

CLAY LOAM OVER DISPERSIVE RED CLAY

General Description: *Hard loam to clay loam abruptly overlying a red coarsely structured dispersive clay, weakly calcareous with depth*

Landform: Plains

Substrate: Hindmarsh Clay.

Vegetation:



Type Site: Site No.: CL014

1:50,000 sheet: 6628-4 (Gawler)

Hundred: Port Gawler

Annual rainfall: 375 mm

Sampling date: 11/06/93

Landform: Flat plain, 0% slope

Surface: Hard setting with no stones

Soil Description:

Depth (cm)	Description
0-10	Dark reddish brown clay loam with moderate granular structure. Abrupt to:
10-30	Dark reddish brown firm medium heavy clay with strong very coarse prismatic structure. Clear to:
30-50	Red firm highly calcareous medium heavy clay with moderate polyhedral structure and 2-10% fine carbonate. Gradual to:
50-75	Red firm moderately calcareous medium heavy clay with weak very coarse prismatic structure. Gradual to:
75-100	Yellowish red moderately calcareous medium clay with moderate subangular blocky structure. Diffuse to:
100-170	Yellowish red moderately calcareous medium clay with moderate coarse subangular blocky structure.



Classification: Calcic, Subnatric, Red Sodosol: medium, non-gravelly, clay loamy / clayey, deep

Summary of Properties

- Drainage:** Moderately well drained. The dispersive clay subsoil restricts water movement, causing water to perch for up to a week following heavy or prolonged rainfall.
- Fertility:** Natural fertility is high as indicated by the exchangeable cation data. All layers have a high nutrient retention capacity. Organic carbon level is adequate, and concentrations of all measured nutrients are satisfactory.
- pH:** Slightly acidic at the surface, alkaline with depth.
- Rooting depth:** 100 cm in pit, but few roots below 50 cm.
- Barriers to root growth:**
- Physical:** The poorly structured and dispersive subsoil clay prevents uniform root growth. Roots tend to concentrate on the aggregate faces, without penetrating inside.
- Chemical:** Very high boron from 10 cm, high sodicity from 30 cm and moderate salinity from 50 cm all reduce potential root growth.
- Water holding capacity:** Approximate 150 mm in root zone, but only about 70 mm is effectively available due to poor root distribution patterns.
- Seedling emergence:** Fair, due to hard setting, sealing surface. Gypsum will help.
- Workability:** Fair, as above.

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	
Paddock	6.1	6.0	0	0.21	1.46	1.7	89	673	-	7.6	1.9	41	42.4	2.4	13.6	7.52	3.00	0.86	1.89	6.3
0-10	6.2	6.0	0	0.19	1.41	1.6	94	703	-	7.6	1.8	24	40.9	2.7	13.8	8.47	2.95	0.65	2.06	4.7
10-30	8.0	7.4	0	0.20	0.63	0.8	20	781	-	43.5	2.6	12	9.7	0.3	28.1	10.8	8.46	3.64	2.73	13.0
30-50	9.0	8.4	7.7	0.76	3.20	0.1	14	603	-	44.0	1.4	6	3.6	0.2	15.7	4.23	7.11	5.20	1.57	33.1
50-75	8.8	8.4	2.3	1.68	6.80	0.1	9	817	-	67.0	1.8	8	2.0	0.2	26.9	5.57	11.9	10.0	2.88	37.3
75-100	8.8	8.5	5.2	1.98	8.38	0.1	9	754	-	52.9	1.8	8	1.7	0.2	25.0	4.51	10.1	9.95	2.42	39.8
100-170	8.8	8.4	6.4	1.75	10.2	0.1	10	686	-	18.7	1.0	8	1.3	0.2	22.4	3.64	8.09	88.4	1.57	39.5

- Note:** Paddock sample bulked from 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.