

# HARD LOAM OVER POORLY STRUCTURED RED CLAY

**General Description:** *Medium to thick hard setting fine sandy loam to loam abruptly overlying a coarsely structured red clay, calcareous with depth, grading to clayey alluvium*

**Landform:** Outwash fans and flats

**Substrate:** Clayey alluvium, mantled by fine carbonate

**Vegetation:**



**Type Site:** Site No.: CL001

1:50,000 sheet:	6629-1 (Riverton)	Hundred:	Saddleworth
Annual rainfall:	500 mm	Sampling date:	09/03/92
Landform:	Midslope of gently inclined outwash fan, 2% slope		
Surface:	Hard setting with no stones		

## Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-29	Hard setting massive red silty loam. Abrupt to:
29-90	Hard dark reddish brown medium clay with coarse prismatic breaking to angular blocky structure. Gradual to:
90-145	Highly calcareous firm yellowish red medium clay with 10-20% soft and 10-20% nodular carbonate segregations. Gradual to:
145-160	Dark red firm calcareous medium clay with 2-10% soft carbonate segregations.



**Classification:** Calcic, Subnatric, Red Sodosol; medium, non-gravelly, silty / clayey, deep

## Summary of Properties

- Drainage:** Moderately well drained. Dispersive, sodic subsoil prevents free drainage and perches water for up to a week following heavy or prolonged rainfall.
- Fertility:** Natural fertility is moderately high. The subsoil has a very high nutrient retention capacity, as indicated by the exchangeable cation data. Relatively low organic carbon values limit surface soil retention capacity. Phosphorus levels are marginal, but other tested elements are in adequate supply.
- pH:** Acidic at the surface, grading to strongly alkaline in the deep subsoil.
- Rooting depth:** 130 cm in pit, but few roots below 90 cm.
- Barriers to root growth:**
- Physical:** Hard massive surface soil and dispersive clayey subsoil both inhibit optimal root development.
  - Chemical:** Salt and boron levels are satisfactory. High pH from 90 cm affects root growth. Manganese toxicity is likely if soil becomes acidic. Lime is required to prevent the problem developing.
- Water holding capacity:** Approximately 130 mm (high) in rootzone.
- Seedling emergence:** Fair due to hard setting surface.
- Workability:** Fair. Moisture range for effective working is narrow. Organic matter build up and gypsum applications will improve workability.

## Erosion Potential

- Water:** Moderately low. Soil is highly erodible, but slope is very gentle.
- Wind:** Low.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> -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	6.3	5.3	0.4	0.05	-	0.90	24	420	-	-	1.2	27.2	25.6	0.75	7.5	4.19	1.94	0.23	0.92	3.1
0-29	6.5	5.4	1.2	0.05	0.4	0.72	13	370	-	-	1.6	29.0	44.6	0.31	8.8	5.86	2.95	0.36	0.80	4.1
29-90	8.4	7.3	2.8	0.26	0.6	0.30	3	380	-	2.8	0.98	12.5	6.6	0.08	25.9	13.1	10.8	2.41	1.44	9.3
90-145	9.4	8.0	17.7	0.23	0.7	0.13	3	290	-	4.2	0.80	5.4	1.7	0.09	17.1	7.74	9.41	2.67	0.99	15.6
145-160	9.2	7.9	6.1	0.27	0.6	0.12	2	360	-	4.1	0.70	5.4	1.5	0.08	21.3	9.08	11.2	3.55	1.18	16.7

- 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.