

SANDY LOAM OVER POORLY STRUCTURED BROWN CLAY

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

Landform: Gently undulating plains.

Substrate: Tertiary age sandy clay.

Vegetation:



Type Site:	Site No.:	SE128	1:50,000 mapsheet:	7025-4 (Cannawigara)
	Hundred:	Pendleton	Easting:	455480
	Section:	F3B	Northing:	5997750
	Sampling date:	31/10/06	Annual rainfall:	490 mm average

Swale between very gently undulating dunes. Hard setting surface with no stones. Paddock delved to 48 cm.

Soil Description:

Depth (cm)	Description
0-16	Dark brown very hard compacted heavy sandy loam with weak platy structure. Many roots. Clear to:
16-30	Light yellowish brown firm massive sand. Roots common. Sharp to:
30-60	Light yellowish brown and brown mottled very hard light medium clay with moderate coarse columnar, breaking to medium angular blocky, structure. Roots common. Clear to:
16-48	Delved zone - mix of upper three horizons.
60-110	Light yellowish brown firm calcareous light medium clay with strong medium subangular blocky structure and 20-50% soft carbonate. Very few roots.



Classification: Bleached-Sodic, Hypercalcic, Brown Chromosol; 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 moderately low, as indicated by the exchangeable cation data. The subsurface layer in particular has very low nutrient retention capacity. Delving has improved cation status of this layer (compare original subsurface layer 16-30 cm with delved sand layer 16-48 cm). Surface soil test data indicate that phosphorus and possibly zinc are deficient. Concentrations of tested nutrient elements are satisfactory.

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

Rooting depth: 60 cm in sampling pit, with a few roots extending to 110 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.

Waterholding capacity: Approximately 90 mm total available water in the potential rootzone.

Seedling emergence: Fair due to degree of compaction. This may be an undesirable consequence of delving (i.e. excessive clay brought to the surface).

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	
0-16	6.4	5.7	0	0.07	0.62	33	1.22	2	14	208	5.0	777	0	0.8	2.84	173	3.7	1.39	6.0	3.90	1.36	0.23	0.55	3.8
16-30	6.7	6.1	0	0.03	0.30	6	0.31	2	3	62	1.5	445	0	0.4	0.26	72	0.96	0.40	2.5	1.72	0.48	0.13	0.14	5.3
30-60	8.2	7.4	0	0.18	0.58	38	0.39	2	2	593	9.5	914	0	3.2	0.21	44	7.32	0.42	29.0	14.2	11.7	1.45	1.70	5.0
60-110	9.3	8.3	44	0.21	0.64	28	0.20	2	2	505	7.5	619	0	3.8	0.19	14	0.94	0.43	23.0	11.4	8.33	1.97	1.31	8.6
16-48 *	7.4	6.8	0	0.13	0.69	49	0.73	2	2	424	4.0	1215	0	2.7	0.26	98	1.93	0.51	20.4	2.74	1.11	0.23	0.33	5.2
16-48 **	7.3	6.8	0	0.05	0.68	13	0.70	2	5	136	2.3	641	0	0.8	5.08	96	1.08	1.68	4.4	8.5	9.74	0.99	1.15	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](#)

