

## HARD CLAY LOAM OVER DISPERSIVE RED CLAY

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

**Landform:** Gently sloping outwash fans and pediments

**Substrate:** Alluvial clays mixed with deeply weathered basement rock

**Vegetation:**



<b>Type Site:</b>	Site No.:	CL020	1:50,000 mapsheet:	6729-4 (Eudunda)
	Hundred:	Neales	Easting:	331100
	Section:	73	Northing:	6215000
	Sampling date:	16/3/95	Annual rainfall:	350 mm average

Midslope of gently undulating rise, 4% slope. Hard setting surface with no stones.

### Soil Description:

Depth (cm)	Description
0-15	Reddish brown massive hard clay loam. Sharp to:
15-40	Red firm coarsely structured dispersive clay with strong coarse prismatic structure. Abrupt to:
40-60	Highly calcareous yellowish red medium clay with moderate coarse prismatic structure. Clear to:
60-100	Highly calcareous pale brown medium clay with minor siltstone fragments. Gradual to:
100-140	Highly calcareous pale brown medium clay with 20-50% siltstone fragments. Gradual to:
140-180	Slightly calcareous medium clay with 10-20% siltstone fragments. Gradual to:
180-200	Weathering siltstone.



**Classification:** Hypercalcic, Subnatric, Red Sodosol; medium, non-gravelly, clay loamy / clayey, deep



## Summary of Properties

**Drainage:** Moderately well drained. Water will perch on the dispersive clay subsoil for a week or so following prolonged or heavy rain.

**Fertility:** Inherent fertility is high, as indicated by the exchangeable cation data. Favourable organic carbon levels augment nutrient retention capacity. Phosphorus levels are marginal, but other measured elements are in good supply. Zinc deficiency is possible.

**pH:** Alkaline at the surface (road dust effect), to strongly alkaline in the subsoil.

**Rooting depth:** 40 cm in pit

### Barriers to root growth:

**Physical:** Hard consistence of surface and subsurface layers impedes root growth. Dispersive and coarsely structured subsoil clay prevents uniform root distribution, thereby restricting water use efficiency.

**Chemical:** High pH, sodicity and boron from 40 cm combine to severely restrict root growth.

**Waterholding capacity:** Approximately 60 mm in rootzone.

**Seedling emergence:** Surface sealing is likely, leading to patchy emergence.

**Workability:** Temporary waterlogging (soupy soil) and rapid drying (leading to hard brittle soil) limit the time for safe working ("Sunday soil").

### Erosion Potential:

**Water:** Moderate due to high soil erodibility and gentle slope.

**Wind:** Moderately low to 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> 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	8.4	7.9	0.8	0.1	0.6	1.5	23	479	17	2.9	-	-	-	-	22.3	15.89	3.85	0.44	1.63	1.9
0-15	8.5	7.9	3.5	0.1	0.7	1.6	24	443	21	3.3	-	-	-	-	24.8	19.54	4.64	0.61	1.69	2.4
15-40	9.1	8.3	1.6	0.3	0.4	0.9	<4	359	20	8.1	-	-	-	-	48.8	22.83	16.79	6.20	1.86	12.7
40-60	9.6	8.6	26.1	0.5	1.4	0.4	<4	275	42	20.8	-	-	-	-	24.2	6.50	12.91	7.03	1.11	29.0
60-100	9.7	8.7	20.2	0.7	1.8	0.1	5	214	63	23.7	-	-	-	-	18.6	3.53	10.23	6.84	0.79	36.7
100-140	9.5	8.7	2.4	0.8	2.5	0.1	<4	239	89	26.3	-	-	-	-	21.1	3.18	9.55	7.51	0.71	35.5
140-180	9.3	8.6	0.4	1.0	3.5	0.1	<4	308	127	35.5	-	-	-	-	27.4	3.48	13.29	10.45	0.99	38.1

**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.

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

