

SANDY LOAM OVER SODIC RED CLAY ON ROCK

General Description: *Sandy loam over blocky structured, sodic red clay, calcareous with depth, forming in weathering basement rock*

Landform: Undulating rises and low hills.

Substrate: Schists and gneisses of the Mangalo Formation, mantled by fine grained aeolian carbonates.

Vegetation:



Type Site:	Site No.:	EE217	1:50,000 mapsheet:	6230-4 (Mangalo)
	Hundred:	Mann	Easting:	650750
	Section:	84	Northing:	6275400
	Sampling date:	18/09/2001	Annual rainfall:	420 mm average

Mid slope of undulating low hills, 5% slope. Firm surface with 5% quartz stones to 20 mm.

Soil Description:

Depth (cm)	Description
0-10	Dark reddish brown firm light sandy loam with weak granular structure. Clear to:
10-30	Red hard medium clay with strong subangular blocky structure and 2-10% schist gravel to 2 cm. Clear to:
30-60	Red firm very highly calcareous medium clay with moderate subangular blocky structure and 10-20% fine carbonate segregations. Gradual to:
60-110	Dark brown firm massive highly calcareous light medium clay with more than 50% weathering schist fragments.



Classification: Calcic, Mesonatric, Red Sodosol; medium, slightly gravelly, loamy / clayey, deep



Summary of Properties

Drainage: Moderately well to well drained. Soil is unlikely to remain saturated for more than a few days following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate as indicated by the exchangeable cation data. Although sandy, the surface soil has a reasonable cation retention capacity. Concentrations of tested nutrient elements are satisfactory.

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

Rooting depth: 110 cm in pit, but few roots below 60 cm.

Barriers to root growth:

Physical: The clayey subsoil, although sodic, presents only a slight limitation to root growth.

Chemical: High pH and sodicity from 30 cm restrict root growth to some extent.

Waterholding capacity: Approximately 85 mm in the potential rootzone above the basement rock.

Seedling emergence: Fair to good, depending on the degree to which the soil crusts.

Workability: Fair to satisfactory. Sandy loam surface soils can easily degrade, restricting opportunities for effective working.

Erosion Potential:

Water: Moderate, due to the gradient and the high inherent erodibility of sandy loam over clay soils.

Wind: Moderately low. Problems are only likely if soil is excessively cultivated or heavily 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	8.6	7.6	nd	0.09	1.62	18	41	463	7.4	1.5	0.62	14.4	1.10	23.8	13.0	9.24	2.32	0.27	1.12	2.1
10-30	9.1	7.9	nd	0.13	0.44	3	4	226	5.1	1.7	0.84	13.2	0.15	8.10	18.8	8.10	7.29	2.87	0.58	15.2
30-60	9.8	8.6	nd	0.70	0.26	2	3	258	121	6.4	1.33	12.5	0.13	3.04	28.4	8.67	9.79	9.29	0.67	32.7
60-110	9.7	8.6	nd	0.92	0.16	2	2	249	192	7.0	1.03	10.5	0.14	1.85	25.1	7.51	7.19	9.78	0.62	39.0

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.

Further information: [DEWNR Soil and Land Program](#)

