IRONSTONE SOIL

General Description: *Sandy loam with an ironstone gravelly subsurface layer over a brown mottled clay subsoil, kaolinitic with depth*

Landform: Gently undulating rises.

Substrate: Deeply weathered kaolinitic clay.

Vegetation: Stringybark (Euc. baxteri) woodland.

Type Site: Site No.: CK016

1:50,000 sheet:	6326-4 (Stokes Bay)	Hundred:	Duncan
Annual rainfall:	850 mm	Sampling date:	24/05/95
Landform:	Lower slope of gentle rise, 1% slope		
Surface:	Firm with 2-10% ironstone gravel (6-60 mm)		

Soil Description:

Depth (cm)	*Description*
0-7	Very dark greyish brown soft massive fine sandy loam. Abrupt to:
7-22	Dark yellowish brown soft massive fine sandy loam. Clear to:
22-48	Yellowish brown loose single grain fine sandy loam with more than 50% ironstone nodules (6-60 mm). Clear to:
48-60	Yellowish brown mottled hard light medium clay with moderate fine angular blocky structure. Clear to:
60-75	Yellowish brown mottled hard medium heavy clay with strong angular blocky structure. Diffuse to:
75-135	Light olive grey, red and yellowish brown very hard medium heavy clay with moderate coarse angular blocky structure.

Classification: Ferric, Subnatric, Brown Sodosol; thick, slightly gravelly, loamy / clayey, deep

Summary of Properties

Drainage Imperfectly drained. Water perches on the clayey subsoil, saturating part of the profile 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. This is confirmed by the exchangeable cation data. Surface nutrient retention capacity is dependent on organic matter levels. High ironstone gravel content ties up phosphorus. Copper level is low (leaf test needed to check).

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

Rooting depth Approximately 135 cm in pit, but few roots below 48 cm.

Barriers to root growth

Physical: The hard clayey subsoil restricts root growth to some extent.

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

Water holding capacity About 70 mm in rootzone. Ironstone gravel reduces the soil volume roots can explore for water.

Seedling emergence: Good.

Workability: Good, although ironstone gravel abrades equipment.

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	5.7	5.0	0	0.24	1.4	3.4	32	210	9.9	8.7	0.25	6.2	5.2	6.9	4.21	1.15	0.19	0.56	2.8	1.3	1750
											*0.6	-	*6.7								
0-7	5.6	4.6	0	0.15	0.3	3.4	17	150	7.1	2.0	-	-	-	6.7	3.17	1.22	0.12	0.35	1.8	2.2	1770
7-22	5.8	5.0	0	0.03	0.2	0.8	2	42	5.9	1.2	-	-	-	2.4	0.63	0.27	0.10	0.08	na	<1	1710
22-48	6.0	5.0	0	0.02	0.2	0.4	2	36	5.5	1.6	-	-	-	2.1	0.65	0.71	0.15	0.09	na	<1	590
48-60	5.7	5.3	0	0.07	0.2	0.4	2	59	37.6	3.5	-	-	-	3.5	0.70	2.90	0.20	0.14	5.7	<1	410
60-75	5.2	4.5	0	0.04	0.1	0.2	2	23	39.9	4.7	-	-	-	3.4	0.30	3.25	0.22	0.06	6.5	1.9	390
75-135	5.0	4.2	0	0.04	0.2	0.2	2	28	32.8	0.9	-	-	-	6.0	0.20	1.54	0.19	0.05	3.2	34	310

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.