

# IRONSTONE SOIL WITH POORLY STRUCTURED SUBSOIL (Stevens soil – sodic variant)

**General Description:** *Ironstone gravelly sandy loam with a bleached A2 layer over a brown coarsely structured gravelly clay grading to deeply weathered sediments*

**Landform:** Undulating low hills.

**Substrate:** Deeply weathered (kaolinized and ferruginized) Tertiary sediments.

**Vegetation:** Euc. cladocalyx woodland with mallee / broombush understorey



**Type Site:** Site No.: EL141

50,000 sheet:	6029-2 (Koppio)	Hundred:	Koppio
Annual rainfall:	525 mm	Sampling date:	1982
Landform:	Upper slope in a landscape of undulating low hills, 8% slope		
Surface:	Firm with 10-20% ironstone fragments		

**Soil Description:**

Depth (cm)	Description
0-15	Dark brown sandy loam with granular structure and 25-50% ironstone fragments (2-10 mm). Clear to:
15-30	Dark yellowish brown single grain sandy loam with 50-75% ironstone nodules and concretions (2-10 mm). Clear to:
30-31	Brown (bleached) single grain sandy clay with 25-50% ironstone nodules (2-10 mm). Abrupt to:
31-65	Yellowish brown mottled medium clay with subangular blocky structure and 2-10% ironstone nodules (10-50 mm). Gradual to:
65-140	Yellowish brown light clay with weak subangular blocky structure and 2-10% weathered ironstone nodules (2-10 mm). Diffuse to:
140-240	Yellowish brown calcareous massive light clay with 50-75% ironstone nodules (10-50 mm).



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

## Summary of Properties

<b>Drainage</b>	Imperfectly drained. Water perches on the sodic clay subsoil for several weeks following heavy or prolonged rainfall.
<b>Fertility</b>	Inherent fertility is moderately low, as indicated by the exchangeable cation data. Nutrient retention capacity is low due to low clay content in the topsoil, and high ironstone content reduces phosphate availability. Phosphate levels are only significant in the upper 15 cm of soil. Manganese availability in the clayey subsoil is low. Organic carbon levels are low.
<b>pH</b>	Acidic at the surface, alkaline with depth.
<b>Rooting depth</b>	Not recorded. Estimate 30 cm in pit.
<b>Barriers to root growth</b>	
<b>Physical:</b>	The clayey subsoil from 31 cm severely restricts root growth.
<b>Chemical:</b>	There are no apparent chemical barriers apart from low trace element availability in the subsoil.
<b>Water holding capacity</b>	Approximately 30 mm in the root zone.
<b>Seedling emergence:</b>	Satisfactory.
<b>Workability:</b>	Satisfactory although surface ironstone causes significant abrasion of implements.
<b>Erosion Potential</b>	
<b>Water:</b>	Moderate.
<b>Wind:</b>	Low.

## Laboratory Data

Depth cm	Sand %	Silt %	Clay %	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-15	89	6	5	5.4	-	0	0.04	0.27	1.30	27	0.78	56	3.20	0.48	7.8	3.1	0.42	0.01	0.14	0.1
15-30	88	6	6	5.4	-	0	0.03	0.17	0.45	5	0.92	22	0.70	0.36	4.3	1.4	0.41	0.01	0.12	0.2
31-65	38	2	60	6.9	-	0	0.06	0.35	0.21	2	0.24	9.8	0.06	0.18	16.0	4.2	4.30	1.30	0.44	8.2
65-140	31	2	67	7.4	-	0	0.12	0.82	-	-	-	-	-	-	26.0	8.0	7.60	3.90	0.62	15.0
140-240	59	4	37	8.5	-	2.3	0.35	1.2	-	-	-	-	-	-	21.0	10.0	6.40	4.20	0.39	20.0

**Note:** EC (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.