

## HARD CLAY LOAM OVER SODIC RED CLAY

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

**Landform:** Level to very gently undulating alluvial plains.

**Substrate:** Fine textured alluvium, mantled by aeolian carbonates.

**Vegetation:**



<b>Type Site:</b>	Site No.:	CL059	1:50,000 mapsheet:	6529-2 (Dublin)
	Hundred:	Grace	Easting:	269550
	Section:		Northing:	6193540
	Sampling date:	2013	Annual rainfall:	380 mm average

Level plain, with slope of 0.2%. Hard setting surface with no stones.

### Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Dark reddish brown hard massive fine sandy clay loam. Abrupt to:
10-30	Dark reddish brown hard medium clay with strong coarse prismatic structure, breaking to strong medium polyhedral. Clear to:
30-40	Dark reddish brown highly calcareous light medium clay with strong coarse prismatic structure, breaking to strong medium polyhedral, and 2-10% soft calcareous segregations. Clear to:
40-70	Yellowish red very highly calcareous light medium clay with moderate subangular blocky structure and more than 50% soft calcareous segregations.



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



## Summary of Properties

**Drainage:** Moderately well drained. No part of the profile is likely to remain wet for more than a week following heavy or prolonged rainfall.

**Fertility:** Inherent fertility is high, as indicated by the exchangeable cation data (CEC exceeding 15 cmol(+)/kg means high nutrient retention capacity). There are no deficiencies at this site according to the laboratory data. Phosphorus, potassium and trace element levels are particularly high.

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

**Rooting depth:** Most root growth is in the upper 40 cm (i.e. above the main carbonate layer), but there is some growth to 70 cm.

### Barriers to root growth:

**Physical:** The hard, coarsely structured and sodic clay subsoil restricts uniform root distribution, reducing water use efficiency.

**Chemical:** High pH and sodicity from 40 cm severely restrict deeper root growth.

**Waterholding capacity:** Approximately 55 mm in potential rootzone.

**Seedling emergence:** Fair – hard setting and sealing surface impedes emergence in season openings with patchy rainfall.

**Workability:** Moderate – surface soil tends puddle when worked too wet, and shatter if worked too dry.

### Erosion Potential

**Water:** Low – soil is highly erodible, but slope is negligible.

**Wind:** Low.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC 1:5 dS/m	ECe dS/m	Org.C %	NO <sub>3</sub> mg/kg	Avail. P mg/kg	PBI	Avail. K mg/kg	SO <sub>4</sub> -S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
													Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	6.2	5.3	0.3	0.16	0.98	2.03	23	66	40	525	10.8	0.9	1.49	36	53	3.30	8.5	5.55	1.31	0.26	1.3	3.1
0-10	7.7	7	0.3	0.11	0.74	0.9	10	27	38	321	9.6	0.9	1.57	26	35.7	1.14	7.3	4.54	1.49	0.42	0.8	5.8
10-30	8.6	7.6	0.3	0.29	1.14	0.87	5	5	-	400	10.5	4.4	2.51	9	6.73	0.59	26.7	11.8	9.27	4.57	1.0	17.1
30-40	9.1	8.3	7.7	0.66	2.48	0.59	2	3	-	317	62.2	7.0	2.28	7	2.13	0.72	31.0	12.8	10.0	7.21	0.9	23.2
40-70	9.3	8.3	16	0.89	5.27	0.43	2	3	-	334	183.1	14.8	1.35	8	1.99	0.50	29.0	10.3	8.93	8.86	0.9	30.5

**Note:** Paddock sample bulked from cores (0-10 cm) taken around the pit.

Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), 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](#)

