

SANDY LOAM OVER POORLY STRUCTURED BROWN CLAY

General Description: *Delved sandy loam with a pale coloured sandy subsurface layer over a brownish yellow hard, coarsely structured clay.*

Landform: Very gently undulating plains.

Substrate: Tertiary age clay.

Vegetation:

Type Site:	Site No.:	SE129	1:50,000 mapsheet:	7025-4 (Cannawigara)
	Hundred:	Pendleton	Easting:	457390
	Section:	104	Northing:	5999860
	Sampling date:	31/10/06	Annual rainfall:	485 mm average

Flat on level plain. Firm surface with no stones. Paddock delved to 50 cm.

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-12	Very dark grey brown friable sandy loam with weak granular structure. Abundant roots. Clear to:
12-32	Light yellowish brown (bleached) soft single grain sand. Few roots. Sharp to:
32-55	Brownish yellow, brown and yellowish red mottled hard medium clay with very coarse columnar, breaking to medium subangular blocky, structure. Silcrete pan on column faces. Few roots (however, roots common under delve zone). Diffuse to:
12-52	Delved zone - mix of upper three horizons. Roots few to common.
55-100	Brownish yellow and yellowish red hard light medium clay with moderate very coarse prismatic, breaking to medium angular blocky, structure. Few roots (common on prism faces). Diffuse to:
100-120	Brownish yellow and yellowish red calcareous medium clay with coarse prismatic structure and 10-20% carbonate veins. Very few roots.



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



Summary of Properties

Drainage: Moderately well drained. Water is likely to perch on top of the clay subsoil for a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate at the surface, as indicated by the exchangeable cation data. However, the subsurface layer has very low nutrient retention capacity. Delving has improved cation status of this layer by incorporating lumps of subsoil clay. Test data indicate possible trace element deficiencies, but these should be confirmed through tissue analysis. Phosphorus and sulphur concentrations are marginal.

pH: Slightly acidic at the surface, acidic in the subsurface, and alkaline to strongly alkaline in the subsoil.

Rooting depth: 55 cm in sampling pit, with a few roots extending to 120 cm.

Barriers to root growth:

Physical: The coarsely structured clay subsoil restricts root growth, confining most roots to aggregate surfaces. Delving has helped by disrupting the topsoil – subsoil barrier.

Chemical: Low subsurface nutrient retention capacity is the main limitation. High pH below 100 cm severely restricts deeper root growth.

Waterholding capacity: Approximately 80 mm total available water in the potential rootzone.

Seedling emergence: Satisfactory.

Workability: Satisfactory.

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	Cl mg/kg	Org.C %	NO ₃ + NH ₄ mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S mg/kg	React Fe mg/kg	Ext Al 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	
0-12	6.8	5.9	0	0.13	0.91	32	1.74	32	19	325	4.3	467	0	1.0	0.62	98	5.29	0.92	7.6	4.86	1.68	0.23	0.82	3.0
12-32	6.2	5.0	0	0.02	0.19	4	0.28	3	5	50	1.7	407	1.9	0.3	0.17	113	0.92	0.26	1.9	1.46	0.25	0.09	0.11	4.7
32-55	7.8	6.8	0	0.12	0.80	37	0.58	4	2	347	3.6	772	0	2.1	0.25	66	0.81	0.19	13.9	7.87	3.71	1.41	0.91	10.1
55-100	8.8	7.6	0	0.18	0.80	41	0.28	5	2	414	6.6	485	0	5.1	0.10	22	3.88	0.09	21.7	8.52	8.86	3.14	1.13	14.5
100-120	9.3	8.4	18	0.33	0.91	44	0.28	3	2	378	6.7	528	0	6.3	0.14	11	1.10	0.14	24.5	9.52	9.72	4.23	1.02	17.3
12-52 *	7.0	6.0	0	0.10	0.73	35	0.68	16	2	241	2.4	786	0	1.8	2.13	100	3.34	0.82	10.0	5.23	3.57	0.52	0.63	5.2
12-52 **	5.5	4.4	0	0.03	0.35	14	0.88	6	8	46	2.9	385	0.03	0.4	1.66	106	2.10	0.51	2.0	1.45	0.36	0.10	0.09	4.9

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.

* Clay lumps sampled from within the zone altered by delving.

** Sand sampled from within the zone altered by delving.

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

