

FLINTY SANDY LOAM OVER DARK CLAY

General Description: *Thick loamy sand to sandy clay loam with abundant flints, over a dark clay with calcreted limestone at depth*

Landform: Very gently undulating former coastal plain

Substrate: Calcreted bryozoal limestone of Miocene age.

Vegetation: Cleared.



Type Site: Site No.: SE101

1:50,000 sheet: 7022-3 (Schank) Hundred: Benara

Annual rainfall: 775 mm Sampling date: 28/02/05

Landform: Slight depression on very gently undulating plain

Surface: Firm with less than 5% flint fragments

Soil Description:

Depth (cm)	Description
0-12	Black sandy loam with moderate subangular blocky structure and up to 10% flint fragments (6-20 mm). Clear to:
12-27	Very dark greyish brown loam with moderate subangular blocky structure and 50% flint fragments (20-60 mm). Gradual to:
27-54	Dark greyish brown (bleached when dry) clay loam with weak polyhedral structure and more than 50% flint fragments (60-200 mm). Abrupt to:
54-91	Very dark greyish brown and dark yellowish brown medium clay with strong subangular blocky structure and 2-10% flint fragments (6-20 mm). Clear to:
91-134	Very dark greyish brown and dark yellowish brown medium clay with strong subangular blocky structure, more than 50% flint fragments (60-200 mm), and 30% hard tubular calcareous segregations. Sharp to:
134-150	Very hard massive calcrete.



Classification: Bleached-Mottled, Petrocalcic, Black Chromosol; thick, slightly gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Moderately well drained. Water ponds on top of clay for a week or so following heavy or prolonged rainfall, but this layer is sufficiently deep that impact on most plants is minimal.

Fertility: Inherent fertility is high, as indicated by the exchangeable cation data (although values are artificially boosted by cations in apparent fertilizer residues). Very high organic carbon levels indicate disruption of biological activity.

pH: Neutral at the surface, slightly alkaline with depth.

Rooting depth: 134 cm in pit, but few root below 90 cm.

Barriers to root growth:

Physical: The calcrete prevents virtually all root growth, but the clayey subsoil restricts growth to some extent.

Chemical: The only chemical constrain is the moderate surface salinity (induced by fertilizer residues?). Germination percentage of many species is reduced.

Water holding capacity: 140 mm in potential root zone.

Seedling emergence: Abundant flints cause patchy emergence.

Workability: Fine earth is easily worked, but flints are abrasive.

Erosion Potential

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP	
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
Paddock	6.6	6.2	0	0.32		7.4	156	504		17.6												
0-12	7.1	6.5	0	1.14	4.27*	6.08	401*	1830*	455*	47.5	1.9	2.38	348	225	52.8	41.2	29.9	5.73	0.62	4.95	1.5	
12-27	6.9	6.3	0	0.56	3.22*	4.46	260*	981*	224*	16.6	1.0	2.07	404	142	48.0	25.1	18.1	3.85	0.37	2.79	1.5	
27-54	7.6	6.9	0	0.22	0.64	0.74	126*	451*	6	4.2	0.5	0.87	182	44.4	7.64	12.0	9.92	0.81	0.19	1.11	1.6	
54-91	7.5	6.7	1	0.29	0.63	0.75	33	1459	2	26.1	0.8	0.35	118	7.63	0.70	46.8	32.8	9.07	0.84	4.13	1.8	
91-134	7.5	7.0	2	0.30	0.65	0.75	31	1268	19	26.9	0.5	0.21	58	10.5	0.58	51.6	39.6	7.50	0.89	3.62	1.7	

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.

Sum of cations, in a neutral to alkaline soil, approximates the CEC (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 CEC.

* Very high values possibly due to residues of phosphate and potassium chloride fertilizer dumped in this area.