

IRONSTONE SOIL ON LATERITE (McAvaney soil)

General Description: *Ironstone gravelly sandy loam, more clayey with depth, grading to a gravelly yellowish brown sandy clay over indurated ironstone at about 100 cm*

Landform: Undulating low hills.

Substrate: Indurated ironstone fragments (laterite).

Vegetation: Euc. cladocalyx woodland with mallee / broombush understorey



Type Site: Site No.: EL138

50,000 sheet:	6029-2 (Koppio)	Hundred:	Koppio
Annual rainfall:	525 mm	Sampling date:	1982
Landform:	Midslope in a landscape of undulating low hills, 5% slope		
Surface:	Soft with 10-20% ironstone fragments		

Soil Description:

Depth (cm)	Description
0-8	Dark brown single grain sandy loam with 10-25% ironstone fragments (2-10 mm). Clear to:
8-20	Dark yellowish brown single grain sandy loam with 50-75% ironstone fragments (10-50 mm). Clear to:
20-45	Brown single grain light sandy clay loam with 50-75% ironstone fragments (10-50 mm). Gradual to:
45-105	Yellowish brown sandy clay with granular structure and 50-75% ironstone fragments (10-50 mm). Gradual to:
105-200	More than 75% ironstone fragments (10-50 mm), strongly indurated.



Classification: Ferric, Petroferric, Brown Dermosol; thin, gravelly, loamy / clayey, very deep

Summary of Properties

Drainage	Moderately well drained. The soil may remain wet for a week or so following heavy or prolonged rainfall.
Fertility	Inherent fertility is moderately low to 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. Trace element availability in the clayey subsoil is low. Organic carbon levels are satisfactory.
pH	Slightly acidic throughout.
Rooting depth	Not recorded. Estimate 105 cm in pit.
Barriers to root growth	
Physical:	The clay layer from 45 cm restricts root growth to some extent, with root densities likely to decrease with depth. The laterite prevents deeper root penetration.
Chemical:	There are no apparent chemical barriers apart from low trace element availability in the clayey 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	
0-8	95	3	2	6.4	-	0	0.04	0.30	1.79	27	0.82	59	10.2	0.60	8.2	3.5	0.57	0.03	0.35	0.4
8-20	89	7	4	6.4	-	0	0.02	0.23	0.64	20	0.54	21	6.4	0.20	4.7	1.7	0.35	0.02	0.19	0.4
20-45	81	3	16	5.6	-	0	0.05	0.23	0.42	5	0.54	19	0.3	0.32	7.5	3.0	1.60	0.10	0.22	1.3
45-105	52	3	44	6.1	-	0	0.09	0.55	0.25	2	0.14	6.2	0.1	0.24	15.0	3.2	5.30	0.54	0.30	3.6
105-200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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.