

WET GREY CLAY

General Description: *Coarsely structured grey cracking clay, saturated for more than three months per year*

Landform: Very gently undulating plain.

Substrate: Clayey lake floor sediments of Tertiary / Pleistocene age.

Vegetation:



Type Site: Site No.: SE050

1:50,000 sheet: 7024-4 (Keppoch)

Hundred:

Beeamma

Annual rainfall: 550 mm

Sampling date:

31/01/96

Landform: Depression on plain, 0% slope

Surface: Hard setting with no stones

Soil Description:

Depth (cm)	Description
0-16	Dark grey hard heavy clay with strong very coarse prismatic structure. Clear to:
16-65	Grey firm medium heavy clay with coarse subangular blocky structure. Diffuse to:
65-95	Grey and light olive brown friable medium heavy clay. Abrupt to:
Buried soil	
95-105	Brown and yellowish red soft single grain loamy sand. Abrupt to:
105-115	Brown and strong brown friable fine sandy medium clay with strong coarse columnar structure. Clear to:
115-140	Grey and yellowish red firm medium clay with strong subangular blocky structure. Abrupt to:
140-160	Light yellowish brown and yellowish brown friable sandy light clay with strong fine polyhedral structure. Clear to:
160-170	Light olive brown and yellowish brown firm sandy medium clay with strong fine polyhedral structure and 2-10% carbonate concretions (2-6 mm).



Classification: Episodic, Massive, Aquic Vertisol; non-gravelly, medium fine / medium fine, moderate

Summary of Properties

Drainage Poorly drained. The soil remains saturated for more than three months per year due to the clayey texture and low lying position.

Fertility Inherent fertility is high as indicated by the exchangeable cation data. There is ample nutrient retention capacity (high surface clay content), although cation balance is sub-optimal. Magnesium and sodium concentrations are excessive while zinc appears to be marginally deficient. Phosphorus and organic carbon levels are also low.

pH Alkaline at the surface, strongly alkaline with depth.

Rooting depth 160 cm in pit, but few roots below 95 cm.

Barriers to root growth

Physical: The hard coarsely structured clay does not provide ideal conditions for root growth - roots concentrate on the aggregate surfaces rather than penetrating. The coarse columnar structure of the buried subsoil (from 105 cm) is a further barrier.

Chemical: High sodicity from 56 cm and high pH from 95 cm inhibit root growth.

Water holding capacity Approximately 150 mm in the root zone.

Seedling emergence: Fair to poor due to the hard coarsely structured surface.

Workability: Poor - little effective working time between hard (dry), and sticky and boggy (wet).

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
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.7	6.5	<0.1	0.19	0.76	1.0	17	555	8	6.8	1.18	71	10.3	0.41	45.0	11.78	18.07	5.99	2.15	13.3
0-16	8.2	6.9	0.1	0.17	0.42	0.6	6	575	7	7.4	-	-	-	-	49.3	13.80	19.73	7.99	2.26	16.2
16-56	8.5	7.5	0.1	0.42	1.32	0.6	<4	512	14	10.2	-	-	-	-	52.0	14.09	20.24	12.60	2.27	24.2
56-65	8.7	7.9	0.3	0.75	1.87	0.5	<4	530	33	11.8	-	-	-	-	55.4	13.63	21.46	16.64	2.33	30.0
65-95	8.9	8.2	1.0	1.15	2.81	0.4	<4	483	69	10.3	-	-	-	-	54.1	12.69	21.15	17.95	2.17	33.2
95-105	9.5	8.5	0.4	0.45	2.87	0.1	<4	153	22	5.5	-	-	-	-	9.4	2.57	3.88	3.34	0.35	35.7
105-115	8.9	8.1	0.4	0.88	2.73	0.2	<4	295	63	12.4	-	-	-	-	29.3	6.22	11.50	11.30	0.97	38.6
115-140	8.8	8.0	0.1	0.83	2.45	0.2	<4	274	55	11.8	-	-	-	-	26.8	5.43	10.61	10.51	0.86	39.2
140-160	9.1	8.0	<0.1	0.52	2.69	<0.1	<4	171	38	6.7	-	-	-	-	12.1	2.61	4.97	4.93	0.43	40.9
160-170	9.2	8.3	3.6	0.98	3.81	0.1	<4	204	75	10.6	-	-	-	-	17.3	4.83	6.76	7.69	0.61	44.4

Note: Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

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.