IRONSTONE SOIL

General Description: *Thick ironstone gravelly sandy loam to loam over a brown, grey and red mottled clay, kaolinitic with depth*

Landform: Gently undulating rises.

Substrate: Deeply weathered kaolinitic clay.

Vegetation:

Type Site: Site No.: CK017

1:50,000 sheet:	6326-4 (Stokes Bay)	Hundred:	Duncan
Annual rainfall:	825 mm	Sampling date:	24/05/95
Landform:	Flat crest of gentle rise		
Surface:	Firm with 10-20% ironstone (6-20 mm)		

Soil Description:

Depth (cm)	*Description*
0-7	Very dark brown soft massive loam. Abrupt to:
7-30	Dark yellowish brown soft massive sandy loam with 20-50% ironstone nodules (6-20 mm). Clear to:
30-54	Dark yellowish brown soft massive sandy loam with more than 50% ironstone nodules (6-60 mm). Clear to:
54-100	Yellowish brown, light olive grey and red firm light medium clay with strong angular blocky structure. Gradual to:
100-170	Light olive grey, red and yellowish brown hard medium heavy clay with strong coarse angular blocky structure.

Classification: Ferric, Mesotrophic, Brown Chromosol; thick, gravelly, loamy / clayey, very deep

Summary of Properties

Drainage Imperfectly drained. Water perches on clayey subsoil for up to several weeks following heavy or prolonged rainfall.

Fertility Natural fertility is usually low in ironstone soils due to their highly weathered clay subsoils. Surface nutrient retention capacity relies on organic matter (high at sampling site). High reactive iron levels and abundant ironstone gravel tie up phosphorus, although levels here are adequate. Potassium and copper concentrations are low (leaf test needed to check).

pH Acidic at the surface, strongly acidic in the lower subsoil.

Rooting depth Approximately 55 cm in pit.

Barriers to root growth

Physical: The clayey subsoil may restrict root growth to some extent.

Chemical: Toxic aluminium levels in the lower subsoil due to low pH and low nutrient retention capacity limit root growth.

Water holding capacity About 40 mm in rootzone. Ironstone gravel reduces the soil volume roots can explore for water.

Seedling emergence: Good, provided surface condition is maintained.

Workability: Firm surface is easily worked, but ironstone is abrasive.

Erosion Potential

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	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	Ext Al mg/kg	React Fe mg/kg
											Cu	Mn	Zn		Ca	Mg	Na	K			
Paddock	5.4	4.7	0	0.11	0.6	3.2	36	98	13	4.3	0.36	7.6	1.7	5.7	2.88	0.74	0.15	0.24	2.6	5.2	1264
											*0.8	-	*2.0								
0-7	5.2	4.4	0	0.09	0.5	4.7	43	82	5.6	1.7	-	-	-	6.9	3.18	0.69	0.20	0.19	2.9	8.0	1516
7-30	5.9	4.8	0	0.01	0.1	0.6	6	21	3.7	0.9	-	-	-	2.3	0.93	0.28	0.12	0.05	na	1.0	653
30-54	6.0	5.1	0	0.01	0.1	0.3	3	20	4.5	0.8	-	-	-	2.5	0.87	0.66	0.11	0.07	na	<1	357
54-100	6.1	5.7	0	0.03	0.1	0.2	2	52	34	0.8	-	-	-	4.9	1.22	3.66	0.18	0.13	3.7	<1	355
100-170	5.3	4.4	0	0.03	0.1	0.1	2	39	33	1.5	-	-	-	4.4	0.57	3.13	0.22	0.10	5.0	8.8	298

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

* EDTA trace element analyses for paddock sample.

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.