

LOAMY SAND OVER COARSELY STRUCTURED RED CLAY

General Description: *Thin firm loamy sand, abruptly overlying a coarsely structured red clay, calcareous with depth*

Landform: Very gently undulating plain

Substrate: Blanchetown Clay – coarsely structured red and grey clay with pockets of fine carbonate leached in from above.

Vegetation:



Type Site:	Site No.:	MM159	1:50,000 mapsheet:	7027-4 (Karte)
	Hundred:	Parilla	Easting:	464270
	Section:	83	Northing:	6113260
	Sampling date:	15/06/2007	Annual rainfall:	325 mm average

Slight depression in very gently undulating plain. Soft surface with minor ironstone fragments.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-8	Dark brown soft (cultivated) massive loamy sand. Abrupt to:
8-25	Red hard sandy medium heavy clay with moderate coarse subangular blocky structure. Abrupt to:
25-35	Red hard medium heavy clay with weak coarse subangular blocky structure and 20-50% ironstone fragments to 20 mm. Clear to:
35-55	Reddish yellow hard very highly calcareous medium clay with weak coarse subangular blocky structure and 20-50% fine carbonate segregations. Diffuse to:
55-80	Reddish yellow hard highly calcareous medium clay with moderate coarse subangular blocky structure and 10-20% fine carbonate segregations. Diffuse to:
80-110	Red and light yellowish brown hard medium heavy clay with strong very coarse angular blocky structure.



Classification: Calcic, Subnatric, Red Sodosol; thin, non-gravelly, sandy / clayey, moderate



Summary of Properties

- Drainage:** Moderately well to imperfectly drained. Water perches on top of the clayey subsoil for a week or so at a time following heavy or prolonged rainfall.
- Fertility:** Inherent fertility is moderately low, as indicated by the exchangeable cation data, although there is significant subsoil nutrient retention capacity at shallow depth. Test data indicate that levels of all nutrient elements are adequate, with the possible exceptions of copper and zinc (soil tests for trace elements are unreliable, so tissue test necessary to confirm).
- pH:** Alkaline throughout.
- Rooting depth:** A few roots penetrate to 80 cm, but most are in the upper 35 cm.
- Barriers to root growth:**
- Physical:** The subsoil clay impedes root growth, forcing many roots around the large aggregates, rather than growing into them. This results in sub-optimal root density and reduced water uptake.
- Chemical:** High boron levels, sodicity and salinity from 35 cm significantly reduced root density and effectiveness, with restricted water uptake to be expected below this depth.
- Waterholding capacity:** Approximately 60 mm in the potential rootzone (allowing for low water use efficiency in the 35-80 cm zone due to hostile soil chemistry).
- Seedling emergence:** Satisfactory.
- Workability:** Satisfactory, although shattering likely if worked too dry.
- Erosion Potential:**
- Water:** Low.
- Wind:** Moderately 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	React Fe 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	
0-8	7.7	7.3	0	0.11	0.52	0.91	32	180	6	8.6	8.6	293	0.9	62	17.5	0.7	5.3	3.95	0.88	0.07	0.42	1.3
8-25	8.7	7.9	0	0.10	0.73	0.44	3	225	15	7.1	3.1	582	0.56	54	27.6	0.41	20.2	9.65	8.53	1.42	0.63	7.0
25-35	8.9	8.1	0	0.27	1.70	0.29	4	196	99	24	4.7	812	0.69	64	21.9	0.33	25.7	10.8	11.2	3.19	0.55	12.4
35-55	9.0	8.4	12	0.91	7.02	0.37	3	293	1120	93	12.5	526	0.7	19	2.21	0.39	36.2	10.3	16.7	8.38	0.85	23.1
55-80	8.9	8.4	8	1.30	7.92	0.20	3	429	1515	112	20.3	520	0.94	15	1.06	0.27	39.9	9.13	19.1	10.5	1.17	26.4
80-110	8.6	8.2	1	1.53	8.59	0.12	2	519	1654	164	24.8	550	0.96	31	6.17	0.21	37.1	5.03	18.9	11.8	1.34	31.7

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.

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

