Soils and climate of the satellite appellations of Saint-Emilion Château de la Grenière – Lussac Saint-Emilion

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The appellations Saint-Emilion and Saint-Emilion Grand Cru (5450 ha) are surrounded by four satellite appellations: Montagne Saint-Emilion (1450 ha), Lussac Saint-Emilion (1450 ha), Puisseguin Saint-Emilion (730 ha) and Saint-Georges Saint-Emilion (200 ha). The geology of the satellite appellation is composed of Tertiary sediments, including soft limestone located on the slopes, called "molasses du Fronsadais" (Oligocene), hard limestone located on the plateaus, called "calcaire à Astéries" (Oligocene) and non-calcareous river sediments in the northern part of the area, called (sables du Périgord, Eocene). The topography is gently sloping and extends between 30 m above sea level (m.a.s.l.) and 106 m.a.s.l. Soils are calcareous on 34 % of the area and vary from shallow on the "calcaire à Astéries" to medium depth on the "molasses du Fronsadais". The texture of the calcareous soils is silty clay. On 66 % of the area soils are non-calcareous and vary in texture from sandy silt to silty clay. The non-calcareous soils are deeper and have generally a greater water holding capacity.

The climate is, on average, cooler in the satellite appellation compared to Saint-Emilion, but temperatures do vary locally. The highest average temperatures are recorded on the limestone plateaus, while temperatures are lower in the northeastern part of the area.

The wines from the satellite appellations used to be not as famous as the wines from Saint-Emilion. Because of the cooler climatic conditions, maturity was more difficult to achieve. With climate change, this handicap is progressively turning into an advantage and wine quality is steadily increasing in this area.

One of the soil types of château de la Grenière (Lussac Saint-Emilion) is a silty soil with temporary water logging on ancient alluvium. Water table disappears in summer and because rooting depth is restricted because of soil compaction in deeper layers, water uptake is likely to be limited in dry summers. Because soil does not contain limestone, the use of low vigor inducing rootstocks, like 101-14MGt, is possible. Such rootstocks, associated to high quality viticultural practices (high leaf area to fruit weight ratio), allows planting the late ripening Cabernet-Sauvignon. With this variety, wines are powerful and display beautiful fruit aromas.

Keywords : Soil, Climate, Saint-Emilion, satellite appellation, château de la Grenière, Lussac Saint-Emilion

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The Saint'Elites

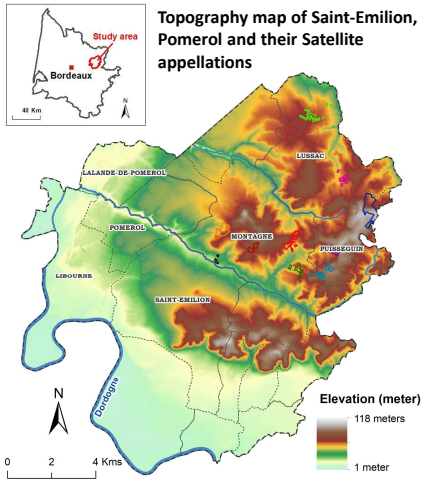
- Clos Albertus
- Château La Couronne

- Château Corbin
- Château De La Grenière
- Château Guibot La Fourvieille
- Château Rigaud
- Château La Rose Perrière
- Château Tour Bayard îlot 1
- Château Tour Bayard îlot 2
- Château Vieux Bonneau

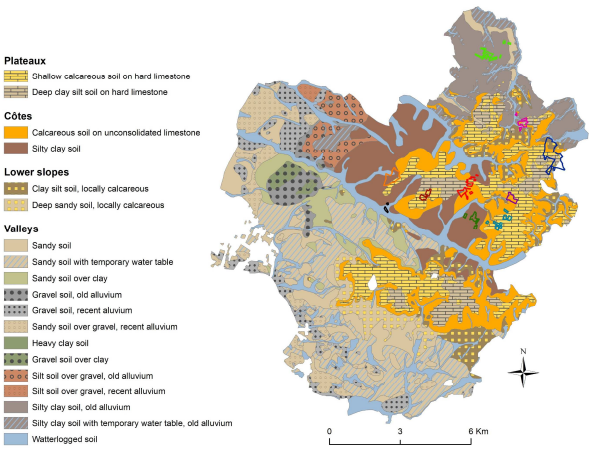
Additional information on the terroir of the Saint-Elites association

Additional information on the terroir of Saint-Emilion with multiple interactive maps (Adviclim project)

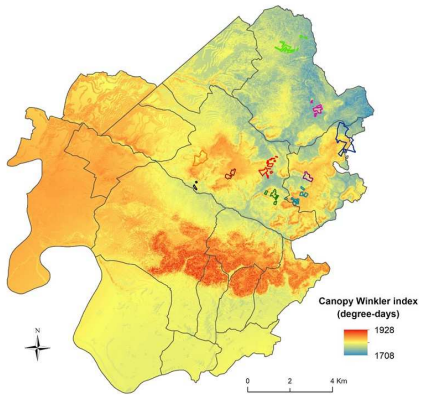
Topography map of Saint-Emilion, Pomerol and their Satellite appellations



Soil map of Saint-Emilion, Pomerol and their Satellite appellations



Canopy Winkler index map (average 2012-18) of Saint-Emilion, Pomerol and their Satellite appellations



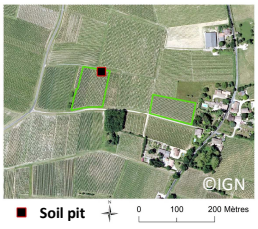
Geology, topographie and soils have a high degree of similarity between Saint-Emilion and its satellite appellations

The climate is cooler in the satellite appellations compared to Saint-Emilion and Pomerol

Château de la Grenière

PDO Lussac Saint-Emilion

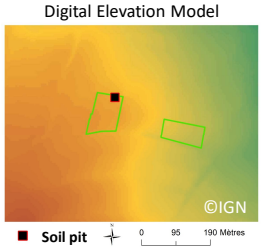
Parcels of château de la Grenière



Soil pit parcel informations:

- Plant material: Cabernet-Sauvignon/101-14MGt
- Planting year: 1985

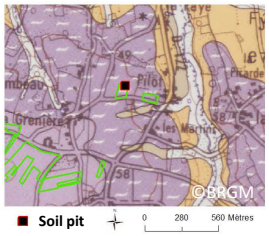
Digital Elevation Model



Topography:

Gentle east facing slope
53 m.a.s.l.

Geology map



Geology:

Ancient fluvial deposits (Eocene)

Soil type (Fr):
BRUNISOL faiblement redoxique sur terrasse fluviatile ancienne

Soil type (En):
Silty soil with temporairy water logging on ancient alluvium

Parcel "le Caillou"	Horizon 1	Horizon 2	Horizon 3	Horizon 4
DEPTH (cm)	0-35	35-70	70-90	90-110
COURSE ELEMENTS (>2 mm) (%)	2%	2%	40%	15%
FINE EARTH (%)	98%	98%	60%	85%
Coarse sand	26%	20%	24%	33%
Fine sand	12%	11%	11%	14%
Coarse silt	32%	24%	20%	12%
Fine silt	21%	21%	19%	11%
Clay	9%	24%	26%	30%
TEXTURE	Sandy-silt	Silty-clay	Silty-clay	Sandy-clay
ORGANIC MATTER (%)	1.0	<0.6	-	-
ORGANIC CARBON (%)	0.6	-	-	-
TOTAL NITROGEN (%)	0.058	0.037	0.034	-
C/N ratio	10.4	-	-	-
pH (water)	7.1	6.6	6.0	5.2
pH (KCl)	6.2	5.5	4.9	4.0
ADSORBANT COMPLEX				
K^+ cmol$^+$/kg	0.29	0.47	0.30	0.27
Mg^{2+} cmol$^+$/kg	0.56	1.20	1.51	2.77
Ca^{2+} cmol$^+$/kg	++	5.71	6.36	8.68
S (sum of cations)	++	7.4	8.2	11.7
V (saturation rate)	Sat.	90%	89%	89%
C.E.C cmol$^+$/kg	4.9	8.2	9.2	13.1
Total Ca (%)	-	-	-	-
Active Ca (%)	-	-	-	-
IPC	-	-	-	-
P_2O_5 g/kg Joret-Hébert	0.359	0.03	0.03	0.03

Soil description:

- Silty texture, mixed with sand in the topsoil and with clay in the subsoil
- Gravel deposit between 70 and 90 cm depth
- Redoximorphic mottling (grey and rusty spots) indicate temporairy water table
- Most likely this water table is not present in summer
- Compaction in deep layers restrict rooting depth (no visible roots beyond 110 cm depth)
- Restricted water supply in dry years
- Low OM and rescricted N availability

Recommended plant material:

- No active lime, wide range of rootstocks possible, 101-14MGt preferred with Cabernet-Sauvignon
- Merlot, Cabernet franc or Cabernet-Sauvignon
- High quality viticulture necessary with Cabernet franc and Cabernet-Sauvignon (high Leaf area / fruit weight ratio, low vigor rootstock)

Wine style:

- Original wine style on this atypical soil for the area
- One of the rare situations in the satellite appellations of Saint-Emilion where Cabernet-Sauvignon is possible in association with a low vigor rootstock (because no $CaCO_3$)
- Powerful wines with beautiful fresh fruit in the nose