

SANDY LOAM OVER RED CLAY ON SILTY ALLUVIUM

General Description: *Medium to thick hard setting sandy loam, over a moderately well structured red clay, weakly calcareous with depth, grading to silty alluvium*

Landform: Alluvial plains of the Bremer River.

Substrate: Silty loam to silty clay loam alluvium.

Vegetation:



Type Site: Site No.: CH161A

1:50,000 sheet:	6727-3 (Alexandrina)	Hundred:	Strathalbyn
Annual rainfall:	400 mm	Sampling date:	28/11/06
Landform:	Alluvial plain, 0% slope.		
Surface:	Hard setting with no stones.		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-15	Dark reddish brown very hard massive sandy loam. Gradual to:
15-30	Yellowish red very hard massive sandy loam. Abrupt to:
30-60	Red firm light medium clay with moderate coarse prismatic, breaking to strong angular blocky, structure. Gradual to:
60-85	Red and reddish brown firm highly calcareous heavy silty clay loam with strong angular blocky structure and 2-10% carbonate nodules. Clear to:
85-140	Strong brown and dark brown friable moderately calcareous light silty clay loam with moderate subangular blocky structure and minor carbonate nodules. Diffuse to:
140-180	Dark brown and strong brown friable silty loam with weak subangular blocky structure and minor carbonate nodules.



Classification: Calcic, Mesonatric, Red Sodosol; thick, non-gravelly, loamy / clayey, moderate

Summary of Properties

Drainage: Moderately well drained. The clayey subsoil may perch water for up to a week following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. There is ample nutrient retention capacity in the subsoil due to higher clay content. At the sampling site, levels of all tested nutrient elements except possibly copper, re adequate.

pH: Neutral to slightly alkaline at the surface, alkaline with depth.

Rooting depth: 180 cm in sampling pit, but few roots below 140 cm.

Barriers to root growth:

Physical: The clayey subsoil restricts root density to some extent, but does not prevent root growth. Elevated sodicity levels in the topsoil and probably upper subsoil are due to the effects of irrigation water. Maintenance of electrolyte concentration is needed to prevent dispersion in these materials.

Chemical: Elevated pH, sodicity, salinity and boron concentration combine to restrict root growth to some extent.

Water holding capacity: (Estimates for potential root zone of grape vines)

Total available: 190 mm
Readily available: 95 mm

Seedling emergence: Fair due to hard setting, sealing surface.

Workability: Poorly structured surface tends to shatter if worked too dry and puddle if worked too wet.

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	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	
0-15	7.9	6.9	0	0.129	1.12	0.64	39	421	60	9.2	1.1	725	2.56	78	138	6.17	8.6	5.76	1.19	0.66	0.94	7.6
15-30	8.3	7.2	0	0.128	1.39	0.40	11	374	71	11.6	1.8	555	2.78	44	124	0.59	8.6	3.34	2.57	1.77	0.89	20.6
30-60	8.9	7.9	0.7	0.458	3.04	0.65	6	376	312	63	4.3	751	3.69	38	75.9	0.23	21.6	10.4	6.18	4.11	0.94	19.0
60-85	9.2	8.2	3.2	0.522	4.65	0.27	4	395	337	103	3.8	601	2.13	19	17.1	0.19	17.9	8.95	3.76	4.2	0.95	23.5
85-140	9.2	8.2	1.2	0.536	3.83	0.22	3	416	365	87.1	3.5	535	2.90	28	81.4	0.38	15.1	7.03	3.3	3.71	1.01	24.7
140-180	9.2	8.4	1.0	0.561	4.95	0.23	4	394	411	43.9	3.1	453	2.65	28	87.5	0.62	12.6	5.90	2.78	3.04	0.88	24.1

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.