

**HARD RED GRADATIONAL CLAY LOAM**

(Cooper soil)

**General Description:** *Hard clay loam grading to a coarsely structured red clay, highly calcareous with depth*

**Landform:** Gently undulating rises.

**Substrate:** Very highly calcareous clayey deposits of Woorinen Formation, variably hardened.

**Vegetation:** Mallee.

<b>Type Site:</b>	Site No.:	EW076	1:50,000 mapsheet:	5831-4 (Venus)
	Hundred:	Rounsevell	Easting:	456640
	Section:	55	Northing:	6338290
	Sampling date:	30/03/1993	Annual rainfall:	380 mm average

Midslope of an undulating rise, 3-4% slope. Hard setting surface with no stones.

**Soil Description:**

<i>Depth (cm)</i>	<i>Description</i>
0-6	Dark reddish brown firm clay loam with weak fine subangular blocky structure and minor ironstone concretions. Clear to:
6-14	Dark reddish brown hard moderately calcareous medium clay with strong coarse columnar structure and minor ironstone concretions. Clear to:
14-34	Brown massive very highly calcareous medium clay with 20-50% carbonate concretions and minor ironstone. Gradual to:
34-140	Class III C carbonate.



**Classification:** Haplic, Lithocalcic, Red Dermosol; thin, non-gravelly, clay loamy / clayey, deep



## Summary of Properties

<b>Drainage:</b>	Well drained. The soil never remains saturated for more than a few days following heavy or prolonged rainfall.
<b>Fertility:</b>	Inherent fertility is moderate to high, as indicated by the exchangeable cation data. The soil has good nutrient retention capacity due to favourable clay and organic matter contents. Regular phosphorus applications are necessary. Nitrogen levels depend on legume content of pastures and cropping history. Concentrations of all tested elements are satisfactory at the sampling site.
<b>pH:</b>	Slightly alkaline at the surface, alkaline with depth.
<b>Rooting depth:</b>	150 cm in pit, but few roots below 34 cm.
<b>Barriers to root growth:</b>	
<b>Physical:</b>	The clayey subsoil restricts root growth to some extent, and the calcrete is a variable restriction, depending on degree of cementation.
<b>Chemical:</b>	There are no chemical barriers.
<b>Waterholding capacity:</b>	Approximately 50 mm in the rootzone (ie above the Class III C carbonate layer).
<b>Seedling emergence:</b>	Fair to satisfactory, depending on the degree of surface sealing.
<b>Workability:</b>	Fair to good. Surface may set hard, reducing the moisture range over which cultivation is effective.
<b>Erosion Potential:</b>	
<b>Water:</b>	Moderately low to moderate.
<b>Wind:</b>	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	
0-6	7.7	7.4	1	0.19	0.85	1.5	37	630	-	1.6	0.26	22	11.0	1.30	20.7	14.59	2.30	0.16	1.93	0.8
6-14	8.2	7.7	3	0.17	0.66	0.6	5	490	-	1.6	0.16	17	1.70	0.19	26.7	21.89	3.93	0.26	1.94	1.0
14-34	8.6	8.0	24	0.13	0.42	0.5	3	300	-	1.6	0.54	7.1	0.88	0.33	21.7	17.25	3.41	0.26	1.10	1.2
34-140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Note:** 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](#)

