

HARD GRADATIONAL RED CLAY

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

Landform: Gently undulating plains.

Substrate: Deeply weathered granite, mantled by fine carbonate.

Vegetation:



Type Site:	Site No.:	CY029	1:50,000 mapsheet:	6430-2 (Alford)
	Hundred:	Tickera	Easting:	760700
	Section:	55	Northing:	6253250
	Sampling date:	20/7/1994	Annual rainfall:	365 mm average

Very gentle slope of 0.5%. Hard setting surface with minor calcrete stone (20-60 mm).

Soil Description:

Depth (cm)	Description
0-10	Dark brown hard light clay with weak subangular blocky structure and minor quartz grit. Clear to:
10-38	Red very hard medium clay with coarse prismatic breaking to strong coarse angular blocky structure. Gradual to:
38-68	Reddish yellow hard massive very highly calcareous light medium clay. Diffuse to:
68-140	Yellowish red hard massive very highly calcareous light medium clay. Gradual to:
140-150	Yellowish red, light grey and red friable massive very highly calcareous light medium clay with 20-50% soft weathered granite fragments (60-200 mm).



Classification: Sodic, Hypercalcic, Red Dermosol; medium, non-gravelly, clayey / clayey, deep



Summary of Properties

Drainage:	Moderately well drained. Water perches on the hard subsoil clay for up to a week following heavy or prolonged rainfall.
Fertility:	Inherent fertility is high, as indicated by the exchangeable cation data and high clay content. Surface soil fertility relies on organic matter and phosphorus - levels of both are adequate at the sampling site. Apart from nitrogen and phosphorus, nutrient deficiencies are likely to be sporadic, depending on seasonal conditions.
pH:	Alkaline throughout.
Rooting depth:	Approximately 70 cm in pit, but few roots below 38 cm.
Barriers to root growth:	
Physical:	High soil strength in subsoil acts as a barrier to roots. Densities are reduced but growth is not prevented.
Chemical:	High sodicity and pH from 68 cm restrict deeper root growth. Low trace element availability in the subsoil contributes to poor root density.
Waterholding capacity:	Approximately 115 mm in rootzone, but some of this is effectively unavailable due to low root density in the subsoil.
Seedling emergence:	Fair. Organic matter levels need to be maintained to preserve surface structure.
Workability:	Fair.
Erosion Potential:	
Water:	Low.
Wind:	Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ 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	8.0	7.2	<0.1	0.2	0.6	1.65	35	638	7.2	1.3	-	-	-	-	25.3	17.94	3.21	0.23	3.08	0.9
0-10	7.9	7.2	<0.1	0.1	0.4	1.4	16	668	5.1	1.0	-	-	-	-	25.4	18.87	3.39	0.29	2.76	1.1
10-38	8.6	7.7	0.2	0.3	0.5	0.55	2	287	3.4	0.6	-	-	-	-	32.5	23.54	8.57	1.65	1.46	5.1
38-68	9.2	8.0	23.7	0.3	0.5	0.3	2	262	7.3	1.2	-	-	-	-	21.9	9.55	7.73	5.07	1.17	23.2
68-140	9.5	8.2	20.3	0.4	0.7	0.2	2	312	16	4.1	-	-	-	-	22.4	8.22	8.40	7.71	1.23	34.4
140-150	9.5	8.1	19.5	0.3	0.8	0.15	4	190	19	-	-	-	-	-	18.0	7.25	6.98	5.68	0.55	31.6

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

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

