

HARD FINE SANDY LOAM OVER RED CLAY

General Description: *Thick, hard, massive fine sandy loam abruptly overlying a strongly structured red clay, calcareous with depth*

Landform: Old alluvial plains and outwash fans.

Substrate: Fine grained alluvium, capped by soft carbonates.

Vegetation:



Type Site: Site No.: CL042

1:50,000 sheet: 6729-3 (Truro)	Hundred: Moorooroo
Annual rainfall: 505 mm	Sampling date: 29/11/04
Landform: Flat plain, 0% slope	
Surface: Hard setting with no stones	

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-10	Reddish brown hard massive fine sandy loam. Gradual to:
10-25	Reddish brown very hard massive fine sandy loam. Gradual to:
25-42	Red very hard massive heavy fine sandy loam. Abrupt to:
42-80	Dark reddish brown very hard medium heavy clay with strong coarse prismatic structure, breaking to strong fine polyhedral. Gradual to:
80-115	Dark reddish brown hard moderately calcareous medium clay with moderate coarse subangular blocky structure, 10-20% soft and 10-20% nodular carbonate segregations. Diffuse to:
115-150	Dark reddish brown friable moderately calcareous medium clay with 2-10% soft manganese segregations. Diffuse to:
150-180	Reddish brown friable slightly calcareous medium clay with 10-20% soft carbonate and 2-10% soft manganese segregations.



Classification: Calcic, Subnatric, Red Sodosol; thick, non-gravelly, loamy / clayey, deep

Summary of Properties

- Drainage:** Moderately well drained. Water perches on top of the clay subsoil for up to a week following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is moderate, as indicated by the exchangeable cation data. The sandy loam surface has a reasonable nutrient retention capacity, about 40% of which is attributable to organic matter. At the pit site, concentrations of all tested elements except zinc are adequate. Note that high sulphate concentrations indicate gypsum application.
- pH:** Acidic in the immediate subsurface, strongly alkaline with depth.
- Rooting depth:** 150 cm in pit, but few roots below 115 cm.
- Barriers to root growth:**
- Physical:** The coarsely structured clay subsoil prevents uniform root distribution.
 - Chemical:** Marginal sodicity from 115 cm affects root growth of horticultural crops. Strong alkalinity from 115 significantly impedes roots of all crops.
- Water holding capacity:** (Estimates for potential root zone of irrigated crops)
- Total available: 160 mm
 - Readily available: 70 mm
- Seedling emergence:** Fair due to hard setting, sealing surface condition.
- Workability:** Fair. Surface soil tends to puddle when worked too wet, and shatter when worked too dry. Surface condition at this site is better than average due to high organic matter levels and gypsum application.
- Erosion Potential**
- Water:** Low.
 - Wind:** Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-10	6.6	6.2	0	0.330	3.81	2.00	37	305	23	917	0.8	6.75	57	167	2.79	8.0	6.94	0.28	0.11	0.70	1.4
10-25	5.9	5.6	0	0.300	3.83	0.62	21	313	28	219	0.6	2.83	69	173	0.99	4.5	3.36	0.30	0.06	0.73	1.3
25-42	6.7	6.1	0	0.167	2.34	0.30	7	283	5	103	0.5	2.48	58	133	0.57	5.3	3.57	0.91	0.11	0.66	2.1
42-80	6.7	6.2	0	0.331	1.66	0.46	2	347	4	195	1.9	5.08	70	96.4	0.51	23.8	8.86	12.4	1.63	0.90	6.9
80-115	8.6	7.9	6.4	0.269	1.63	0.16	3	294	7	84.5	2.3	1.97	18	32.3	0.41	17.6	8.09	7.21	1.52	0.74	8.7
115-150	8.7	7.9	1.2	0.273	1.12	0.14	2	396	21	44.2	5.3	3.26	44	137	0.40	24.1	6.93	12.9	3.27	1.04	13.6
150-180	9.3	8.3	5.7	0.261	0.88	0.10	2	360	28	20.4	5.2	2.02	13	20.6	0.62	23.2	7.96	11.2	3.11	0.92	13.4

Note: 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, in this case estimated by the sum of cations.