SANDY LOAM OVER HARD BROWN CLAY

General Description: *Thick massive sandy loam with a bleached and ironstone gravelly subsurface layer, abruptly overlying a hard coarsely structured brown, yellow and red mottled clay*

Landform: Mid to lower slopes of gently undulating rises.

Substrate: Tertiary age sandy clay.

Vegetation:

Type Site:

Site No.:	SE097	1:50,000 mapsheet:	7024-2 (Hynam)
Hundred:	Jessie	Easting:	482940
Section:	434	Northing:	5905210
Sampling date:	07/12/2004	Annual rainfall:	585 mm average

Lower slope of gently undulating rise, 2% slope. Firm surface with no stones.

Soil Description:

Depth (cm)	*Description*
0-10	Dark brown friable massive sandy loam. Clear to:
10-40	Pinkish grey firm massive sandy loam with 2-10% ironstone gravel (2-6 mm). Abrupt to:
40-65	Yellowish brown and yellowish red mottled very hard medium heavy clay with strong coarse prismatic structure, breaking to medium polyhedral. Gradual to:
65-95	Light olive brown, yellowish brown and strong brown (with greyish brown staining on ped faces) very hard medium heavy clay with strong coarse lenticular structure, breaking to coarse polyhedral, and slickensides. Diffuse to:
95-130	Yellowish brown, very pale brown and red very hard sandy medium clay (and dark ped face staining), with moderate very coarse prismatic structure. Gradual to:
130-150	Light yellowish brown and yellowish brown firm sandy medium clay with weak coarse prismatic structure.

Classification: Bleached-Vertic, Eutrophic, Brown Chromosol; thick, non-gravelly, loamy / clayey, deep

Summary of Properties

Drainage: Moderately well to imperfectly drained. Water perches on top of the clayey subsoil for a week or two, following heavy or prolonged rainfall. This is only likely to affect grape vines during wet springs.

Fertility: Inherent fertility is moderately low, as indicated by the exchangeable cation data (sum of cations for the surface layer is less than 5 cmol(+)/kg). Although there is ample nutrient retention capacity in the subsoil, frequent fertilizer applications are needed to maintain adequate nutrient levels in the topsoil. The sampling site is outside the vine row – consequently concentrations of phosphorus, sulphur, zinc and copper are low in test results.

pH: Slightly acidic at the surface, neutral with depth.

Rooting depth: Roots to 130 cm in pit, but few below 95 cm.

Barriers to root growth:

Physical: The hard heavy clay subsoil restricts even proliferation of roots, thereby limiting efficiency of water uptake.

Chemical: There are no chemical barriers to root growth. Salinity, pH, sodicity and boron levels are all satisfactory.

Waterholding capacity: (Estimates for potential rootzone of grape vines)
Total available: 125 mm
Readily available: 55 mm

Seedling emergence: Fair to good, depending on degree of hard setting of surface.

Workability: Fair to satisfactory. Surface prone to structure decline, limiting the effective moisture range over which safe cultivation can be undertaken.

Erosion Potential:

Water: Moderately low to moderate, depending on slope.

Wind: Moderately low.

Laboratory Data

Depth cm	pH H_2O	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	
0-10	6.2	5.3	0	0.036	0.50	1.02	7	189	22	2.2	0.4	1.16	136	1.18	40.8	3.9	2.91	0.35	0.15	0.47	3.9
10-40	6.2	5.2	0	0.015	0.20	0.22	4	92	9	1.6	0.4	0.34	48	0.06	66.8	3.5	2.36	0.78	0.13	0.22	3.7
40-65	7.0	6.2	0	0.035	0.21	0.44	2	307	20	7.5	1.3	0.47	34	<.05	17.2	23.4	14.5	7.61	0.52	0.80	2.2
65-95	7.2	6.4	0	0.046	0.34	0.21	2	307	54	11.4	1.4	0.30	16	0.13	6.99	20.7	11.8	7.43	0.58	0.88	2.8
95-130	7.3	6.5	0	0.048	0.57	0.06	2	211	66	7.7	1.5	0.18	9.6	0.10	4.70	13.6	7.21	5.22	0.59	0.59	4.3
130-150	7.0	6.4	0	0.179	1.87	0.08	2	198	271	7.4	1.6	0.40	38	0.08	8.65	15.9	8.40	5.75	1.20	0.53	7.6

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.

Further information: DEWNR Soil and Land Program