

LOAM OVER DARK CLAY ON ROCK

General Description: *Hard loam to clay loam abruptly overlying a black to dark grey strongly structured clay grading to carbonaceous shale*

Landform: Slopes of rolling low hills.

Substrate: Carbonaceous shale (serpentine)

Vegetation:



Type Site: Site No.: CH127
 1:50,000 sheet: 6628-2 (Onkaparinga) Hundred: Onkaparinga
 Annual rainfall: 950 mm Sampling date: 02/11/00
 Landform: Upper slope of rolling low hill, 20% slope
 Surface: Hard setting with no stones

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-20	Brown firm loam with weak granular structure and 10-20% shale fragments (6-20 mm). Gradual to:
20-40	Light brown firm clay loam with weak polyhedral structure and 10-20% shale fragments (6-20 mm). Clear to:
40-80	Black with dark greyish brown and dark yellowish brown mottles hard heavy clay. Gradual to:
80-130	Very dark grey with light olive brown mottles hard medium clay with moderate polyhedral structure and 20-50% soft shale fragments (60-200 mm). Gradual to:
130-140	Weathering shale.



Classification: Eutrophic, Mottled-Subnatric, Black Sodosol; thick, gravelly, loamy / clayey, deep

Summary of Properties

- Drainage:** Moderately well drained. Water perches on the clayey subsoil for a week or so, but drains laterally due to the high position in the landscape.
- Fertility:** Inherent fertility is moderate, as indicated by the exchangeable cation data. At the sampling site phosphorus, potassium, sulphur and boron are deficient. Calcium : magnesium ratio is very low for optimum apple quality. Copper, zinc and magnesium concentrations are excessive. High magnesium is a characteristic of soils on this rock type. Organic carbon levels are moderately high.
- pH:** Neutral at the surface, slightly acidic with depth.
- Rooting depth:** 130 cm in pit, but few roots below 80 cm. Root growth in surface is less vigorous than in neighbouring orchards on different soils.
- Barriers to root growth:**
- Physical:** The hard consistence throughout, and particularly the hard subsoil clay, retards root growth.
- Chemical:** There are no chemical barriers.
- Water holding capacity:** Approximately 120 mm (total available), and approximately 55 mm (readily available).
- Seedling emergence:** Fair (for cover crops), due to hard setting surface soil.
- Workability:** Fair due to poor structure of surface soil.
- Erosion Potential**
- Water:** Moderately high.
- Wind:** 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	Ext Al mg/kg
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K		
Orchard	7.1	6.3	0	0.07	23	2.5	22	188	6.4	0.9	30.8	193	21.9	12.0	-	10.45	3.04	0.34	0.50	-	ns
0-20	7.2	6.4	0	0.08	33	2.0	14	178	6.2	1.0	21.0	169	14.9	6.6	-	8.38	3.39	0.54	0.44	-	ns
20-40	7.3	6.2	0	0.08	44	1.0	3	124	6.6	0.6	3.2	82	1.5	0.8	-	4.32	2.51	0.73	0.32	-	ns
40-80	6.8	5.9	0	0.13	99	0.5	5	148	46.7	0.4	0.9	47	5.3	0.2	-	4.14	10.72	1.29	0.36	-	ns
80-130	6.2	5.4	0	0.17	116	0.6	7	434	40.2	0.3	1.2	192	35.8	0.4	-	5.23	20.59	2.20	0.63	-	0.4

Note: Orchard sample bulked from cores (0-10 cm) taken around the pit.