

SAND OVER RED SANDY CLAY (Shallow Moornaba soil)

General Description: *Thick sand over a red sandy clay loam to sandy clay, calcareous with depth*

Landform: Gentle slopes with low sandhills.

Substrate: Tertiary clayey sands, sandy clays and clays.

Vegetation:



Type Site: Site No.: EE068

1:50,000 sheet: 6230-1 (Cowell)

Hundred:

Minbrie

Annual rainfall: 340 mm

Sampling date:

22/01/93

Landform: Lower slope of gently sloping rise, 2% slope

Surface: Loose with no stones.

Soil Description:

Depth (cm)	Description
0-17	Brown soft loamy sand. Abrupt to:
17-33	Light yellowish brown soft coarse sand. Abrupt to:
33-56	Light reddish brown soft coarse sand with 2-10% quartz gravel. Gradual to:
56-90	Red and grey mottled friable coarse sandy clay with strong fine angular blocky structure and 2-10% quartz gravel. Gradual to:
90-153	Strong brown and grey firm highly calcareous coarse sandy light clay with moderate fine angular blocky structure. Clear to:
153-180	Red and grey mottled hard medium clay with strong fine angular blocky structure and 2-10% carbonate nodules.



Classification: Calcic, Mottled-Hypernatric, Red Sodosol; thick, non-gravelly, sandy / clayey, moderate

Summary of Properties

Drainage	Moderately well drained. Soil rarely remains saturated for more than a week following heavy or prolonged rainfall, but substrate clay retards deep drainage.
Fertility	Inherent fertility is low, as indicated by the exchangeable cation data, low clay content at the surface, and low organic carbon levels. Regular phosphorus applications are essential - levels are low at the sampling site. Nitrogen concentrations depend on legume component of pastures and cropping history. Copper, zinc and manganese deficiencies are possible - copper levels are low, zinc data are suspect.
pH	Neutral at the surface, strongly alkaline with depth.
Rooting depth	56 cm in pit.
Barriers to root growth	
Physical:	Clayey subsoil prevents good root distribution, but does not prevent root growth.
Chemical:	High pH and high sodicity from 56 cm, together with low nutrient retention capacity and status in the sandy surface layers prevent deeper root growth.
Water holding capacity	Approximately 35 mm in the sandy soil above the clay.
Seedling emergence:	Satisfactory, although water repellence may be a problem in dry seasons.
Workability:	Loose surface is easily worked.
Erosion Potential	
Water:	Moderately low.
Wind:	Moderate.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl 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	-	-	0	-	0.24	0.6	12	110	-	0.6	0.11	15	3.2	0.42	2.8	2.60	0.62	0.16	0.33	5.7
0-17	7.3	7.4	0	0.04	0.44	0.4	11	130	-	0.4	0.21	17	2.3	0.28	3.1	1.84	0.49	0.16	0.25	5.2
17-33	7.4	7.4	0	0.04	0.56	0.1	6	65	-	0.1	0.18	8.8	0.15	0.25	1.8	1.10	0.37	0.21	0.12	11.7
33-56	7.7	7.4	0	0.03	0.52	<0.1	<2	48	-	0.8	0.18	3.5	0.09	0.31	1.8	1.19	0.41	0.24	0.08	13.3
56-90	9.3	8.5	1	0.23	1.15	-	-	-	-	3.2	0.24	21	3.2	<0.1	10.2	3.06	4.47	2.60	0.54	25.5
90-153	9.8	8.6	5	0.34	1.57	-	-	-	-	6.7	0.20	6.9	0.86	0.27	9.3	2.71	3.94	3.41	0.68	36.7
153-180	9.7	8.5	3	0.45	1.74	-	-	-	-	10	0.38	7.6	1.4	0.37	15.6	3.14	5.71	5.93	1.04	38.0

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