

IRONSTONE SOIL

General Description: *Very thick ironstone gravelly sandy loam over a brown clay, kaolinitic with depth*

Landform: Gently undulating plateau surface.

Substrate: Deeply weathered kaolinized basement sandstone (Kanmanto Group).

Vegetation:



Type Site:	Site No.:	CK009	1:50,000 mapsheet:	6326-4 (Stokes Bay)
	Hundred:	Cassini	Easting:	700950
	Section:	51	Northing:	6042500
	Sampling date:	24/2/94	Annual rainfall:	655 mm average

Very gentle slope (1%) on plateau surface. Firm to soft surface with no stones.

Soil Description:

Depth (cm)	Description
0-5	Very dark brown soft massive loamy fine sand with 2-10% ironstone gravel (2-6 mm). Abrupt to:
5-21	Yellowish brown and dark brown soft massive light sandy loam with 10-20% ironstone gravel (2-20 mm). Gradual to:
21-40	Yellowish brown soft massive light sandy loam with 20-50% ironstone gravel (6-20 mm). Gradual to:
40-89	Yellowish brown soft massive light sandy loam with more than 90% ironstone gravel (6-60 mm). Clear to:
89-115	Strong brown and pale yellow very hard medium clay with moderate angular blocky structure and 10-20% ironstone gravel (6-20 mm). Diffuse to:
115-155	Strong brown, light grey and red very hard silty medium clay with moderate angular blocky structure.



Classification: Bleached-Ferric, Eutrophic, Brown Chromosol; very thick, slightly gravelly, sandy/clayey, deep



Summary of Properties

- Drainage:** Imperfectly drained, due to low permeability clay subsoil. Soil may remain wet for several weeks following heavy or prolonged rainfall.
- Fertility:** Natural fertility is moderate to low, as indicated by the exchangeable cation data. Nutrient retention capacity is satisfactory, but relies on high surface organic matter levels (more than 2% organic carbon). Ironstone gravel ties up phosphorus, but concentrations are high at sampling site. Levels of other tested elements appear to be satisfactory.
- pH:** Acidic throughout.
- Rooting depth:** Approximately 90 cm in pit.
- Barriers to root growth:**
- Physical:** The hard clayey subsoil restricts root growth to some extent, but at 90 cm depth, effects are minimal.
 - Chemical:** Phosphorus fixation by ironstone and subsoil trace element deficiencies limit deep root growth.
- Waterholding capacity:** 40 mm in rootzone. Soil volume reduced by ironstone gravel.
- Seedling emergence:** Good, provided surface organic matter is maintained.
- Workability:** Fair to good - ironstone is abrasive.
- Erosion Potential:**
- Water:** Low.
 - Wind:** Moderately low.

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	5.8	5.2	0	0.29	1.82	5.1	60	556	-	1.2	0.8	93	2.8	1.8	12.9	7.54	2.08	0.22	1.48	1.7
0-5	5.9	5.3	0	0.49	2.19	6.0	47	1034	-	1.6	0.5	73	4.4	2.6	14.2	8.01	2.21	0.24	2.05	1.7
5-21	6.0	5.0	0	0.05	0.40	1.8	11	220	-	0.5	0.2	56	0.3	0.3	6.6	3.08	0.55	0.21	0.61	3.2
21-40	6.3	5.3	0	0.03	0.15	0.5	4	103	-	0.3	0.1	47	0.1	0.2	3.5	1.58	0.60	0.15	0.34	4.3
40-89	6.5	5.5	0	0.02	0.13	0.4	<4	107	-	0.5	<0.1	5	<0.1	0.1	4.5	1.51	1.51	0.18	0.37	4.0
89-115	5.9	5.3	0	0.05	0.13	0.1	<4	82	-	2.0	<0.1	2	<0.1	0.1	9.3	1.94	6.41	0.45	0.36	4.8
115-155	5.2	4.4	0	0.04	0.11	0.1	<4	20	-	1.6	<0.1	1	<0.1	0.1	6.6	0.93	3.52	0.31	0.16	4.7

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

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

