

DEEP GRADATIONAL BROWN CLAY

General Description: *Clay loam to light clay grading to a coarsely structured brown or grey mottled clay, weakly calcareous at depth*

Landform: Very gently undulating plain.

Substrate: Clayey Tertiary / Pleistocene lake floor sediments.

Vegetation:



Type Site: Site No.: SE049

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

Hundred: Beeamma

Annual rainfall: 550 mm

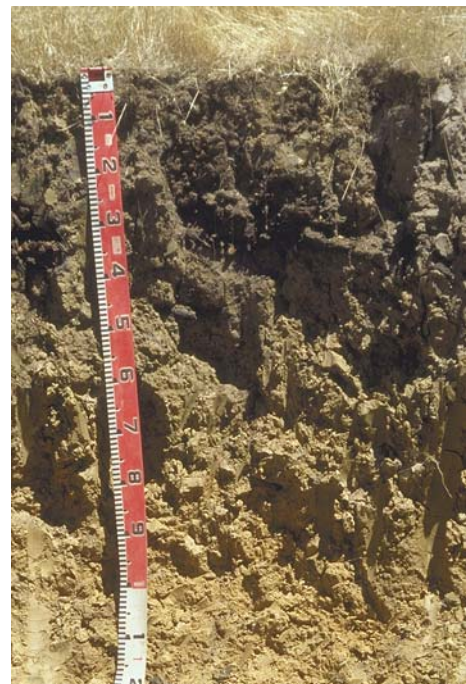
Sampling date: 31/01/96

Landform: Flat plain, 0% slope

Surface: Firm, seasonally cracking with no stones

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-11	Very dark greyish brown friable light clay with strong fine polyhedral structure. Clear to:
11-21	Greyish brown and strong brown mottled hard sandy medium clay with strong very coarse columnar structure. Clear to:
21-50	Brown and light olive brown very hard medium heavy clay with strong very coarse columnar structure and minor fine carbonate. Gradual to:
50-80	Light yellowish brown very hard medium heavy clay with strong coarse subangular blocky structure and 2-10% fine carbonate. Diffuse to:
80-120	Olive yellow and strong brown hard massive sandy medium heavy clay with minor fine carbonate.



Classification: Mottled-Sodic, Hypocalcic, Brown Dermosol; medium, non-gravelly, clayey / clayey, deep

Summary of Properties

Drainage Poorly drained. The coarsely structured dispersive clay severely impedes water movement leading to waterlogging which is exacerbated by the low lying position in the landscape. The profile may remain wet for several months during winter - spring.

Fertility Inherent fertility is moderate to high, as indicated by the exchangeable cation data. Nutrient retention capacity is high to the surface as a result of high clay and organic matter contents. Only phosphorus appears to be deficient.

pH Acidic at the surface, alkaline with depth.

Rooting depth Not recorded. Estimate 80 cm in pit.

Barriers to root growth

Physical: The coarsely structured dispersive subsoil impedes root development by preventing significant growth inside the aggregates.

Chemical: High sodicity and elevated pH and boron levels prevent root growth deeper than 80 cm.

Water holding capacity Approximately 110 mm in the root zone.

Seedling emergence: Fair. The surface soil tends to seal over and set hard, blocking a proportion of emerging seedlings.

Workability: The firm to hard surface is difficult to work effectively (ie to avoid puddling or shattering). The clay tends to become sticky and intractable when 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	5.6	4.8	0	0.13	0.72	3.1	12	301	8	2.2	1.01	255	1.41	9.0	14.6	6.73	3.82	0.63	0.86	4.3
0-11	5.9	4.9	0	0.10	0.67	2.6	7	268	7	2.8	-	-	-	-	18.4	8.22	5.88	0.84	0.75	4.6
11-21	7.2	6.0	<0.1	0.13	0.34	0.8	4	386	3	4.5	-	-	-	-	28.5	8.93	10.82	3.07	1.11	10.8
21-50	8.7	7.6	<0.1	0.23	0.34	0.3	<4	523	13	7.8	-	-	-	-	32.5	10.35	16.22	5.83	1.62	17.9
50-80	9.1	8.2	1.0	0.53	0.75	0.2	<4	533	28	9.5	-	-	-	-	38.1	10.23	19.26	8.10	1.80	21.2
80-120	9.2	8.3	0.3	0.48	0.57	0.1	<4	402	33	10.0	-	-	-	-	31.1	6.23	14.43	8.22	1.24	26.4

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