

# LOAM OVER POORLY STRUCTURED RED CLAY

**General Description:** *Hard loam over coarsely structured dispersive red clay, calcareous with depth*

**Landform:** Flats and very gentle slopes.

**Substrate:** Alluvial clay, red and finely structured

**Vegetation:**



**Type Site:** Site No.: CL019

1:50,000 sheet: 6729-4 (Eudunda)

Hundred: Neales

Annual rainfall: 325 mm

Sampling date: 16/03/95

Landform: Flat, 0% slope

Surface: Hard setting with 10-20% quartzite stones and gravel

## Soil Description:

Depth (cm)	Description
0-20	Hard massive reddish brown loam with minor quartz gravel. Abrupt to:
20-40	Very hard dispersive red medium heavy clay with coarse prismatic structure. Clear to:
40-90	Orange highly calcareous moderately well structured light medium clay. Gradual to:
90-130	Reddish brown highly calcareous medium clay. Gradual to:
130-170	Yellowish red highly calcareous medium clay with moderate subangular blocky structure and minor manganiferous segregations. Gradual to:
170-190	Yellowish red highly calcareous light medium clay with moderate subangular blocky structure.



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

## Summary of Properties

**Drainage** Moderately well to imperfectly drained. The soil may remain wet for a week or more following heavy or prolonged rainfall due to the perching effect of the dispersive subsoil.

**Fertility** Inherent fertility is high, as indicated by the exchangeable cation data. All main elements are well supplied (except nitrogen). Organic carbon levels are good for this rainfall zone.

**pH** Slightly acidic at the surface to strongly alkaline with depth.

**Rooting depth** 90 cm in pit.

### Barriers to root growth

**Physical:** The hard setting sealing surface restricts surface root growth, and the hard, coarsely structured dispersive subsoil impedes downward movement. Roots are confined to the spaces between the coarse aggregates, with little root growth occurring within them. This leads to poor water use efficiency.

**Chemical:** High pH (more than 9.2) from 40 cm, high sodicity (ESP greater than 25) from 40 cm.

**Water holding capacity** High in rootzone (approximately 110 mm).

**Seedling emergence:** Possible surface sealing leading to patchy emergence.

**Workability:** Fair to poor. Low infiltration rates keep surface wet following rain, but it rapidly dries and seals over, leaving only a short period for cultivation. Quartz gravel in surface layer may abrade implements.

### Erosion Potential

**Water / wind** Moderate 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> -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	6.6	6.2	0.0	0.1	1.1	1.4	31	817	12	2.3	-	-	-	-	11.1	6.69	1.51	0.24	1.97	2.1
0-20	6.8	6.2	0.0	0.1	1.1	1.1	26	697	11	2.4	-	-	-	-	11.6	6.62	2.21	0.32	1.84	2.7
20-40	8.6	7.8	0.2	0.3	1.0	0.9	4	409	20	4.7	-	-	-	-	33.3	16.19	8.53	4.37	1.67	13.1
40-90	9.6	8.4	19.0	0.6	3.8	0.3	<4	311	113	6.0	-	-	-	-	16.1	5.99	6.00	5.04	0.98	31.3
90-130	9.5	8.4	36.2	0.9	6.1	0.1	<4	305	175	7.3	-	-	-	-	12.4	3.77	5.48	4.50	0.93	36.2
130-170	9.5	8.5	29.6	1.1	7.1	0.2	<4	268	164	9.6	-	-	-	-	10.6	2.71	5.23	4.03	0.84	38.0
170-190	9.6	8.6	20.5	1.1	6.9	0.1	<4	288	128	12.9	-	-	-	-	11.2	2.48	5.48	4.32	0.89	38.5

**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.