

SANDY LOAM OVER DISPERSIVE RED CLAY ON ROCK

General Description: *Sandy loam over a dispersive red clay, calcareous with depth, grading to weathering basement rock*

Landform: Slopes of undulating rises to low hills.

Substrate: Weathering schists of the Warrow Formation, mantled by fine secondary carbonates

Vegetation:



Type Site: Site No.: EE216

1:50,000 sheet:	6230-1 (Cowell)	Hundred:	Miltalie
Annual rainfall:	400 mm	Sampling date:	18/09/01
Landform:	Upper slope of undulating low hills, 6% slope.		
Surface:	Soft with 2% quartz stones.		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark brown weakly granular coarse sandy loam with 25% quartz gravel. Gradual to:
10-25	Reddish brown massive coarse sandy loam with 10% quartz gravel. Abrupt to:
25-55	Yellowish red dispersive medium clay with strong medium subangular blocky structure and 10% quartz gravel. Clear to:
55-85	Yellowish red medium clay with moderate medium subangular blocky structure, 20-50% fine carbonate segregations, and 10% quartz gravel. Gradual to:
85-110	Strong brown massive light medium clay with 30% schist fragments.



Classification: Hypercalcic, Hypernatric, Red Sodosol; medium, moderately gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Well drained. The soil is unlikely to remain wet for more than a day or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. Nutrient retention capacity is low in the surface layers due to low clay content, but is high in the subsoil. At the pit site, concentrations of all tested elements are satisfactory with the exception of nitrate nitrogen (subject to seasonal fluctuations). Organic carbon levels are adequate for this environment.

pH: Acidic at the surface, strongly alkaline with depth.

Rooting depth: 60 cm in pit.

Barriers to root growth:

Physical: The dispersive clay subsoil impedes root growth to some extent, but despite its high sodicity, is not a major barrier. Underlying basement rock, although reasonably deep at this site, may restrict rootzone depth in similar environments.

Chemical: High pH / sodicity from 25 cm restricts root growth

Water holding capacity: Approximately 75 mm in the potential root zone.

Seedling emergence: Fair to satisfactory, depending on the degree to which surface structure has been degraded. Excessive working or over-grazing leads to breakdown of aggregates and surface tends to seal and set down hard.

Workability: Satisfactory while surface condition is maintained. Loss of surface aggregation reduces workability by narrowing the moisture range over which effective working can occur.

Erosion Potential

Water: Moderate due to the slope and the naturally high erodibility of the soil.

Wind: Low, unless surface soil is excessively cultivated or over-grazed.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	Org.C %	NO ₃ mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO ₄ mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum of cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-10	5.8	4.8	nd	0.05	1.17	3	28	189	6.6	0.8	0.32	62.5	1.04	13.0	4.7	3.24	0.83	0.18	0.45	3.8
10-25	6.4	5.5	nd	0.03	0.46	2	10	47	4.0	0.6	0.14	49.4	0.17	2.27	3.5	2.38	0.76	0.24	0.11	6.9
25-55	9.1	8.2	nd	0.47	0.30	5	1	95	46.2	3.2	1.03	9.2	0.11	2.02	22.0	4.35	9.99	7.39	0.24	33.6
55-85	9.7	8.7	nd	0.88	0.23	2	3	96	130	6.0	1.02	7.2	0.14	0.87	28.6	7.73	11.1	9.53	0.24	33.3
85-110	9.8	9.0	nd	0.84	0.14	2	3	93	121	5.9	0.58	9.0	0.12	0.57	33.7	7.67	12.7	13.1	0.27	38.9

Note: Sum of cations in neutral to alkaline soils is an approximation of cation exchange capacity (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 sum of cations.