

SANDY LOAM OVER BROWN CLAY

General Description: *Thick sandy loam to sandy clay loam over well structured brown clay, calcareous with depth*

Landform: Gently undulating plain.

Substrate: Calcareous clay (Padthaway Formation).

Vegetation: *Eucalyptus camaldulensis* (red gum).



Type Site: Site No.: SE041

1:50,000 sheet:	7023-2 (Penola)	Hundred:	Comaum
Annual rainfall:	625 mm	Sampling date:	28/09/95
Landform:	Midslope of gentle undulation, 1.5% slope		
Surface:	Hard setting with no stones		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-18	Dark brown friable massive fine sandy loam. Gradual to:
18-45	Yellowish brown and strong brown soft massive loamy fine sand. Gradual to:
45-55	Brown and strong brown soft massive loamy fine sand with 2-10% ironstone concretions (6-20 mm). Abrupt to:
55-110	Light olive brown and yellowish red firm medium clay with strong coarse breaking to fine polyhedral structure. Gradual to:
110-150	Light olive brown and red mottled firm massive heavy clay with minor ironstone concretions. Abrupt to:
150-170	Yellowish brown and light yellowish brown hard massive calcareous medium heavy clay with 20-50% carbonate concretions (20-60 mm).



Classification: Mottled-Sodic, Eutrophic, Brown Chromosol; thick, non-gravelly, loamy / clayey, very deep

Summary of Properties

Drainage	Imperfectly drained. Water can perch on the subsoil clay for several weeks at a time following heavy or prolonged rainfall.
Fertility	Inherent fertility is moderately low, as indicated by the exchangeable cation data. Nutrient retention is sub-optimal due to the low clay content at the surface, and must be supplemented by the organic fraction (organic carbon level is low at the sampling site). Phosphorus and zinc are deficient at the sampling site.
pH	Acidic at the surface, alkaline with depth.
Rooting depth	170 cm in pit, but few roots below 110 cm.
Barriers to root growth	
Physical:	The hard coarsely structured clayey subsoil causes reduced root densities, but does not prevent root growth.
Chemical:	High carbonate concentrations in a clayey matrix (from 150 cm) restrict root growth.
Water holding capacity	Approximately 150 mm in the root zone.
Seedling emergence:	Fair due to hard setting sealing surface.
Workability:	Fair. The poorly structured surface has a limited moisture range over which it can be effectively cultivated.
Erosion Potential	
Water:	Low.
Wind:	Moderately 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 -S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Row	6.1	5.7	0	0.21	2.64	1.1	20	208	18	0.6	6.3	650	15	0.83	6.0	5.55	1.63	0.56	0.30	na
0-18	5.0	4.5	0	0.14	1.99	1.0	13	189	17	0.6	-	-	-	-	6.4	3.46	0.72	0.32	0.31	na
18-45	5.4	4.7	0	0.07	1.28	0.2	7	85	13	0.2	-	-	-	-	2.1	1.54	0.44	0.22	0.06	na
45-55	6.2	5.3	0	0.04	0.55	0.1	4	98	9	0.2	-	-	-	-	1.6	1.47	0.83	0.17	<0.1	na
55-95	5.8	5.2	0	0.14	0.57	0.2	<4	273	31	2.9	-	-	-	-	25.2	8.82	13.04	1.42	0.77	5.6
95-110	6.6	5.8	0	0.12	0.52	0.2	<4	238	22	3.9	-	-	-	-	20.6	6.86	12.28	1.42	0.60	6.9
110-150	7.7	6.8	<0.1	0.13	0.94	0.1	<4	282	14	4.9	-	-	-	-	24.9	6.40	12.33	1.88	0.65	7.6
150-170	8.5	7.9	34.3	0.31	0.48	0.2	<4	285	13	2.7	-	-	-	-	25.6	8.93	12.48	1.99	0.71	7.8

Note: Row sample bulked from 20 cores (0-10 cm) taken from along the rows 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