THE FORMATION AND EVOLUTION OF THE MAIN SOILS FOUND IN BANAT'S VINEYARDS

FORMAREA ŞI EVOLUŢIA PRINCIPALELOR SOLURI DIN PODGORIILE DIN BANAT

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Abstract:*Our researches were focused on formation and evolution of main soils found in Banat's vineyards.Banat's vineyards profiled on red wine production are found in geological conditions in which soils formed and evolved on eruptive rocks, granites and diorites – (Minis vineyard) on quartz and calcite plates (Moldova Noua vineyard), on carbonated and yellowish clays (Buzias vineyard) and on auburn clays and loams slightly carbonated (Recas and Tirol vineyards).*

Rezumat: *Cercetările s-au axat pe formarea şi evoluţia principalelor soluri din podgoriile din Banat.Podgoriile Banatului, producătoare de vinuri roşii, se întâlnesc în condiţiile geologice în care s-au format şi evoluat solurile, respectiv pe roci eruptive, granitice şi diorite – (Podgoria Miniş), pe şisturi, cuarţite şi calicite (Podgoria Moldova Nouă), pe argile carbonatate şi gălbui (Podgoria Buziaş) şi pe argile şi luturi slab roşcate şi uşor carbonate (podgoriile Recaş şi Tirol).*

Key words: *soil, vineyard, maternal rock.*
Cuvinte cheie: *sol, podgorie, roca mamă.*

INTRODUCTION

The viticulture region from Banat vineyard profiled on red wines is confined by Zarandului Mountains in the North West part, Locvei and Semenic Mountains in the South and South –East and Banat Plain in the West part.

This region lies out from North to South approximately on the same longitude 21° and 35-45 min, covering the Western Piedmonts that integrate the vineyards: Minis – Maderat, Recas-Bencec, Silagiu – Buzias, Tirol and Moldova Noua.

MATERIAL AND METHODS

There were determined the main soil units from Banat's vineyards, as a result of performing a main soil profile, corresponding to each soil unit and determination of morphological properties and laboratory performed analysis concerning determination of physical and chemical properties of the considered soils.

RESULTS AND DISCUSSIONS

The main soil units found in Banat's vineyard, of the main parental material, and covered surface and altitude to which these are found are presented in table 1.

The soils found in Minis-Maderat vineyard are colluvial alluvial soils and pre-alluvial soils present in different soil units.

At slope bases, up to altitudes of 140-180 m colluvial alluvial soils with a loam- sandy texture are found. In the superior and inferior third of slopes (180-220 m altitude), with 17-25% inclination, the most predominant soils are pre-alluvial soils, auburn pre-alluvial and pre-alluvial profound sweep soils with loam-sandy skeleton formed on grit stones, plates and colluvial deposits.

Table 1.

The main soil types in Banat's vineyard

Soil unit	Maternal rock	Covered surface %	Altitude	Slope %
MINIŞ – MĂDERAT VINEYARD				
Colluvial alluvial, loam-sandy	colluvial deposits	15	140 - 180	4
Pre-luvisoils, eroded, with skeleton, loam-sandy	grit stones and plates	30	200	25
Auburn pre-alluvial, superficial, with loam-sandy skeleton	grit stones and plates	30	220	17
Pre-alluvial soil, profound sweep	grit stones and plates	25	225	8
RECAŞ – BENCEC VINEYARD				
Pre-alluvial soil	Loams and clays	30	170-180	2-4
Erodisoil, euthric	Carnonated loams and marls	30	150-170	10-20
Pre-alluvial soil, gleyed	Loams and clays	40	120-150	10-12
SILAGIU (BUZIAŞ) VINEYARD				
Pre-alluvial soil, slightly gleyed	Carbonated red clays	30-40	200-300	12-18
Auburn pre-alluvial, soil,	Altered micro-plates	20-30	180-250	12-18
TIROL VITICULTURE CENTRE				
Stagnant pre-alluvial soil	Clays	30-40	160-180	2-4
Slightly eroded pre-alluvial soil	Clays	40-50	140-160	8-15
MOLDOVA NOUĂ VITICULTURE CENTRE				
Lythosoil, skeletal	Plates	30	250-350	10-15
Lythosoil, skeletal, slight eroded, formed on slopes and hard rocks	Quartz and plates	40	160-200	15-20
Soil complex with alluvial soils, districambosoils and stagnosoils	Colluvial materials from marls, hard rocks and calcite plates.	30	4-5	9

Most of grapevine plantations from the Southern part of vineyard are characterized by these soils types offering optimal conditions for growth and developing of grapevines especially for obtaining red wines.

On plateaus the most predominant soils are pre-alluvial, profound sweep soils on grit stones and plates.

The dominant soils in Recas vineyards are: pre-alluvial soils, eutric erodisoils and gleyed pre-alluvial soils formed on clays, loams, marls and carbonated loams.

The soils found in Recas comparing with those found in Minis are more profound but heavier due to loam-clayed or clay-loamy texture. In regions where water stagnation occurs as a consequence of clayed background, land sliding may also occur. Generally, these soils offer optimal growth and developing conditions particularly black soils.

In Silagiu, on large surfaces (on plateaus and mid-slopes), there are found the following soil types: slightly gleyed pre-alluvial soils, auburn pre-alluvial soils, poorly developed skeleton soils formed on altered micro-plates.

In Tirol hillside region, there are found slight eroded pre-alluvial soils evolved on medium podzolic clays. Moldova Noua viticulture centre was generally formed on hills characterized by lythosoils found on different developmental stages.

The soil complex similar with alluvial soil type, districambisoils and stagnosoils formed on marls, plates and calcites are found at slope bases.

On altitudes of 160-200 m, in the middle third of slopes, the predominant soil type is skeletal lythosoil slightly eroded formed on quartz and plates while on plateaus and superior part of slopes at altitudes of 250-300 m, skeletal lythosoils are dominant on slants of 10-15%.

CONCLUSIONS

The researches developed in Banat's vineyards regarding the main soil units, allowed us to conclude that:

- soils found in Minis-Madedrat vineyard are pre-alluvial soils of zonal type represented by various soil units and colluvial alluvial soils.
- Most of grapevine plantations from the Southern part of vineyard were set up on these soil types offering optimal growth and developing conditions for grapevines and particularly for red wine grape varieties. The most predominant on plateaus are pre-alluvial profound sweep soils on grit stones and plates;
- the dominant soils in Recas vineyard are: pre-alluvial soils and erodisoils formed on clays and loams, carbonated loams and marls.
- These soil types are offering optimal growth and developing conditions for grapevines and particularly black soils;
- in Silagiu, there are found poorly gleyed pre-alluvial soils, auburn pre-alluvial soils, poorly developed skeleton soils formed on altered micro-plates.
- In Tirol hillside region, there are found pre-alluvial soils such as slight eroded pre-alluvial soils, stagnisoils, slightly eroded evolved on medium podzolic clays;
- In Moldova Noua viticulture centre, there are found rich skeletal soils like lythosoils (skeletal) in different developmental stages.

The soil complex formed on small slopes of 9% consists of: alluvial soils, districambisoils and stagnisoils evolved on marls, plates and calcites found at slope bases.

At altitudes of 160-200 m, in the superior middle third of slopes, most dominant soils are those skeletal formed on plates and quartz while on plateaus and upper part of slopes, strongly skeletal soils, medium podzolic of lythosoil type are found.

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