IRONSTONE SOIL

General Description: *Thick sandy loam with concentrated ironstone accumulations at the base, over a brown, grey and red mottled clay, kaolinitic with depth*

Landform: Gently undulating rises.

Substrate: Deeply weathered kaolinized basement rock.

Vegetation:

Type Site: Site No.: CK014B

1:50,000 sheet:	6326-2 (Seddon)	Hundred:	Seddon
Annual rainfall:	600 mm	Sampling date:	24/05/95
Landform:	Lower slope of 2%		
Surface:	Firm with no stones		

Soil Description:

Depth (cm)	*Description*
0-11	Very dark greyish brown soft massive fine sandy loam. Abrupt to:
11-28	Light grey soft single grain fine sandy loam. Clear to:
28-45	Yellow soft single grain fine sandy loam with more than 50% ironstone nodules (6-60 mm). Abrupt to:
45-85	Dark yellowish brown, greyish brown and red hard light medium clay with fine angular blocky structure.
85-130	Greyish brown, dark yellowish brown and red very hard heavy clay with medium angular blocky structure. Abrupt to:
130-140	Rock.

Classification: Ferric, Mottled-Subnatric, Brown Sodosol; thick, non-gravelly, loamy / clayey, deep

Summary of Properties

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

Fertility Natural fertility is usually low in ironstone soils due to predominance of kaolin clays. Surface nutrient retention capacity is due to high organic carbon levels. Ironstone gravels cause phosphate fixation, requiring high inputs of phosphorus to maintain adequate levels. There is a highly leached infertile layer above the clay subsoil.

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

Rooting depth Approximately 85 cm in pit, but few roots below 28 cm.

Barriers to root growth

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

Chemical: Low nutrient retention capacity in subsurface layers, phosphate fixation, and acidity restrict root growth. Aluminium toxicity is also a possible limitation.

Water holding capacity 60-70 mm in rootzone. Ironstone gravel reduces the soil volume roots can explore for water.

Seedling emergence: Satisfactory.

Workability: Good to fair - ironstone gravel is abrasive.

Erosion Potential

Water: Moderately low to 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	5.3	4.6	0	0.24	1.4	4.1	23	120	23	3.5	0.55	1.8	2.4	7.7	6.15	1.63	0.25	0.31	3.2	1.6	2380
											*1.0	-	*2.8								
0-11 #	5.6	4.7	0	0.23	1.2	4.4	36	250	14	1.2	-	-	-	9.9	7.31	2.01	0.26	0.65	2.6	1.8	2460
11-28	6.4	5.6	0	0.04	0.7	0.3	3	63	9	1.1	-	-	-	1.8	0.73	0.56	0.27	0.14	na	<1	560
28-45	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-		-
45-85	6.3	5.9	0	0.16	0.5	0.2	2	260	57	1.1	-	-	-	12.4	2.64	7.35	0.93	0.70	7.5	<1	590
85-130 #	5.6	4.6	0	0.12	0.4	0.3	2	200	28	2.1	-	-	-	18.2	3.05	11.6	1.76	0.55	9.7	<1	970

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.

\# Analyses from CK014A