

LOAMY SAND OVER RED CLAY ON CALCRETE

General Description: *Medium thickness loamy sand to sandy loam over a well structured red clay on calcreted calcarenite*

- Landform:** Gently undulating rises (remnants of ancient coastal dunes).
- Substrate:** Calcarenite, capped by calcrete of variable thickness and hardness.
- Vegetation:**



Type Site: Site No.: SE096

1:50,000 sheet: 7023-1 (Struan) Hundred: Jessie

Annual rainfall: 575 mm Sampling date: 03/12/04

Landform: Upper slope of a gently undulating rise, 3% slope

Surface: Firm with no stones

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0-13	Dark reddish brown friable massive loamy sand. Clear to:
13-23	Light reddish brown friable massive loamy sand. Abrupt to:
23-40	Red firm medium clay with strong fine polyhedral structure. Sharp to:
40-46	Moderately cemented massive calcrete. Clear to:
46-75	Reddish yellow firm massive very highly calcareous light clayey sand with more than 50% semi-hard calcarenite fragments. Gradual to:
75-140	Semi-hard calcarenite with very pale brown and reddish yellow firm massive very highly calcareous light clayey sand between fragments.



Classification: Bleached, Petrocalcic, Red Chromosol; medium, non-gravelly, sandy / clayey, shallow

Summary of Properties

Drainage: Well drained. The soil is unlikely to remain wet for more than a day or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. The nutrient retention capacity of the surface soil is limited by low clay content, but there are ample reserves of calcium, magnesium and potassium in the subsoil. The sampling site is outside the vine row – consequently concentrations of phosphorus, potassium, sulphur and trace elements are low. Maintenance of adequate nutrient levels is relatively easy on this soil.

pH: Slightly alkaline at the surface, alkaline with depth.

Rooting depth: 40 cm in pit where calcrete has not been ripped (note concentration of roots on calcrete surface in profile image). Where ripped, roots are expected to penetrate deeper than 100 cm.

Barriers to root growth:

Physical: The calcrete where not ripped is a variable restriction depending on the degree of fracturing.

Chemical: There are no apparent chemical barriers.

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

Total available:	50 mm (unripped)	80 mm (ripped)
Readily available:	25 mm (unripped)	45 mm (ripped)

Seedling emergence: Satisfactory.

Workability: Surface can be safely worked over a range of moisture conditions, but shattering is likely if soil is too dry.

Erosion Potential

Water: Moderately low.

Wind: Moderately 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	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-13	7.8	6.6	0.4	0.139	0.76	0.55	7	109	21	2.6	0.5	0.88	70	0.75	12.5	7.32	6.00	0.81	0.22	0.29	3.0
13-23	7.9	6.7	0.6	0.150	0.89	0.58	4	75	25	4.2	0.6	0.40	82	0.89	11.4	8.80	7.50	0.90	0.23	0.17	2.6
23-40	7.6	6.6	4.6	0.342	0.87	1.26	3	185	21	13.5	0.7	0.22	12	0.34	8.83	31.9	27.2	2.44	1.79	0.54	5.6
40-46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46-75	8.9	8.1	92.6	0.152	0.92	0.29	<1	27	39	15.2	0.3	0.11	24	0.09	3.96	11.6	10.8	0.34	0.43	0.07	3.7
75-140	8.7	8.0	90.9	0.197	1.53	0.21	2	66	99	14.6	0.3	0.23	2.5	0.20	4.04	10.7	9.71	0.36	0.52	0.14	4.8

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.