

LOAMY SAND OVER POORLY STRUCTURED BROWN CLAY

General Description: *Sandy surface sharply overlying a brown mottled columnar clay with abundant soft carbonate at depth, grading to heavy clay*

Landform: Slopes of undulating rises.

Substrate: Pleistocene age heavy clay with slickensides

Vegetation:



Type Site: Site No.: CH094

1:50,000 sheet:	6627-4 (Noarlunga)	Hundred:	Willunga
Annual rainfall:	575 mm	Sampling date:	29/04/96
Landform:	Lower slope of an undulating rise, 5% slope		
Surface:	Soft with no stone		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-13	Dark grey and brown soft massive loamy sand. Clear to:
13-32	Pale brown firm loamy sand with yellow brown mottles. Abrupt to:
32-45	Greyish brown, yellowish brown and red mottled very firm medium clay with coarse columnar structure. Clear to:
45-60	Greyish brown and red mottled very firm medium heavy clay with coarse prismatic structure and slickensides. Clear to:
60-90	Greyish brown and orange mottled highly calcareous medium heavy clay with 20-50% soft carbonate, coarse blocky structure and slickensides. Diffuse to:
90-125	Yellowish brown and orange mottled very highly calcareous medium heavy clay with 20-50% soft carbonate, blocky structure and slickensides.



Classification: Vertic, Mottled-Subnatric, Grey Sodosol; thick, non-gravelly, sandy / clayey, deep

Summary of Properties

Drainage	Imperfectly drained. Water will "perch" on the poorly structured subsoil clay, saturating the upper profile for up to several weeks after prolonged rain.
Fertility	Natural fertility is moderately low, due to the sandy nature of the surface. Test data indicate that the surface soil is deficient in calcium, magnesium, copper and boron. Tissue tests are required to check.
pH	Acidic at the surface, strongly alkaline with depth.
Rooting depth	Few roots below 60 cm in pit.
Barriers to root growth	
Physical:	The poorly structured clay subsoil prevents good root proliferation - most roots are in the cracks between the columns of clay.
Chemical:	Exchangeable sodium is marginally toxic from 90 cm.
Water holding capacity	Approximately 60 mm in rootzone. Readily available water capacity in potential rootzone for irrigated crops (i.e. 60 cm) is about 35 mm.
Seedling emergence:	Good.
Workability:	Good.
Erosion Potential	
Water:	Moderate due to the slope and the very high erodibility of the surface soil.
Wind:	Moderate, due the sandy nature of the surface.

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	6.7	6.2	0	0.21	2.44	0.8	153	192	18	0.6	0.98	217	46.7	4.39	5.0	4.02	1.16	0.32	0.38	6.4
0-13	5.1	4.7	0	0.21	2.87	0.6	23	169	27	0.2	-	-	-	-	4.2	2.72	0.37	0.17	0.35	4.0
13-32	6.0	5.2	0	0.04	0.92	0.1	5	64	5	<0.1	-	-	-	-	1.6	0.93	0.27	0.19	0.12	na
32-45	6.5	6.1	0	0.31	1.17	0.4	<4	303	92	3.0	-	-	-	-	33.4	19.1	10.6	2.24	1.35	6.7
45-60	7.8	7.4	0.4	0.38	1.13	0.4	<4	287	67	3.2	-	-	-	-	36.4	18.9	11.1	2.60	1.11	7.1
60-90	8.7	7.8	25.5	0.24	0.71	0	<4	218	20	2.1	-	-	-	-	21.3	12.0	8.11	1.83	0.81	8.6
90-125	9.4	8.1	26.6	0.30	0.54	0.2	<4	167	11	3.4	-	-	-	-	17.0	6.80	8.57	2.68	0.43	15.7

Note: Row sample bulked from 20 cores (0-10 cm) taken along planting lines.

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.