

CLAY LOAM GRADING TO BROWN SODIC CLAY

General Description: *Clay loam with massive structure grading to cracking, brown, dispersive clayey subsoil with some fine carbonate*

Subgroup soil: M2

Landform: Level plain

Substrate: Young sandy light clay

Vegetation: Perennial ryegrass and clover.



Type Site:	Site No:	SE142	1:50,000 mapsheet:	7025-2 (Tatiara)
	Hundred:	Tatiara	Easting:	490540
	Section:	408	Northing:	5965000
	Sampling date:	20/10/08	Annual rainfall:	510 mm average

Irrigated bay on a relatively recent alluvial plain.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0–11	Hardsetting, black, light fine sandy clay loam with massive structure.
11–40	Dark yellowish brown and yellowish red, medium heavy clay with moderate polyhedral blocky structure.
40–65	Strong brown, medium heavy clay with weak subangular blocky structure.
65–90	Highly calcareous, yellowish brown, medium clay with weak subangular blocky structure and 10–20% soft carbonate segregations (20–60 mm in diameter).
90–118	Moderately calcareous, light brownish grey, medium clay with weak subangular blocky structure.
118–165	Unrelated material(?): light yellowish brown and yellowish brown, sandy light clay with massive structure.



Classification: Vertic, Calcic, Brown Dermosol; medium, non-gravelly, clay loamy/clayey, deep.



Summary of Properties

- Drainage:** Drainage is moderately good.
- Fertility:** Inherent fertility is good, as the soil has a high capacity to retain and supply nutrients owing to high clay content.
- pH:** Soil pH ranges from alkaline in the topsoil to strongly alkaline in the mid to lower subsoil.
- Rooting depth:** Viewed in the pit: most roots occur above 65 cm, with some to 90 cm.

Barriers to Root Growth:

- Physical:** Dispersiveness limits root growth.
- Chemical:** High pH, low levels of some nutrients (e.g. phosphorus and zinc), raised levels of salts (throughout the profile), and possibly low oxygen levels associated with wetness, may limit root growth with depth. Also, phosphorus level in the surface soil is marginal to low.

Waterholding capacity: High. Total available: approx 140 mm
 $[(0.11 \times 210) + (0.29 \times 190) + (0.25 \times 170) + (0.25 \times 150 \times 0.5)]$.

Seedling emergence: Moderate. Careful surface management at optimum moisture content is required, together with maintenance and improvement of organic matter and possibly gypsum, to maintain and improve surface condition.

Workability: Moderate.

Erosion Potential:

- Water:** Low.
- Wind:** Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Al CaCl ₂ mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg						Est. ESP
													Cu	Fe	Mn	Zn		Ca	Mg	Na	K	Al	H	
Paddock	8.3	7.6	0.3	0.21	1.76	2.5	23	213	137	10.8	1.5	0	1.1	233	17	1.2	15.9	9.9	4.8	0.6	0.5	0.0	0.0	4
0-11	8.2	7.4	0.3	0.25	2.46	3.3	26	472	205	23.8	1.8	0	1.5	311	11	0.8	16.3	9.9	4.5	0.8	1.1	0.0	0.0	5
11-40	8.6	7.6	0.3	0.25	2.28	0.6	5	245	222	19.0	3.1	0	0.7	102	15	0.2	19.3	8.2	8.7	1.8	0.7	0.0	0.0	9
40-65	9.2	8.5	1.0	0.43	2.33	0.2	2	262	291	26.3	4.9	0	0.5	21	29	0.1	23.5	11.3	10.1	1.4	0.7	0.0	0.0	6
65-90	9.4	8.6	4.4	0.46	2.32	0.1	2	272	287	29.5	6.6	0	0.4	8	3.2	0.2	28.4	15.2	10.7	1.7	0.7	0.0	0.0	6
90-118	9.4	8.7	1.3	0.48	1.91	0.1	2	283	216	24.1	8.9	0	0.5	16	6.2	0.1	24.3	11.0	10.0	2.5	0.8	0.0	0.0	10
118-165	9.4	8.7	0.5	0.31	2.39	0.0	2	183	157	11.7	5.7	0	0.6	15	18	0.2	8.7	3.1	3.8	1.3	0.5	0.0	0.0	15

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

Sum of cations approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.

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

