

THICK BLEACHED SAND OVER COFFEE ROCK (PODSOL)

General Description: *Thick grey sand with a bleached subsurface on hard iron / organic matter cemented sand (coffee rock), over buried sand over sandy clay.*

Landform: Very gently undulating plain.

Substrate: Buried sand over clay soil, formed on windblown sand.

Vegetation:



Type Site:	Site No.:	SE173	1:50,000 sheet:	7022-2 (Gambier)
	Hundred:	Gambier	Easting:	495030
	Section:		Northing:	5819960
	Sampling date:	12/12/2012	Annual rainfall:	745 mm average

Low rise on very gently undulating plain, 1% slope. Soft surface with no stones.

Soil Description:

Depth (cm)	Description
0-20	Very dark grey soft single grain loamy sand. Clear to:
20-50	Light greyish brown (bleached when dry) soft single grain sand. Sharp to:
50-80	Dark brown hard massive clayey sand (coffee rock) with abundant ferruginous segregations. Clear to:
80-125	Light grey soft single grain sand. Abrupt to:
125-145	Brown with grey and orange mottles, hard sandy light clay with weak coarse prismatic structure.



Classification: Parapanic, Humosesquic, Aeric Podosol; medium, non-gravelly, sandy / sandy, moderate



Summary of Properties

Drainage: Well drained. No part of the profile is likely to remain wet for more than a day or two at a time following heavy or prolonged rainfall.

Fertility: Inherent fertility is low, as indicated by the exchangeable cation data. The sandy surface soil, with high organic carbon levels, has satisfactory nutrient retention capacity, but below 20 cm, capacity is very low. Test data indicate marginal to low levels of phosphorus, potassium, sulphur, copper and zinc, more pronounced in the dryland surface soil, than the irrigated samples. However, note that the dryland sample is 0-20 cm, compared with 0-10 cm for the irrigated.

pH: Acidic at the surface, mildly acidic at depth. Irrigated surface soil is slightly alkaline, due to irrigation water.

Rooting depth: Not recorded – estimate that most root growth occurs in the upper 80 cm.

Barriers to root growth:

Physical: The coffee rock presents a marginal to severe barrier to root growth (depending on degree of cementation).

Chemical: Low nutrient retention capacity (below 20 cm), exacerbated by low pH and associated aluminium toxicity and nutrient leaching, affects root growth in all subsurface layers.

Waterholding capacity: Approximately 45 mm in the estimated potential rootzone.

Seedling emergence: Satisfactory, except where water repellent

Workability: The sandy surface soil is readily worked, but over-working creates wind erosion hazard.

Erosion Potential

Water: Low.

Wind: Moderately low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	Ext. Al mg/kg	EC 1:5 dS/m	Cl mg/kg	Org.C %	NO ₃ + NH ₄ mg/kg	Avail. P mg/kg	PBI	Avail. K mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable cations cmol(+)/kg				ESP
													Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.4	6.8	-	0.357	-	3.70	110	26	10	94	15.9	0.7	1.20	30	2.05	5.87	15.3	12.0	2.13	0.89	0.28	6.0
0-20	5.1	4.3	1.08	0.146	52	2.23	52	12	10	83	5.9	0.4	1.11	47	3.37	4.71	8.19	6.64	1.20	0.14	0.21	1.7
20-50	6.1	5.3	0.40	0.011	4	0.29	1	18	12	62	1.3	0.2	0.10	16	0.24	1.26	1.00	0.79	0.12	0.02	0.07	2.0
50-80	5.1	4.1	16.2	0.028	1	1.60	3	38	273	43	4.3	0.6	0.14	88	0.43	0.44	1.59	1.12	0.30	0.06	0.11	3.8
80-125	6.4	5.5	1.27	0.013	2	0.09	2	8	19	17	1.9	0.1	0.10	25	0.17	0.09	0.56	0.33	0.14	0.06	0.03	10.7
125-145	6.9	5.9	0.47	0.043	8	0.16	2	1	64	35	14.1	0.6	0.05	13	0.19	0.54	6.29	3.06	2.56	0.57	0.10	9.1

Note: Paddock sample bulked from cores (0-10 cm) taken from adjacent irrigated lucerne.

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, in this case estimated by the sum of cations.

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

