PHISICAL AND CHEMICAL PROPERTIES OF SOILS FOUND IN THE VINEYARDS CENTERS TIROL AND MOLDOVA NOUĂ

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Abstract: *The researches that represented the objectives of the present scientific paper aimed determination of physical and chemical properties of soils planted with grapevines from Tirol and Moldova Noua viticulture centre. Most viticulture plantations from the Southern part of the vineyard are found on soils with optimal growth and developing conditions for grapevines and particularly for red wines. The most predominant soils on plateaus are pre-alluvial soils, alluvial soils, districambisoils and lythosoils. This paper aims to study soil Centers Tyrol wine and Moldova Noua. Research is in its early stages, but the future team will have greater involvement in bringing the information about the physical and chemical properties of soil filled with life. The physical properties of soil were determined: Soil texture - Cernikova method; Porosity of the soil - was determined by calculation. The soil chemical properties were determined: Content in humus - Tiurin method; Soil reaction - by potentiometric method in aqueous extract 1:2,5; Total nitrogen content in% - was done by Kjeldahl method (soil mineralization is made by boiling with concentrated sulfuric acid in the presence of catalyst); Total phosphorus and mobile content was determined by the Egner-Rhiem-Domingo on a Spectrophotometer UV – VIS Assimilable potassium content - to extract the ammonium lactate and acetate was determined by atomic absorption spectrophotometer. The research was conducted in the same direction, all for a period of three years (years 2007 to 2009), but results in this regard can be observed only after a greater number of years, as the humus content of soil is disrupted following its use by Apple. In Romania, investigations are limited due to lack of financial resources and because disinterest or poor information for those working in the field, to uncover the state land occupied by vineyards. Research without practical information that can be used by those concerned with the physical and chemical properties of soil in growing centers Tyrol and Moldova Noua. The work is original, both in terms of information it provides, as well as practical solutions that gives those interested in fertility status of soils occupied by trees. The book has great practical importance, because without new and needed both of fertility status of land occupied by trees and in the achievement of steady production and good quality.*

Key words: *viticulture centre, physical properties, chemical properties*

INTRODUCTION

Most viticulture plantations from the Southern part of the vineyard are found on soils with optimal growth and developing conditions for grapevines and particularly for red wines.

The most predominant soils on plateaus are pre-alluvial soils, alluvial soils, districambisoils and lythosoils.

This work aims to study soils in the Vineyard Centers Tirol and Moldova Noua. Research is in its early stages, but in the future the team will have greater involvement in bringing the information about the physical and chemical properties of soil filled with life.

MATERIAL AND METHOD

The research was conducted in the Tyrol and Moldova Noua vineyards centers, major soil types of the vineyard are:

- Preluvisols stagnic;

- Preluvisols slightly eroded;
- Lithosols disorders;
- Lithosols skeletal, slightly eroded;
- Alluvisols;
- Districambosoluri;
- Stagnosols.

Of soil physical properties were determined:

- Soil texture - Cernikova method;
- Soil porosity - was determined by calculation.

Among the chemical properties of soil were determined:

- Humus content - Tiurin method;
- Soil reaction - by potentiometric method in aqueous extract 1:2,5;
- Total nitrogen content in% - was done by Kjeldahl method (soil mineralization is made by boiling with concentrated sulfuric acid in the presence of catalyst);
- Mobile content and total phosphorus was determined by Egner - Domingo Rhiem a UV Spectrophotometer – VIS
- Assimilable potassium content - was extracted in ammonium acetate and lactate was determined by atomic absorption spectrophotometer.

RESULTS AND DISCUSSIONS

In Tyrol, in the hilly area is getting brown forest soils on low-medium-podzolic clay, slightly eroded.

Moldova Noua vineyard center consists generally of the type of soils on hills with skeleton Lithosols in various stages of training.

Alluvisols complex, and stagnosols districambosoluri formed on marl, shale and calcite is getting to the slopes 160 - 200 cm altitude, to the middle third of slopes, dominates Lithosols skeletal, slightly eroded shales and quartzites formed on and on plateaus and upper slopes predominate Lithosols disorders.

Below (Table 1) are the main physical properties of soils in Tyrol and Moldova Noua vineyards centers.

Physical properties of soils from Tyrol are close to those of vineyards Silagiu and Recas are rich in natural clay 33 - 48% and 25 - 35% of colloidal particles with an average of 25-33% sand, soils are compact, heavier, with low permeability.

Especially at the middle 18 - 25% slopes at Moldova Noua meet with a high percentage of soil skeleton, but also have the highest percentage of natural clay 55 - 70% and an average of 25 - 30% sand. These soils have a heavy texture, is less airy, with a low water permeability.

Total soil porosity had values between 50% to 40 - 60 cm depth and 52 - 55% at 0 - 20 cm soil depth in Tyrol wine center and between 57 - 62% at 0 - 20 cm depth and 50 - 66 % at 40 - 60 cm soil depth in central Moldova Noua vineyard.

Table 2 presents the main chemicals properties of soil from Tyrol and Moldova Nouă vineyards centres.

Nutrient content in soil varies from one to another, in relation to genetic type, parent rock, climate conditions, cultural status, etc.

In Tyrol soils are slightly acidic, with a mediocre in humus content, low total nitrogen supply, average equivalent forms supplied, and those on the plates, poor in potassium.

Humus content is generally very low, with values between 1,03 - 1,88% at 0 - 20 cm depth between 0,55 - 0,75% at 40 - 60 cm soil depth in Tyrol and wine center the depth of 1,38 - 1,97% 1,01 - 1,14% at 0 - 20 cm and 40 - 60 cm soil depth of Moldova Noua vineyard center.

Table 1.

The main physical properties of soil in vineyards centers Tyrol and Moldova Noua

Soil unit	Depth cm	Porosities %	Skeleton %	Colloidal particles	Natural clay %	Physical sand %
Vineyard centre TIROL						
Preluvosols stagnic	0-20	52	-	35,2	33,0	31,0
	40-60	50	-	26,4	48,2	25,4
Preluvosols slightly eroded	0-20	55	-	32,1	34,9	33,0
	40-60	50	-	25,4	47,4	27,2
Vineyard centre MOLDOVA NOUĂ						
Lithosols disorders	0-20	60	11,2	14,6	70,5	14,9
	40-60	50	24,2	15,7	69,8	14,5
Lithosols disorders	0-20	62	18,1	5,8	69,0	25,2
	40-60	57	26,8	12,4	57,7	29,9
Alluviosols, districambosols and stagnosols	0-20	57	3,1	13,7	49,7	36,6
	40-60	66	33,8	10,7	63,9	25,4

On the set of Moldova Noua are acidic soils with pH 4,4 to 4,5 and neutral or slightly alkaline pH of 7,0 to 8,3 on the slopes and the slopes.

These soils are very low to medium supplied in humus and total nitrogen and total phosphorus very rich from 0,21 to 0,35% but poorly supplied in accessible formats and low-potassium soils are located on plateaus.

Table 2

The main chemical properties of soil in vineyards centres Tyrol and Moldova Nouă

Soil unit	Depth cm	pH	Humus %	N %	P total %	P_2O_5 mobile mg/100 g	K_2O assimilation mg/100 g
Vineyard centre TIROL							
Preluvosols stagnic	0-20	5,6	1,88	0,119	-	10,0	4,6
	40-60	5,7	0,75	0,021	-	10,5	2,8
Preluvosols slightly eroded	0-20	5,8	1,03	0,133	-	11,3	12,0
	40-60	5,8	0,55	0,007	-	5,4	9,5
Vineyard centre MOLDOVA NOUĂ							
Lithosols disorders	0-20	4,6	1,38	0,210	0,213	2,00	7,8
	40-60	4,5	-	0,160	0,290	5,80	3,2
Lithosols disorders	0-20	7,0	1,71	0,146	0,245	16,0	6,3
	40-60	7,1	1,01	0,177	0,300	7,6	3,8
Alluviosols, districambosols and stagnosols	0-20	8,0	1,97	0,231	0,265	10,0	8,4
	40-60	8,3	1,14	0,231	0,350	6,8	6,1

CONCLUSIONS

Following investigations in Tyrol and Moldova Noua vineyards centers were separated following:

- Total porosity of these soils had values between 50 - 55% in Tyrol wine center and between 50 - 66% in Nine Moldova Noua vineyard center;

- The center vineyard soils are rich in skeleton Moldova Noua, especially those located in the middle slopes, where the frame rate is situated between 18,1 - 26,8% in Lithosols soil type.

Soil pH in wine center Tyrol has values between 5,6 - 5,8 and between 4,5 and 8,3 in vineyard soils in central Moldova Noua;

- Humus content is very low to medium values, respectively in the two centers 1,03 - 1,97 researched wine;

- Total nitrogen content is de 0,119 - 0,231%, at between 0,213 - 0,350% in total phosphorus at the mobile phosphorus between 2.0 and 16.0 mg/100 g soil and the assimilated between 2.8 and potassium 8.4 mg/100 g soil.

In conclusion, knowing all the physical and chemical properties of soil in vineyards centers Tyrol and Moldova Noua, it appears that most soils indicated to be planted with grapevines is Moldova Noua vineyard center, followed by those of Tyrol vineyard center.

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