

IRONSTONE SOIL ON DEEPLY WEATHERED ROCK (Koppio soil)

General Description: *Sandy loam with abundant ironstone gravel over a brownish ironstone gravelly clay grading to deeply weathered basement rock*

Landform: Undulating low hills.

Substrate: Deeply weathered ferruginized quartzitic gneiss of the Hutchison Group.

Vegetation: Euc. cladocalyx woodland with mallee / broombush understorey



Type Site: Site No.: EL140

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, 10% slope		
Surface:	Firm with 10-20% ironstone fragments		

Soil Description:

Depth (cm)	Description
0-2	Dark brown sandy loam with granular structure and 10-25% ironstone concretions and nodules (10-50 mm). Clear to:
2-13	Dark yellowish brown single grain sandy loam with 50-75% ironstone nodules and concretions (10-50 mm). Clear to:
13-26	Dark yellowish brown single grain sandy loam with 50-75% ironstone nodules and weathered gneiss fragments (10-50 mm). Clear to:
26-120	Yellowish brown mottled light clay with subangular blocky structure and 2-10% ironstone nodules (10-50 mm). Gradual to:
120-190	Olive yellow mottled light medium clay with weak subangular blocky structure and 2-10% weathered gneiss fragments (100-300 mm). Gradual to:
190-250	Light brownish grey mottled sandy clay with weak subangular blocky structure and 25-50% weathered gneiss fragments.



Classification: Ferric, Eutrophic, Brown Kurosol; thin, gravelly, loamy/clayey, very deep

Summary of Properties

Drainage Imperfectly drained. The soil may remain wet for a week to several weeks following heavy or prolonged rainfall.

Fertility Inherent fertility is 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 2 cm of soil. Manganese and copper availability in the clayey subsoil is low. Organic carbon levels are satisfactory.

pH Acidic at the surface, strongly acidic with depth.

Rooting depth Not recorded. Estimate 45 cm in pit.

Barriers to root growth

Physical: The clayey subsoil from 26 cm restricts root growth to some extent.

Chemical: There are no apparent chemical barriers apart from low trace element availability in the subsoil.

Water holding capacity Approximately 65 mm in the root zone.

Seedling emergence: Satisfactory.

Workability: Satisfactory although surface ironstone causes significant abrasion of implements.

Erosion Potential

Water: Moderate.

Wind: Low.

Laboratory Data

Depth cm	Sand %	Silt %	Clay %	pH H ₂ O	pH CaCl ₂	CO ₃ %	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	
0-2	88	7	5	6.9	-	0	0.09	1.05	2.62	19	0.58	58	5.40	0.86	14.0	4.90	1.7	0.17	0.82	1.2
2-13	85	7	8	6.2	-	0	0.04	0.42	1.45	6	1.20	38	1.20	0.64	8.8	2.80	1.0	0.06	0.23	0.7
13-26	84	6	10	6.8	-	0	0.03	0.42	0.54	3	0.54	20	0.10	0.38	8.2	2.10	2.2	0.11	0.22	1.3
26-120	67	3	30	5.2	-	0	0.12	0.68	0.10	2	0.04	1.8	0.05	0.10	9.9	1.60	3.6	0.48	0.20	4.9
120-190	61	5	34	4.6	-	0	0.25	2.24	-	-	-	-	-	-	7.1	0.35	2.4	0.87	0.07	12.3
190-250	70	9	21	5.6	-	0	0.17	2.35	-	-	-	-	-	-	6.3	0.36	2.4	1.20	0.08	19.1

Note: 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.