

GRADATIONAL BROWN CLAY LOAM

General Description: *Hard clay loam grading to a brown or grey mottled coarsely structured clay, calcareous with depth*

Landform: Level plain.

Substrate: Calcified clay of the Padthaway Formation.

Vegetation:



Type Site:	Site No.:	SE038	1:50,000 mapsheet:	7024-4 (Keppoch)
	Hundred:	Glen Roy	Easting:	457230
	Section:	104	Northing:	5945840
	Sampling date:	15/09/1995	Annual rainfall:	545 mm average

Flat plain, 0% slope. Hard setting surface with no stones.

Soil Description:

Depth (cm)	Description
0-13	Dark brown friable massive fine sandy clay loam. Clear to:
13-22	Dark brown and dark reddish brown friable massive fine sandy light clay. Abrupt to:
22-43	Greyish brown and dark reddish brown mottled firm medium clay with coarse prismatic breaking to lenticular structure. Abrupt to:
43-58	Yellowish red and light olive brown hard massive medium clay. Clear to:
58-75	Brown firm massive moderately calcareous medium clay with 20-50% calcrete fragments (6-20 mm) and minor soft gypsum. Gradual to:
75-130	Brown firm massive moderately calcareous medium clay with 20-50% calcrete fragments (6-20 mm) and 20-50% fine carbonate segregations. Diffuse to:
130-150	Brown and reddish brown firm medium heavy clay with coarse lenticular structure and 10-20% carbonate nodules (60-200 mm).



Classification: Mottled, Supracallic, Brown Dermosol; medium, non-gravelly, clay loamy / clayey, deep



Summary of Properties

- Drainage:** Imperfectly drained. The soil can remain wet for several weeks following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is moderate to high as indicated by the exchangeable cation data. The surface soil has ample nutrient retention capacity, even with the low organic matter levels at the sampling site. All tested nutrients are in adequate supply.
- pH:** Alkaline throughout. Surface alkalinity is probably due to the irrigation water.
- Rooting depth:** 130 cm in pit, but few roots below 58 cm.
- Barriers to root growth:**
- Physical:** The coarsely structured or massive clayey subsoil restricts root growth, because there is poor development inside aggregates - water use efficiency is suboptimal.
 - Chemical:** There are no chemical barriers, although very high subsoil carbonate levels in a clayey matrix may impair root growth.
- Waterholding capacity:** Approximately 95 mm in the rootzone.
- Seedling emergence:** Fair, due to hard setting sealing surface.
- Workability:** Fair. The soil has a limited moisture range over which it can be effectively worked.
- 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 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	
Row	8.5	7.7	0.2	0.16	0.88	0.7	27	399	15	1.3	3.6	28	4.1	0.46	12.2	8.80	2.01	0.51	1.02	4.2
0-13	8.5	7.7	0.1	0.16	0.62	0.8	23	709	9	2.2	-	-	-	-	18.7	11.7	3.02	1.46	1.99	7.8
13-22	8.3	7.4	<0.1	0.16	0.62	0.6	7	596	10	1.9	-	-	-	-	22.1	13.7	3.58	1.81	1.68	8.2
22-43	7.6	7.0	<0.1	0.13	1.21	0.4	<4	836	51	2.7	-	-	-	-	38.0	22.6	7.19	2.10	2.44	5.5
43-58	7.8	7.4	0.1	0.40	1.66	0.3	<4	718	34	4.0	-	-	-	-	34.4	21.1	7.15	1.64	2.32	4.8
58-75	8.5	8.0	49	0.40	1.90	0.2	<4	558	32	2.6	-	-	-	-	18.7	13.2	4.66	0.80	1.46	4.3
75-115	8.5	8.0	36	0.41	2.01	0.2	<4	535	39	2.7	-	-	-	-	20.1	13.6	5.71	0.85	1.49	4.2
115-130	8.5	8.0	41	0.41	1.95	0.2	<4	546	46	3.5	-	-	-	-	23.4	14.5	7.39	0.77	1.64	3.3
130-150	8.7	8.2	52	0.32	1.67	0.2	<4	567	43	3.2	-	-	-	-	20.4	12.0	7.66	0.69	1.52	3.4

Note: Row sample bulked from 20 cores (0-10 cm) taken from along the vine rows near 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

Further information: [DEWNR Soil and Land Program](#)

