GRADATIONAL RED CLAY LOAM

General Description: *Well structured clay loam overlying a finely polyhedral red clay with soft carbonate accumulations at depth, grading to sandy or sandy clay sediments*

Landform: Low rises

Substrate: Tertiary or Pleistocene age clayey sand to sandy clay mantled by soft or rubbly carbonate

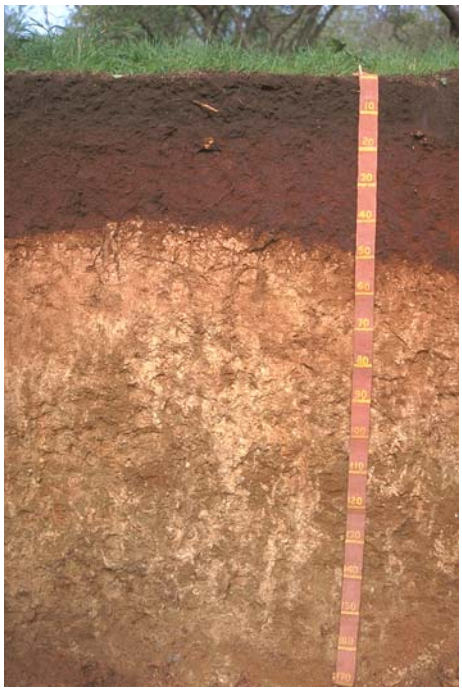
Vegetation:

Type Site:

Site No.:	CH078		
1:50,000 sheet:	6627-3 (Willunga)	Hundred:	Willunga
Annual rainfall:	575 mm	Sampling date:	30/05/95
Landform:	Crest of low rise, 3% slope		
Surface:	Firm with no stones		

Soil Description:

Depth (cm)	*Description*
0-11	Dark brown clay loam with strong granular structure. Clear to:
11-20	Dark reddish brown friable light clay. Clear to:
20-50	Dark reddish brown friable medium clay. Sharp to:
50-90	Orange very highly calcareous light clay, with 20-50% soft carbonate. Diffuse to:
90-120	Brown and red highly calcareous sandy medium clay with blocky structure, 10-20% soft carbonate, and 2-10% shale and quartz gravel. Diffuse to:
120-170	Olive brown and orange sandy medium clay with blocky structure, 10-20% soft carbonate, and 2-10% shale and quartz gravel.



Classification: Sodic, Hypercalcic, Red Dermosol; medium, non-gravelly, clay loamy / clayey, deep

Summary of Properties

Drainage The soil is well drained and is never likely to be saturated. The calcareous subsoil is moderately sodic and indicates that excessive irrigation will cause a water table to develop within a metre of the soil surface.

Fertility Natural fertility is high. At the sampling site phosphorus, potassium, sulphur, calcium, and magnesium are all in plentiful supply. Neutral pH helps to maintain availability.

pH Neutral at the surface, alkaline with depth

Rooting depth 170 cm in pit but few roots below 90 cm.

Barriers to root growth

Physical: There are no physical barriers.

Chemical: The strong carbonate layer restricts root growth. The slightly elevated salt levels between 50 and 120 cm are attributable to the high carbonate content. There is no boron problem, but exchangeable sodium from 50 cm is marginally high. This has probably accumulated from irrigation water.

Water holding capacity Approximately 140 mm rootzone, of which about 60 mm is readily available.

Workability Good, due to favourable surface structure and good drainage.

Erosion Potential Low.

Laboratory Data

Depth cm	Particle size analysis				pH H_2O	pH $CaC1_2$	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	CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
	Coarse sand	Fine sand	Silt	Clay												Ca	Mg	Na	K	
Row	-	-	-	-	7.1	6.7	0.2	0.26	1.64	2.8	36	423	47	2.9	23.3	17.53	4.92	.92	1.66	3.9
0-11	9	39	19	33	7.2	6.9	0.1	0.18	0.99	3.9	73	920	25	3.0	24.5	16.08	3.93	0.24	2.84	1.0
11-20	-	-	-	-	7.6	7.1	0.1	0.12	0.67	1.9	9	1113	17	3.5	25.4	15.10	5.12	0.53	3.82	2.1
20-50	3	14	6	77	7.7	7.2	0.1	0.22	1.04	1.4	8	848	28	2.0	36.6	24.70	5.40	2.20	3.61	6.0
50-90	-	-	-	-	8.7	7.9	52.3	0.44	2.12	0.5	5	174	64	0.8	14.2	10.25	2.19	2.29	0.65	16.1
90-120	-	-	-	-	8.7	8.1	24.3	0.41	2.15	0.4	<4	168	52	1.1	15.4	10.34	4.07	1.85	0.59	12.0
120-170	24	32	10	26	8.7	8.2	8.3	0.22	1.10	0.0	<4	193	34	1.2	15.3	8.39	6.35	1.17	0.64	7.6

Note: Row sample bulked from 20 cores (0-10 cm) taken from the tree/vine lines around the pit.

DTPA trace element analyses for row sample (mg/kg): Cu = 7.6, Zn = 14.9, Mn = 32.

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.