

## STUDY OF SOME PEDOLCLIMATIC FACTORS THAT CHARACTERIZE THE VITICULTURAL AREA OF SAMBURESTI

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### ABSTRACT

In this paper are presented aspects from a geological point of view regarding the territory of Samburesti commune, which has a sedimentary cover with lithology and varying thickness; the upper part of this blanket, of molasses nature, corresponds to the Neogene and Quaternary and thickens in the orogenous contact area - the platform, presenting a series of oil structures.

### INTRODUCTION

The effects of climate, soil, and cultivar were found to be highly significant with regard to vine behavior and berry composition (an example being anthocyanin concentration) (Leeuwen C. e.a., 2004). Quality wines are typically the product of soil, climate, and wine production practices (Thiollet-Scholtus M. e.a., 2014). Soil has a major influence on the growth, fruiting and production quality of vines. Unlike other cultivated species, the vine is less pretentious to the soil, it easily adapts to difficult soil conditions (sands, stony soils) (Toti M. et al., 2015). The influence of the soil on the vine is due to its physical and chemical properties (Oșlobeanu M. et al., 1991). Pedoclimatic conditions affect grape and wine quality. In particular, the relationship between soil and grape quality is at the core of the terroir definition (De Santis Diana e.a., 2017). 'Terroir' is a term used

to describe how climate, microclimate, geology, soil, topography and vitivicultural history affect the taste and aroma of a wine produced from a vineyard (Biss A.J., 2020).

If, for a specific site, the soil and viticultural practices are the same and nutrition is adequate, it could be postulated that primary seasonal differences will be due to climatic factors such as sunlight and temperature (Downey M.O. e.a., 2005).

Soil temperature is an important factor that regulates the response of shoots to extreme temperature conditions, such as heat stress. Little information is known, however, about the role that soil temperature plays in regulating the response of grapevine leaves to frost (Sun L.-L. e.a., 2018).

### MATERIAL AND METHOD

Sampling on the soil profile, in the field:

- in this phase determinations and observations were made regarding the relief, the morphological characters of the soils, of the parent material, of the phreatic level, of the texture on horizons,

of the presence of alkaline-earth carbonates by direct determinations with HCl 1/3 and so on and a preliminary diagnosis and classification of soils was performed according to the official classification (S.R.T.S. 2003);

- collecting soil samples on genetic horizons;  
- packaging and labeling of each sample;  
- determination of the hygroscopicity coefficient - Micherlich method;

- determinations and analyzes of apparent density were also performed (Yes);
- specific density (D).

## RESULTS AND DISCUSSIONS

Sâmburești vineyard is located in the southern part of the country, 20 km east of Drăgășani vineyard. It is located in the transition zone between the Getic hills

and the long hills that make up the southern half of the Cotmeana Piedmont. Piedmont has a relief dominated by hills of medium height and low slope, with many plateaus and long valleys.

Olt County owns 2.9% of the total agricultural area of the country with 433,903 ha. The situation of its distribution by modes of use being presented in Table 1.

Table 1

### Distribution of agricultural area by modes of use

Specification	Hectares
Arable	388 603
Pastures	32 339
Woodlands	528
Vines	7 484
Fruit tree plantations	4 949

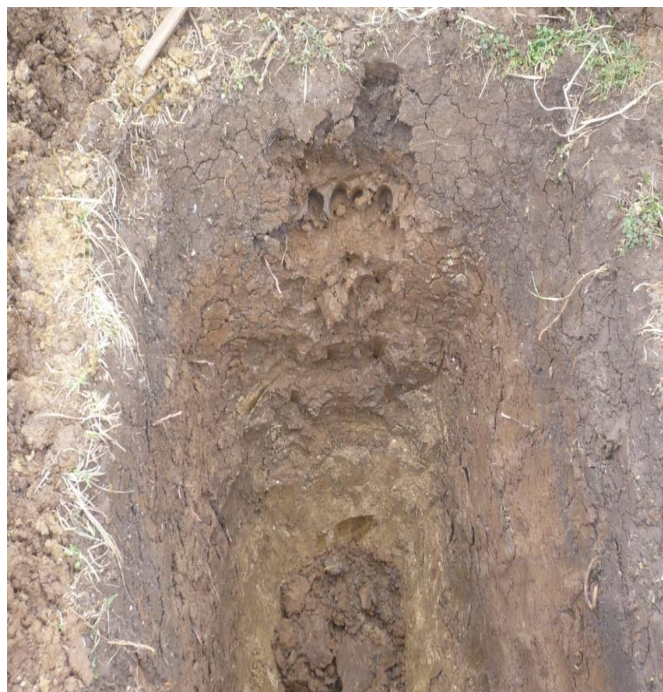
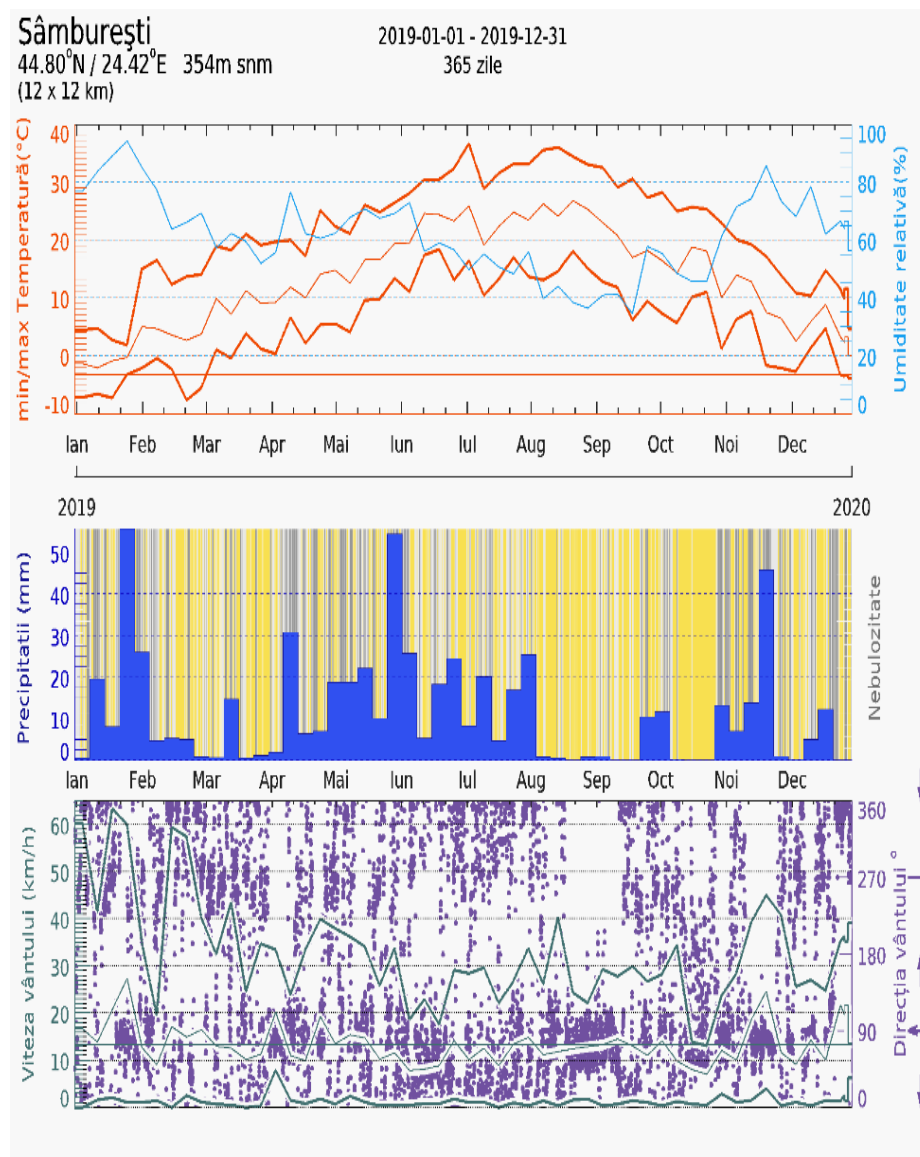


Figure 1 - Soil profile LUVOSOL



**Figure 2 - Climate characteristics in 2019 year**

The soils of the Sâmburești vineyard are mostly clayey, loamy and deep clayey soils, in different phases of podzolization. These soils are characterized by a medium to weak supply of organic and mineral substances, with variable texture (from loamy-sandy to clayey), with an important content of iron in the form of colloidal hydroxide which by dehydration gave the soils a reddish-brown color or intense rust, an important characteristic for obtaining high quality red wines.

Reddish luvisol with melanic character, moderate pseudogleyate, strongly decarbonated, deep, with loamy/loamy clay texture, formed on

slope disaggregation-alteration materials consisting of medium/medium-fine materials, underlying mesobasic, living rocks.

**Morphological characteristics:**

Their soil profile is of type: A+E(p) – E1 - Bt1 – Bt2w (Figure 1).

Horizon A + E (p), = 0-23 cm, gradual transition, brown-gray color (10 YR - 4/3.5), clayey texture, polyhedral subangular structure, poorly developed, plasticity, adhesiveness, porous, frequent roots.

E1 horizon = 23-43 cm, gradual passage, dark olive brown color (2.5 YR - 4/3.5) with 5% stains in redox colors, clayey texture, small subangular

polyhedral structure, poorly developed, plasticity, adhesiveness, pori fini.

Bt1 horizon = 43-69 cm, dark olive-yellow color (2.5YR - 4.5/4.5) with 5% stains in redox colors, clayey texture, medium subangular polyhedral structure, medium developed, plastic, adhesive, fine pores, weakly-moderately compact, thin thin roots, gradual passage.

Bt2w horizon = 69-105 cm, dark brown color (melanic character) (7.5YR - 3/2.5) with 20-25% spots and dots in redox colors, clayey texture, medium / large polyhedral angular structure, plastic, adhesive, fine pores, gradual passage.

Physical characteristics:

On the horizon A + E (p), the apparent density is low, the total porosity is high, the soil is not compacted, the medium wilting coefficient, the medium permeability.

On the horizon, the apparent density is medium, medium porosity, poorly compacted soil, medium wilting coefficient, medium permeability.

On the Bt1 horizon, the apparent density is high, low porosity, moderately compacted, medium wilting coefficient, low permeability.

On the Bt2w horizon, the bulk density is high, low porosity, moderately compacted, high wilting coefficient, low permeability.

Chemical characteristics:

For horizon A + E (p), the soil reaction is moderately acidic, the total nitrogen content is low, the mobile phosphorus content is low, the mobile potassium content is low, the soot index is low, the humus content is low.

For the E1 horizon, the reaction of the solution is moderately acidic, the total nitrogen content is low, the mobile phosphorus content is low, the mobile potassium content is low, the nitrogen content is low, the humus content is low.

For the Bt1 horizon, the soil reaction is moderately acidic, the total nitrogen content is very low, the mobile phosphorus content is extremely low, the mobile potassium content is low, the

nitrogen index is low, the humus content is very low.

For the Bt2w horizon, the soil reaction is weakly acidic, the total nitrogen content is very low, the mobile phosphorus content is extremely low, the mobile potassium content is low, the nitrogen index is low, the humus content is very low.

Regarding the climate, the average annual temperature in Sâmburești is 10.6 °C, the thermal resources of the area being given by the global thermal balance between 3338.1 and 3961.9 °C and the useful (effective) thermal balance between 1526 and 2439.8 °C, indices particularly favorable to the vine culture. The amount of annual precipitation over 555.2 mm, the sum of active precipitation 364 mm (Figure 2).

## CONCLUSIONS

The position it occupies in the transition area between the long hills that make up the Piedmont of Cotmena and the Getic hills is a privilege for the soils of Sâmburești. The soils in the vineyard, starting from the northwestern part of the country and reaching the Otenia Plain, are of a great variety. The soil presented a clayey texture on the surface and clayey on the profile, unstitched on the surface, weak and moderately compacted on the profile, with medium to low permeability and medium water retention capacity.

The soil was poor in humus, showed a moderately acidic reaction on the surface and slightly acidic to the base, a low to very low content of total nitrogen and mobile phosphorus, a low content of mobile potassium and medium iron.

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