SAND OVER POORLY STRUCTURED CLAY

General Description: *Medium thickness sand over a coarsely structured dispersive brown or red clay, calcareous with depth*

Landform: Gently undulating rises.

Substrate: Tertiary sandy clay.

Vegetation:

No landscape image available

Type Site: Site No.: CY001

1:50,000 sheet:	6429-3 (Maitland)	Hundred:	Maitland
Annual rainfall:	475 mm	Sampling date:	19/02/92
Landform:	Crest of low rise, 2% slope		
Surface:	Loose with no stones		

Soil Description:

Depth (cm)	*Description*
0-9	Very dark greyish brown loose sand. Sharp to:
9-20	Greyish brown (bleached dry) loose sand. Sharp to:
20-26	Yellowish brown very hard fine sandy medium clay with strong coarse columnar structure. Abrupt to:
26-40	Yellowish red firm fine sandy medium clay with strong coarse columnar structure. Clear to:
40-61	Yellowish red firm very highly calcareous fine sandy medium clay with strong coarse angular blocky structure. Clear to:
61-82	Yellowish red firm very highly calcareous fine sandy medium clay with moderate coarse angular blocky structure. Clear to:
82-154	Reddish yellow friable massive very highly calcareous sandy light clay. Gradual to:
154-170	Yellowish red friable massive very highly calcareous fine sandy light clay.

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

Summary of Properties

Drainage Moderate to imperfect. Bleached subsurface layer and dispersive clay indicate that perched water tables develop for a week or more following prolonged rainfall.

Fertility Surface fertility relies on organic matter levels which are adequate to low, and on phosphorus levels which are adequate at this site. Elevated phosphorus levels in the 9-20 cm layer indicate phosphate leaching - a less soluble form of phosphorus fertilizer could be considered. The nutrient retention capacity of the surface soil is relatively low, due to its sandy texture, while the capacity of the subsoil is moderate to high. Copper levels are marginal - tissue test needed for confirmation.

pH Neutral at surface, strongly alkaline with depth.

Rooting depth 70 cm in pit.

Barriers to root growth

Physical: The columnar structured dispersive clay reduces root densities.

Chemical: High pH and sodicity, and toxic levels of boron from 40 cm restrict deep root growth.

Water holding capacity Approximately 75mm in rootzone.

Seedling emergence: Good.

Workability: Good.

Erosion Potential

Water: Moderately low.

Wind: Moderate to moderately high.

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	6.5	5.4	0	0.05	0.6	0.54	33	100		-	0.16	28.1	1.0	0.90	2.2	1.90	0.47	1.00	0.12	na
0-9	6.5	5.4	0.4	0.09	1.5	0.89	25	130		0.7	0.19	34.8	2.7	2.06	3.1	2.75	0.63	0.14	0.21	na
9-20	6.9	5.6	0.8	0.04	0.6	0.23	36	85		-	0.12	24.7	0.3	0.23	1.2	0.75	0.27	0.17	0.12	na
20-26	7.9	6.5	0.0	0.16	0.4	0.45	12	520		4.6	0.22	26.7	0.1	0.07	13.3	6.17	5.77	2.20	1.41	16.5
26-40	8.9	7.3	0.0	0.17	0.6	0.18	4	550		7.9	0.21	8.8	0.1	0.05	16.8	6.07	7.10	2.97	1.67	17.7
40-61	9.8	8.3	20.4	0.44	2.1	0.25	3	470		15.4	0.44	3.8	0.2	0.04	14.2	4.70	7.32	3.91	1.51	27.5
61-82	10.0	8.4	15.9	0.44	1.8	0.16	2	400		13.3	0.98	1.2	0.3	0.06	11.0	2.42	5.77	3.62	1.24	32.9
82-154	10.2	8.6	3.5**?**	0.52	2.1	0.14	1	380		11.3	0.33	1.5	0.1	0.08	7.9	1.07	4.28	4.59	1.01	58.1
154-170	10.1	8.6	16.4	0.76	3.9	0.16	2	390		13.2	0.69	1.7	0.2	0.06	10.4	1.25	5.01	6.28	1.24	60.4

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.