SANDY LOAM OVER BROWN MOTTLED CLAY

General Description: *Greyish gravelly sandy loam to sandy clay loam over a brown, red and grey mottled clay forming in quartzite*

Landform: Slopes of the Clare Hills

Substrate: Weathering quartzite or quartzitic shale

Vegetation: Blue gum woodland

Type Site:

Site No.:	CM045	1:50,000 mapsheet:	6630-3 (Clare)
Hundred:	Clare	Easting:	281400
Section:	8	Northing:	6245300
Sampling date:	11/08/93	Annual rainfall:	640 mm average

Midslope of a moderately sloping rise, with a hard setting surface, 2-10% surface quartzite and a slope of 12%.

Soil Description:

Depth (cm)	*Description*
0-15	Dark greyish brown massive sandy loam. Clear to:
15-30	Dark greyish brown with pale brown blotches massive light sandy clay loam with 2-10% quartzite stones. Clear to:
30-45	White massive light sandy clay loam with 10-20% quartzite stones. Clear to:
45-65	White massive light sandy clay loam with 20-50% quartzite stones. Clear to:
65-90	Brown, red and dark grey mottled heavy clay with strong angular blocky structure. Gradual to:
90-120	Olive brown, orange and yellowish red mottled heavy clay with strong angular blocky structure. Gradual to:
120-140	Weathering quartzitic siltstone.

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

Summary of Properties

Drainage: The soil is moderately well to imperfectly drained as the heavy clay subsoil restricts vertical movement of water, causing a perched water table to form. The upper profile may remain saturated for a week to several weeks.

Fertility: The upper soil layers have a low capacity to store nutrients; nutrient status relies on high organic matter levels (marginal at sampling site). The clay subsoil has a high storage capacity. Phosphorus levels are high.

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

Rooting depth: There are roots to 120 cm (weathering rock).

Barriers to root growth:

Physical: Winter waterlogging on the clay layer often prevents adequate root growth of annual plants into the clay. This problem is accentuated in quick finishes. The tight clay subsoil itself may also be a barrier to root growth, as will bedrock when it occurs within a metre of the surface.

Chemical: There are no apparent chemical barriers apart from low nutrient status.

Waterholding capacity: Approximately 120 mm in the rootzone.

Seedling emergence: Fair to good, depending on the degree to which the surface seals over.

Workability: Fair to good, depending on organic matter content. Low levels result in a reduction in the moisture range over which effective working can occur.

Erosion Potential:

Water: Moderately high due to the slope and the high erodibility of this soil (i.e. poorly structured sandy surface over a tight clay subsoil).

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Row	6.4	6.2	0	0.07	0.34	1.4	59	345	-	0.7	9.0	63	15.5	2.3	8.2	7.91	1.36	0.18	0.46	2.2
0-15	7.0	6.7	0	0.06	0.31	1.1	49	243	7.3	0.6	7.0	32	8.1	1.5	12.4	11.35	2.37	0.19	0.55	1.5
15-30	7.1	6.7	0	0.05	0.26	0.5	24	151	2.8	0.5	0.9	14	6.2	0.2	3.2	3.92	0.48	0.12	0.17	3.8
30-45	6.9	6.5	0	0.03	0.16	0.2	13	231	2.2	0.3	0.3	11	4.8	0.7	3.1	3.85	0.48	0.12	0.17	3.9
45-65	7.0	6.7	0	0.04	0.17	0.1	8	274	1.6	0.3	0.3	14	3.7	0.3	3.1	3.24	0.55	0.12	0.22	3.9
65-90	7.0	6.5	0	0.08	0.23	0.2	<4	413	10	1.3	0.9	20	0.6	0.1	31.0	16.88	10.91	0.53	1.07	1.7
90-120	7.2	6.8	0	0.10	0.32	0.2	<4	475	14	1.5	1.0	19	4.9	<0.1	30.2	17.80	12.40	0.73	0.98	2.4

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

Further information: DEWNR Soil and Land Program