

IRONSTONE SOIL WITH CALCAREOUS LOWER SUBSOIL

General Description: *Firm sandy loam with a bleached ironstone gravelly A2 layer over a coarsely structured dispersive brown clay, calcareous at depth*

Landform: Gently undulating rises.

Substrate: Tertiary / alluvial clay.

Vegetation:



Type Site: Site No.: CK018

1:50,000 sheet: 6426-4 (Kingscote) Hundred: Haines
Annual rainfall: 550 mm Sampling date: 25/05/95
Landform: Saline patch on slight rise on an upper-mid slope of 1.5%
Surface: Firm with no stones. Rest of paddock is non saline.

Soil Description:

Depth (cm)	Description
0-6	Very dark greyish brown soft massive fine sandy loam with <2% ironstone nodules. Abrupt to:
6-23	Light brownish grey loose loamy sand with 20-50% ironstone nodules (2-6 mm). Abrupt to:
23-40	Light olive brown firm medium clay with moderate angular blocky structure and 10-20% ironstone nodules (2-6 mm). Clear to:
40-60	Light yellowish brown firm medium clay with moderate angular blocky structure and 10-20% ironstone nodules (2-6 mm). Abrupt to:
60-72	Light yellowish brown firm moderately calcareous massive medium clay with more than 50% hard carbonate fragments (60-200 mm) and 2-10% ironstone nodules (2-6 mm). Clear to:
72-96	Light yellowish brown firm calcareous medium clay with weak blocky structure and 2-10% ironstone nodules (2-6 mm). Gradual to:
96-125	Light olive brown and greenish grey firm medium clay with weak blocky structure and 2-10% ironstone nodules (2-6 mm). Gradual to:
125-185	Light olive brown, greenish grey and red firm medium clay with moderate coarse angular blocky structure.



Classification: Ferric, Mottled-Hypernatric, Brown Sodosol; medium, non-gravelly, loamy / clayey, very deep

Summary of Properties

Drainage	Imperfectly drained. Water perches on the subsoil clay, saturating the soil for several weeks following heavy or prolonged rainfall.
Fertility	Inherent fertility is moderately low, as indicated by the exchangeable cation data. Organic matter provides significant surface nutrient retention capacity. Ironstone ties up phosphate (note high reactive iron levels), but phosphorus levels are adequate. Copper level is marginal (leaf test needed to check).
pH	Neutral (salty soils) and acidic (non salty soil) in the surface, alkaline in subsoil.
Rooting depth	Approximately 25 cm in pit.
Barriers to root growth	
Physical:	Poorly structured subsoil clay limits root density.
Chemical:	High salinity and sodicity (and high pH at depth) restrict root growth.
Water holding capacity	Less than 20 mm in rootzone. Ironstone gravel and carbonate gravel reduce the soil volume roots can explore for water.
Seedling emergence:	Fair to poor, depending on surface salt levels.
Workability:	Firm surface is easily worked, but ironstone gravel is abrasive.
Erosion Potential	
Water:	Low.
Wind:	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	Ext Al mg/kg	React Fe mg/kg	
											Cu	Mn	Zn		Ca	Mg	Na	K				
Pdk A	5.9	4.9	0	0.12	1.0	1.6	29	170	7.7	1.3	0.23	3.1	0.56	4.9	2.41	0.62	0.17	0.38	3.5	<1	1713	
											*1.1	-	*1.8									
Pdk B	7.6	7.0	<1	0.86	5.9	1.8	41	410	34	4.0	0.23	8.4	1.2	6.6	3.55	2.36	1.60	0.97	24.2	1.3	2244	
0-6	8.8	8.3	<1	2.1	13	1.2	45	400	82	7.9	-	-	-	5.1	3.50	2.95	1.27	0.76	24.9	<1	1368	
6-23	8.1	7.9	0	3.0	15	0.4	6	240	86	3.2	-	-	-	2.8	1.90	1.28	0.58	0.31	-	<1	917	
23-40	8.8	8.1	1	1.5	7.1	0.4	2	1000	53	7.9	-	-	-	15.3	4.66	5.65	7.18	2.41	46.9	<1	889	
40-60	9.0	8.4	1	1.1	4.7	0.1	3	1000	39	6.5	-	-	-	18.5	3.95	6.16	6.36	2.34	34.4	<1	548	
60-72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72-96	9.3	8.3	29	1.2	4.9	0.2	2	1000	44	5.6	-	-	-	17.8	4.55	5.88	6.27	2.29	35.2	<1	411	
96-125	9.3	8.3	12	0.83	4.8	0.1	2	690	33	7.5	-	-	-	13.7	3.05	5.30	5.23	1.69	38.2	<1	386	
125-185	8.8	8.0	<1	0.75	4.3	0.1	2	510	37	11	-	-	-	15.2	1.83	5.88	6.37	1.05	41.9	<1	385	

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit. Pdk A is non-saline, Pdk B is saline.

* EDTA trace element analyses for paddock (A) 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.