: Swamp gum and reeds.

Type Site: Site No.: CK012

1:50,000 sheet:	6326-2 (Seddon)	Hundred:	MacGillivray
Annual rainfall:	550 mm	Sampling date:	25/02/94
Landform:	Flat		
Surface:	Soft with no stones. Water table at 220 cm.		

Soil Description:

Depth (cm)	*Description*
0-30	Dark brown very hard fine sandy medium clay with moderate coarse prismatic structure (recent clayey wash mixed with original sandy surface soil). Clear to:
30-48	Light grey soft massive clayey fine sand. Sharp to:
48-80	Greyish brown and strong brown very hard silty medium clay with strong coarse prismatic structure. Gradual to:
80-130	Yellowish brown and light brownish grey firm massive sandy light clay with 2-10% quartz grit. Diffuse to:
130-220	Yellowish brown and light grey friable massive sandy light clay. Gradual to:
220-260	Light grey (gleyed), yellowish brown and black mottled wet massive fine sandy light clay (below water table).

Classification: Eutrophic, Mottled-Mesonatric, Brown Sodosol; thick, non-gravelly, loamy* / clayey, deep

* Assumed natural surface

Summary of Properties

Drainage Poor, due to tight dispersive subsoil clay. Soil may remain wet for several months.

Fertility Natural fertility is moderate, as indicated by the exchangeable cation data, but this is largely due to the clayey wash on the surface. The original sandier surface has a low nutrient retention capacity (as indicated by the data for the paddock sample). Here, most capacity is attributable to the organic matter fraction. The paddock sample suggests low potassium levels, but subsoil concentrations are high.

pH Neutral (pit) to acidic (paddock), alkaline at depth.

Rooting depth Approximately 80 cm in pit, but most roots are in the upper 30 cm.

Barriers to root growth

Physical: The coarsely structured subsoil clay restricts root growth and water use efficiency.

Chemical: Low nutrient status and retention capacity in the bleached A2 layer impedes root growth, as does the moderate salinity level in the subsoil.

Water holding capacity 95 mm in the root zone, but much is effectively unavailable due to low root density.

Seedling emergence: Good in loamy sand of paddock, provided surface organic matter is maintained. Moderate in clayey soil at sampling site.

Workability: The loamy sand of the paddock is easily worked. The clayey soil at the sampling site becomes intractable when wet - sticky, boggy and difficult to work.

Erosion Potential

Water: Low.

Wind: Moderately low (loamy sand of paddock).

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	5.5	5.0	0	0.43	4.30	1.8	30	46	-	0.3	0.3	138	4.4	1.0	4.5	3.06	0.46	0.24	0.13	5.3
0-30	7.0	6.7	0.2	0.99	7.21	1.6	8	389	-	4.2	0.7	75	3.8	1.5	17.8	9.69	6.20	2.37	1.02	13.3
30-48	7.8	7.1	0	0.19	7.01	0.1	<4	34	-	0.4	0.1	3	0.5	0.2	1.1	0.85	0.44	0.23	0.07	na
48-80	7.9	7.4	0	1.24	6.85	0.2	<4	480	-	5.3	<0.1	6	0.2	0.2	16.3	4.76	5.38	3.13	1.25	19.2
80-130	8.3	7.8	0	1.23	13.8	0.0	<4	283	-	3.5	0.1	5	1.3	0.1	6.8	2.21	2.64	1.37	0.66	20.1
130-220	8.7	8.2	2.0	1.13	9.7	0.0	<4	284	-	4.4	<0.1	4	0.8	0.3	8.6	3.33	3.43	1.67	0.66	19.4
220-260	8.6	8.1	2.6	1.29	10.1	0.2	<4	468	-	6.8	<0.1	16	1.7	0.2	12.2	4.30	4.30	2.57	1.13	21.1

Note: Paddock sample bulked from 20 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.