

Soils and climate of the satellite appellations of Saint-Emilion

Château Vieux Bonneau – Montagne 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 Vieux Bonneau (Montagne Saint-Emilion) is a silty-clay soil on decarbonated “molasse du Fronsadais”. Traditionally Merlot was the major variety on this soil type, but with climate change, Cabernet franc becomes a possible option. Wine concentration is promoted by moderate water deficit (due to a high proportion of swelling clay) and low soil nitrogen availability.

Keywords : Soil, Climate, Saint-Emilion, satellite appellation, château Vieux Bonneau, Montagne Saint-Emilion

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The Saint-Elites
 Clos Albertus
 Château La Couronne

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

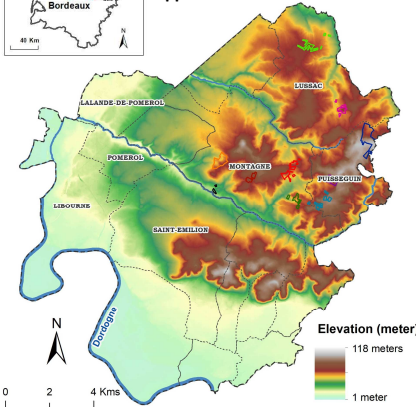


Additional information on the terroir of the Saint-Elites association

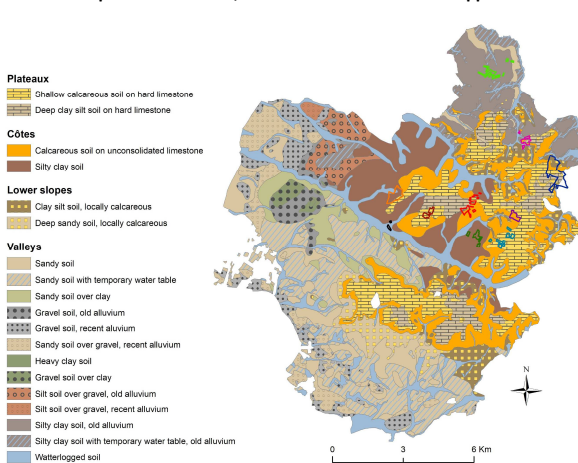


Additional information on the terroir of Saint-Emilion with multiple interactive maps (Adviclim project)

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

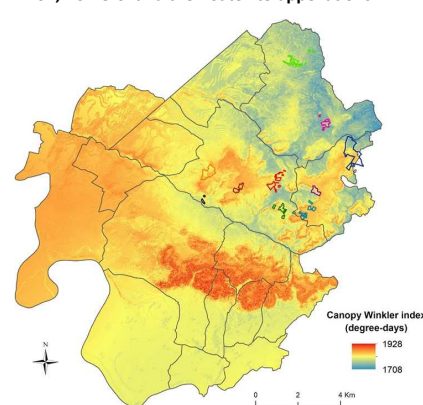


Soil map of Saint-Emilion, Pomerol and their Satellite appellations



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

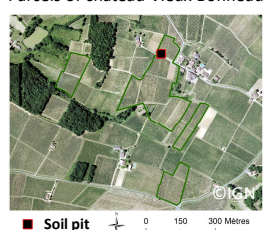
Canopy Winkler index map (average 2012-18) of Saint-Emilion, Pomerol and their Satellite appellations



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

Château Vieux Bonneau PDO Montagne Saint-Emilion

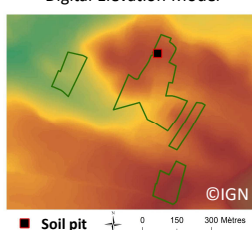
Parcels of château Vieux Bonneau



Soil pit parcel informations:

- Plant material: Merlot/Riparia (RGM)
- Planting year: 1973

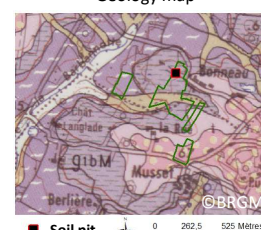
Digital Elevation Model



Topography:

Top of a small hill 62 m.a.s.l.

Geology map



Geology:

Decarbonated *molasse du Fronsadais* (Oligocene)



Soil type (Fr):
BRUNISOL sur molasses du Fronsadais remaniées

Soil type (En):
Silty clay soil on decarbonated *molasses du Fronsadais*

Parcel "Bonneau"	Horizon 1	Horizon 2	Horizon 3
DEPTH (cm)	0-30	30-85	85-130
COURSE ELEMENTS (>2 mm) (%)	0%	1%	0%
FINE EARTH (%)	100%	99%	100%
Coarse sand	37%	56%	27%
Fine sand	11%	5%	9%
Coarse silt	18%	8%	18%
Fine silt	12%	5%	12%
Clay	23%	27%	34%
TEXTURE	Silty clay	Clay-silt	Clay-silt
ORGANIC MATTER (%)	1.7	<0.5	-
ORGANIC CARBON (%)	1.0	-	-
TOTAL NITROGEN (%)	0.089	0.033	-
C/N ratio	11.4	-	-
pH (water)	6.8	7.1	5.2
pH (KCl)	5.9	6.2	4.0
ADSORBANT COMPLEX			
K ⁺ cmol ⁺ /kg	0.72	0.29	0.30
Mg ²⁺ cmol ⁺ /kg	2.21	3.21	3.82
Ca ²⁺ cmol ⁺ /kg	9.49	10.78	9.36
S (sum of cations)	++	++	13.5
V (saturation rate)	Sat.	Sat.	96%
C.E.C cmol⁺/kg	10.7	11.5	14.1
Total Ca (%)	-	-	-
Active Ca (%)	-	-	-
IPC	-	-	-
P₂O₅ g/kg Joret-Hébert	0.157	0.03	0.03

Soil description:

- Soil developed on decarbonated *molasse du Fronsadais*
- Clay content between 25 and 35%
- High proportion of « swelling clay »
- Compaction of subsoil restricts rooting depth to 85 cm
- Moderately low OM and total nitrogen content
- Moderately low water availability due to:
 - Topography
 - Limited rooting depth

Recommended plant material:

- No CaCO₃, wide range of rootstocks possible
- 3309C or 101-14MGt are good options
- Traditionally Merlot was the preferred variety in this location, but with climate change Cabernet franc is becoming a serious option

Wine style:

- This soil type is not very common in the area
- Wine concentration is promoted by moderate water deficit and medium to low N availability