

LOAM OVER POORLY STRUCTURED GREY CLAY (Elson soil – loamy variant)

General Description: *Sandy loam to loam over a grey or brown mottled sodic clay, calcareous at depth, over alluvium*

Landform: Lower slopes, drainage depressions and valley flats between rolling low hills.

Substrate: Medium to fine grained alluvium.

Vegetation: Euc. leucoxyton, Euc. odorata woodland



Type Site: Site No.: EL137

50,000 sheet: 6029-2 (Koppio)

Hundred: Koppio

Annual rainfall: 525 mm

Sampling date: 1982

Landform: Valley flat between undulating low hills

Surface: Firm with no stones

Soil Description:

Depth (cm)	Description
0-17	Very dark grey loam with granular structure. Abrupt to:
17-20	Brown single grain sandy loam. Abrupt to:
20-35	Greyish brown weakly mottled medium clay with blocky structure and 2-10% ironstone, gneiss and magnetite nodules and fragments. Clear to:
35-50	Light olive brown mottled medium clay with blocky structure and 2-10% carbonate and magnetite nodules. Clear to:
50-80	Dark yellowish brown weakly mottled light clay with 2-10% carbonate nodules. Gradual to:
80-110	Dark yellowish brown massive sandy clay with 2-10% carbonate nodules. Gradual to:
110-135	Dark yellowish brown weakly mottled silty clay with sub-angular blocky structure and 2-10% carbonate nodules. Gradual to:
135-180	Dark yellowish brown massive calcareous sandy clay loam with 2-10% carbonate nodules.



Classification: Eutrophic, Mottled-Mesonatric, Grey Sodosol; medium, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage Imperfectly to poorly drained. Poorly structured clayey subsoil and low lying position in the landscape restrict through flow of water, so the soil may remain wet for several weeks to months following heavy or prolonged rainfall.

Fertility Inherent fertility is moderately high, as indicated by the exchangeable cation data. At the sampling site, phosphorus and zinc appear to be deficient and the calcium : magnesium ration is low. Organic carbon levels are satisfactory.

pH Neutral at the surface, alkaline with depth.

Rooting depth Not recorded. Estimate 50 cm in pit.

Barriers to root growth

Physical: The clayey layer at 20 cm restricts root distribution patterns.

Chemical: High sodicity from 35 cm impedes root growth.

Water holding capacity Approximately 80 mm in the root zone.

Seedling emergence: Fair to satisfactory, depending on whether surface soil sets hard.

Workability: Fair. Wetness restricts the period over which the soil can be effectively cultivated.

Erosion Potential

Water: Low.

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	
0-17	74	14	12	7.2	-	0.5	0.10	1.17	1.38	17	0.54	82	17.9	0.24	11.0	4.4	2.0	0.39	0.44	3.6
20-35	56	7	37	8.0	-	1.3	0.18	1.03	0.25	3	0.70	9.8	1.8	0.10	17.0	4.0	7.2	3.60	0.91	21.2
35-50	51	3	46	8.5	-	3.3	0.61	3.36	0.13	2	0.32	5.0	0.6	0.14	17.0	12.0	8.0	5.30	0.98	31.2
50-80	61	3	36	8.4	-	1.3	0.35	2.62	-	-	-	-	-	-	13.0	5.0	5.7	3.80	0.67	29.2
80-110	68	6	26	8.4	-	1.5	0.38	3.63	-	-	-	-	-	-	8.3	9.3	4.0	1.90	0.43	22.9
110-135	48	3	49	8.4	-	2.0	0.53	3.80	-	-	-	-	-	-	16.0	10.0	6.9	4.00	0.66	25.0
135-180	71	1	28	8.3	-	2.8	0.50	5.10	-	-	-	-	-	-	12.0	18.0	5.0	3.00	0.45	25.0

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.