

VOLCANIC SOIL

General Description: *Dark coloured silty loam to sandy clay loam, highly calcareous with depth, formed in calcified volcanic ash.*

Landform: Gently undulating rises.

Substrate: Layered volcanic ash.

Vegetation:



Type Site:	Site No.:	SE118	1:50,000 mapsheet:	7022-2 (Gambier)
	Hundred:	Blanche	Easting:	478250
	Section:	742	Northing:	5810160
	Sampling date:	14/03/07	Annual rainfall:	760 mm average

Upper slope of gently undulating rises, 5% slope. Soft surface with no stones.

Soil Description:

Depth (cm)	Description
0-12	Black friable silty loam with strong fine polyhedral structure. Clear to:
12-18	Very dark brown friable silty loam with moderate fine polyhedral structure. Clear to:
18-35	Very dark brown friable massive highly porous light sandy clay loam. Gradual to:
35-56	Dark brown friable massive highly calcareous porous light sandy clay loam. Sharp to:
56-58	Firm laminar calcrete pan. Sharp to:
58-64	Dark brown friable massive highly calcareous light sandy clay loam. Sharp to:
64-92	Dark greyish brown friable massive highly calcareous clay loam, capped by a thin calcrete pan. Sharp to:
92-130	Dark brown hard massive carbonate. Sharp to:
130-160	Black extremely hard layered ash deposit.



Classification: Haplic, Mellic, Black Kandosol; medium, non-gravelly, silty / clay loamy, 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 high, as indicated by the exchangeable cation data. Natural phosphorus levels are high, and levels of all tested nutrient elements are satisfactory to high. However, phosphate fixing capacity is very high, as indicated by reactive iron concentrations.
- pH:** Neutral at the surface, alkaline with depth.
- Rooting depth:** 92 cm in sampling pit, but few roots below 64 cm.
- Barriers to root growth:**
- Physical:** The thin calcrete pans restrict root growth to varying degrees depending on continuity and fracturing.
 - Chemical:** There are no apparent chemical barriers.
- Waterholding capacity:** Approximately 90 mm in the rootzone.
- Seedling emergence:** Satisfactory.
- Workability:** The soft surface is readily worked.
- Erosion Potential:**
- Water:** Low to moderately low.
 - Wind:** Low (only susceptible if pulverized).

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	React Fe 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	
0-12	7.0	6.5	0	0.184	0.99	5.27	164	932	43	14	1.4	5564	2.17	286	24.2	27.3	31.0	23.2	4.89	0.42	2.45	1.4
12-18	7.1	6.2	0	0.088	0.36	3.40	87	772	23	7.5	1.1	5886	1.97	267	9.30	6.73	23.1	16.8	3.81	0.43	2.02	1.9
18-35	7.2	6.3	0	0.074	0.30	1.53	31	671	6	7.9	0.8	7626	1.52	230	3.52	0.25	17.9	12.4	3.36	0.42	1.72	2.4
35-56	8.2	7.6	15	0.115	0.63	0.85	9	423	54	5.6	0.4	5526	1.16	41	2.46	0.44	19.7	16.5	2.05	0.21	0.99	1.1
56-58	8.5	7.9	28	0.104	0.68	0.43	5	151	72	3.5	0.6	3770	0.66	26	1.93	0.49	16.8	14.5	1.73	0.22	0.32	1.3
58-64	8.5	7.9	29	0.108	0.63	0.69	7	62	61	2.6	0.7	3867	0.96	21	1.47	0.48	19.5	17.3	1.9	0.23	0.14	1.2
64-92	8.7	8.0	54	0.112	0.47	0.58	4	45	29	4.0	0.6	2261	0.69	24	0.94	0.19	17.9	15.6	1.92	0.29	0.09	1.6
92-130	8.8	8.0	10	0.108	0.33	0.15	21	261	10	3.3	0.3	3152	0.97	34	2.68	1.06	26.5	20.4	4.37	1.12	0.63	4.2
130-160	8.9	8.0	3	0.083	0.43	0.07	16	197	225	3.2	0.3	3274	0.7	71	5.15	1.00	14.0	11.1	1.69	0.72	0.49	5.2

Note: 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](#)

