

# SANDY CLAY LOAM OVER BROWN MOTTLED HEAVY CLAY

**General Description:** *Thick sandy clay loam with a bleached subsurface, abruptly overlying a brown and red coarsely structured heavy clay, calcareous with depth, grading to highly weathered rock*

**Landform:** Lower slopes of undulating rises and low hills.

**Substrate:** Highly weathered sandstone basement rock

**Vegetation:**



**Type Site:** Site No.: CM015  
 1:50,000 sheet: 6630-3 (Clare)      Hundred: Clare  
 Annual rainfall: 600 mm      Sampling date: 27/04/06  
 Landform: Lower slope of an undulating rise, 6% slope  
 Surface: Soft (cultivated) with no stones

**Soil Description:**

<i>Depth (cm)</i>	<i>Description</i>
0-18	Dark reddish brown friable massive fine sandy loam (reworked soil). Clear to:
18-33	Dark brown firm fine sandy clay loam with weak granular structure. Clear to:
33-45	Pink with brown speckles firm massive fine sandy clay loam with 20-30% quartzite and sandstone fragments (6-60 mm). Abrupt to:
45-75	Dark brown and dark reddish brown mottled very hard heavy clay with strong very coarse angular blocky structure. Gradual to:
75-100	Strong brown and yellowish red very hard heavy clay with strong very coarse angular blocky structure and slickensides. Gradual to:
100-135	Yellowish brown and strong brown hard medium clay with moderate angular blocky structure, 2-10% fine carbonate segregations and 20-50% soft sandstone fragments. Diffuse to:
135-165	Weathering sandstone with sandy clay loam texture.



**Classification:** Calcic, Mottled-Subnatric, Brown Sodosol; thick, non-gravelly, loamy / clayey, deep

## Summary of Properties

**Drainage:** Moderately well drained. Water perches on top of the subsoil clay for up to a week at a time following heavy or prolonged rainfall.

**Fertility:** Inherent fertility is moderately low, as indicated by the exchangeable cation data. Surface layers have relatively low nutrient retention capacity, mainly due to low organic matter levels. Test data at the sampling site indicate deficiencies of sulphur (surface layers only) and zinc (note however that sampling pit was in the inter-row).

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

**Rooting depth:** 100 cm in sampling pit.

### Barriers to root growth:

**Physical:** The hard subsoil clay provides a partial barrier by preventing an even distribution of roots, which tend to proliferate on aggregate surfaces, without penetrating.

**Chemical:** Marginal sodicity and salinity from 100 cm may restrict root growth.

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

Total available: 120 mm

Readily available: 55 mm

**Seedling emergence:** Fair to satisfactory. Surface is prone to sealing.

**Workability:** Fair. Poorly structured sandy loams have a limited period during which moisture content allows effective cultivation.

### Erosion Potential

**Water:** Moderate. Soil is erodible, and lowers are prone to concentrations of runoff water.

**Wind:** Moderately low.

## Laboratory Data

Depth cm	pH H <sub>2</sub> O	pH CaCl <sub>2</sub>	CO <sub>3</sub> %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO <sub>4</sub> -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	
0-18B*	6.6	5.7	0	0.03	0.20	0.73	36	118	2.9	0.4	5.93	134	12.5	0.94	3.2	2.13	0.69	0.09	0.26	2.8
0-18	6.4	5.3	0	0.03	0.26	0.87	32	262	2.8	0.5	7.36	120	51.1	3.29	5.4	3.89	1.05	0.09	0.38	1.7
18-33	6.1	4.9	0	0.03	0.40	0.58	11	178	3.8	0.4	6.30	141	22.2	3.10	6.4	4.12	1.83	0.25	0.22	3.9
33-45	6.3	5.0	0	0.02	0.45	0.30	10	131	9.2	0.4	2.16	163	20.1	0.57	5.0	2.88	1.63	0.33	0.16	6.6
45-75	7.4	6.2	0	0.16	0.94	0.57	2	272	35	1.7	5.65	89	9.14	0.39	32.3	13.2	14.8	3.64	0.69	11.3
75-100	8.6	7.8	0.5	0.29	1.76	0.39	2	349	63	1.8	2.95	55	56.6	0.85	38.4	16.0	15.6	6.01	0.83	15.7
100-135	9.1	8.3	18.6	0.58	3.27	0.26	2	392	89	2.2	0.93	16	3.28	0.65	39.7	17.1	15.1	6.59	0.91	16.6
136-165	9.2	8.4	1.8	0.47	3.53	0.15	2	346	65	1.3	1.15	37	26.5	2.24	34.8	14.1	15.2	5.07	0.44	14.6

**Note:** \* Surface sample from pit B, 100 m south

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.

Est. ESP (estimated exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the sum of cations.