HARD SANDY LOAM OVER RED CLAY

General Description: *Hard medium thickness sandy loam over a strongly structured red heavy clay, calcareous with depth, grading to fine grained alluvium*

Landform: Very gently sloping alluvial fans

Substrate: Fine grained alluvium, mantled by wind-blown carbonate

Vegetation:

Type Site: Site No.: CL037

1:50,000 sheet:	6729-3 (Truro)	Hundred:	Moorooroo
Annual rainfall:	520 mm	Sampling date:	18/11/04
Landform:	Lower slope of gently inclined alluvial fan, 1% slope		
Surface:	Hard setting with no stones		

Soil Description:

Depth (cm)	*Description*
0-15	Dark reddish brown friable massive sandy loam. Gradual to:
15-30	Reddish brown friable massive sandy loam. Clear to:
30-50	Dark reddish brown hard heavy clay with strong coarse prismatic (breaking to strong medium polyhedral) structure. Gradual to:
50-70	Dark reddish brown and greyish brown mottled hard heavy clay with strong coarse prismatic (breaking to strong medium polyhedral) structure. Gradual to:
70-100	Dark red highly calcareous hard medium heavy clay with strong coarse prismatic (breaking to strong medium polyhedral) structure, 20-50% fine carbonate segregations and 2-10% hard carbonate fragments. Gradual to:
100-150	Reddish brown, strong brown and dark brown mottled slightly calcareous massive firm medium clay with 2-10% hard carbonate fragments.

Classification: Calcic, Subnatric, Red Sodosol; thick, non-gravelly, loamy / clayey, very deep

Summary of Properties

Drainage: Moderately well drained. The heavy clay subsoil has restricted permeability and may remain saturated for a week or so following heavy or prolonged rainfall. Some perching of water at the base of the topsoil can also be expected from time to time.

Fertility: Inherent fertility is moderate, as indicated by the exchangeable cation data. The sandy loam surface has limited nutrient retention capacity, but the high clay content subsoil maintains ample reserves of calcium, potassium and magnesium. The test data suggest that zinc concentrations are low. Organic carbon levels are also lower than would be expected in this moisture regime.

pH: Alkaline at the surface (with high carbonate), neutral in the subsurface, and alkaline with depth. Surface alkalinity is not natural, and likely to be due to incidental or controlled lime application.

Rooting depth: 100 cm in pit, but most growth occurs above the carbonate layer (i.e. 70 cm).

Barriers to root growth:

Physical: The heavy clay subsoil restricts root growth to a moderate extent. Compaction in the subsurface sandy loam is more likely to be a barrier.

Chemical: Marginally high salinity (from 100 cm) and sodicity (from 50 cm) restrict root growth to some extent.

Water holding capacity: Estimates for potential grape vine root zone:

Total available water	95 mm
Readily available water	50 mm

Seedling emergence: Fair, due to tendency of surface soil to seal and set hard.

Workability: Fair. Soil is likely to shatter if worked to dry and puddle if worked too wet.

Erosion Potential

Water: Low (soil is highly erodible, but slope is low).

Wind: Low (only excessive cultivation will predispose soil to wind erosion).

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	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	Mn	Zn		Ca	Mg	Na	K	
0-15	8.2	7.5	11.0	0.122	0.65	0.78	90	442	18	3.0	0.8	8.72	137	74.7	1.61	7.9	5.41	1.24	0.13	1.08	1.7
15-30	7.5	6.8	1.6	0.058	0.54	0.59	67	250	17	2.4	0.7	6.35	92	72.9	1.33	7.3	5.29	1.35	0.10	0.53	1.4
30-50	8.5	7.4	0.3	0.138	0.72	0.69	5	295	18	5.0	1.0	3.49	71	11.6	0.61	30.2	18.3	7.76	3.29	0.78	10.9
50-70	8.6	7.4	0.3	0.167	0.62	0.57	2	286	23	15.5	0.7	3.64	83	44.8	0.50	28.7	17.8	5.96	4.20	0.73	14.7
70-100	9.0	7.9	0.3	0.282	1.20	0.26	2	253	31	34.5	0.7	0.96	14	6.32	0.54	23.6	14.8	5.11	3.04	0.64	12.9
100-150	8.7	7.9	3.8	0.477	2.95	0.15	2	249	227	78.9	1.0	1.10	21	34.2	0.61	25.1	12.9	8.23	3.38	0.60	13.5

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.