DYNAMIC EVOLUTION OF QUALITY COMPONENT IN GRAPE JUICE, UNDER INFLUENCE OF CHEMICAL FERTILIZER DOSES TO FETEASCĂ NEAGRĂ VARIETY TOHANI AND TOPOLOVENI CENTERS

EVOLUȚIA DINAMICĂ A COMPONENTELOR DE CALITATE A MUSTULUI, SUB INFLUENȚA DOZELOR DE ÎNGRĂȘĂMINTE CHIMICE LA SOIUL FETEASCĂ NEAGRĂ ÎN CENTRELE VITICOLE TOHANI ŞI TOPOLOVENI

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Abstract. *The chemical fertilizers have influenced different the quality of grape to the Fetească neagră variety by applied dosage, and wine-growing centre, changing in terms of quantity and quality the composition characteristics of row-material.To highlight the impact of fertilizer doses, and of the ecosystem concerning the quality, have been curried out studies regarding accumulation of sugar and grape juice total acidity, phenolic compounds and the alcoholic potential to the Fetească neagră variety in the wine-growing centres Topoloveni and Tohani. It was studied the influence of chemical fertilizers and relations between chemical composition and quality of raw materials obtained.*
Key words: *variety, dose, fertilizer, quality*

Rezumat: *Îngrăşămintele chimice şi-au pus amprenta diferit asupra calității strugurilor la soiul Fetească neagră prin mărimea dozelor, anul de recoltă, dar şi centru viticol, modificând cantitativ şi calitativ, caracteristicile de compoziție ale materiei prime.Pentru a evidenția impactul dozelor de îngrăşăminte, dar şi a ecosistemului cercetat asupra calității mustului , s-au impus determinări privind acumulările de zaharuri şi aciditatea din bob, compuşi fenolici şi potențialul alcoolic al soiului Fetească neagră în centrele viticole Topoloveni şi Tohani. S-a cercetat influența îngrăşămintelor chimice şi relațiile dintre acestea şi compoziția chimică şi calitatea materiei prime obținute .*
Cuvinte cheie*: soi, doză, fertiliyare, calitate*

INTRODUCTION

Fertilizer application must be done by taking care of the following factors such as, soil moisture, soil type, supply level of soil with nutrients, planed yield etc. (Țârdea and Dejeu, 1995). Applied chemical fertilizer dose rates have influenced differently the quality of juice grape, resulting that we have to optimize the fertilisation (Davidescu et al., 1981). It was proved that increasing of fertilizer dose rate doesn't lead to higher accumulation of sugar content in juice grape. Good quality of juice grape obtained at Tohani it is due to the other

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factors then the nutrition one (favorable microclimate). Ripening grapes depends on the variety genetics, climate factors and nutritional factors during vegetation season (Budan, 1966).

MATERIAL AND METHOD

The first trial has been placed in Tohani Centre localized in Central part of Dealu Mare vineyard, where it was tested the variety Feteasca neagra grafted on Berlandieri Riparia x Selectare Oppenheim 4 rootstock. The vineyard it was 20 years old. Planting distance where 2,20/1,20 m. The surface is situated at 417 m altitude, the rows was oriented North-South. The soil type it was preluvosol, reach in ferro-humic components. Analysed soil texture was loamy and the humus content very low (1.21 – 1, 03%) and the pH betweent 5,6-6,5.

Second trial it was placed in Topoloveni center, localised in Central-West part of the vineyard Stefanesti-Arges. Biotic factor it was the Feteasca neagră variety grafted on Berlandieri Riparia x Kober 5 BB rootstock. Vineyard was 25 years old. Planting distance was between 2,20 x 1,00 m, surface slope 0% and rows orientation North-South

Trials have been established in 2002-2004. Utilized fertilizer: NH_4NO_3 -34,55%, crystallized single superphosphate with 18% P_2O_5, potassium salt with 48-50% K_2O. The fertilizers have been applied in unic dose rate at the beginning of trials, in the autumn the phosphorus and potassium one and the nitrogen one in springtime at disbudding. The trials where done with two variants: V_1 (N_{100} P_{150} K_{200}) and V_2 (N_{150} P_{200} K_{200}). Physicochemical analyses have been made to the grapes and to the juice quality parameters (sugar content, total acidity, phenolic compounds and alcoholic potential).

RESULTS AND DISCUSSION

Before ripening and technological maturity Feteasca neagră variety has accumulated an average of 236,0 g/l sugar content in Tohani Center, comparative with 225,3 g/l sugar content in Topoloveni Centre to the first V_1 (N_{100} P_{150} K_{200}). Even the fertilizer dose rates has increased with the second variant V_2 (N_{150} P_{200} K_{200}), the sugar content it was higher in Tohani, exceeding the accumulation potential of Feteasca albă variety from Topoloveni (fig. 1).

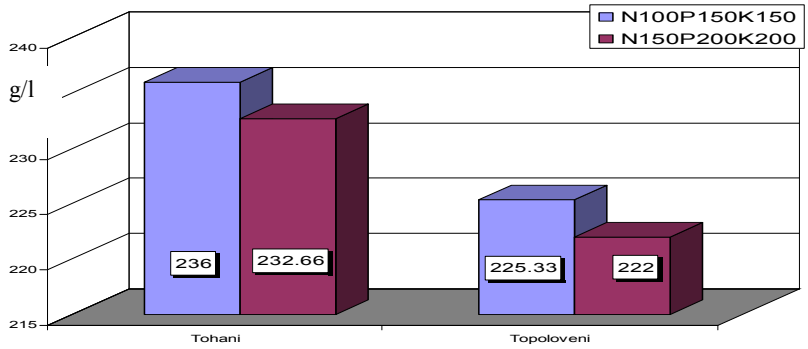

Fig. 1 - Sugar content of juice grape (g/l) according to the chemical fertilizer dose rate and Vineyard Center for Fetească neagră variety in 2002-2004

Feteasca neagră variety cultivated in Topoloveni it had a total acidity of juice grape much higher. The average acidity of juice grape was 5,1 g/l H_2SO_4 , in Topoloveni due to the dose rate increase at the second variant V_2(N_{150} P_{200} K_{200}), (fig. 2).

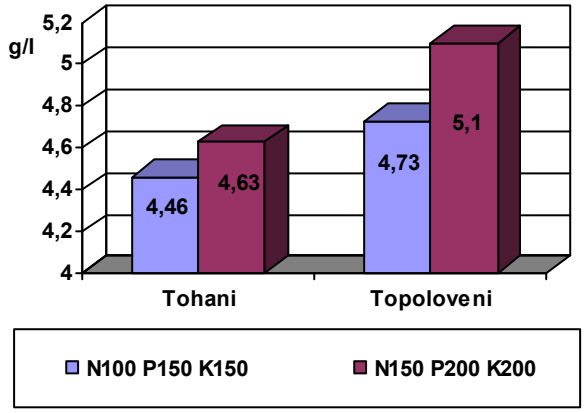

Fig. 2 - Acidity content of juice grape (g/l) in accordance with chemical fertilizer dose rate and vineyard Center for Fetească neagră variety in 2002-2004

The average alcoholic potential 13,0% vol., from Tohani Centre it is ahead Topoloveni Centre (12,4 % vol.), due to variety. (fig. 3).

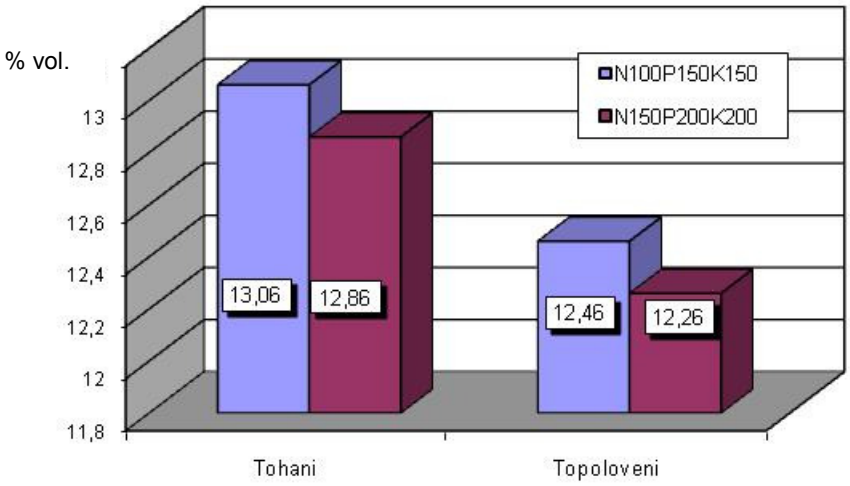

Fig. 3 - Alcoholic potential of juice grape in accordance with chemical fertilizer dose rate and vineyard Center for Fetească neagră variety in 2002-2004

Other analysed quality parameter at Feteasca albă variety was the juice grape content in phenolic compounds. After optioned results from

colorimetric determinations the average of studied years was 1038,3 mg/l in Tohani Centre and 875,0 mg/l in Topoloveni (fig.4).

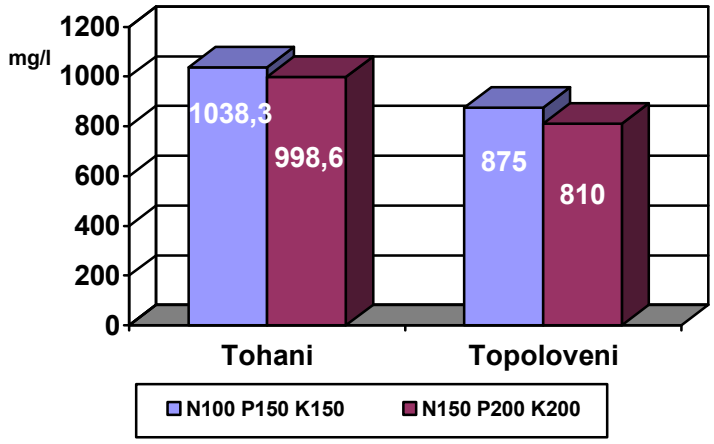

Fig. 4 - The content in phenolic compounds of juice grape in accordance with chemical fertilizer dose rate and vineyard Center for Fetească neagră variety in 2002-2004

CONCLUSIONS

1. Fetească neagră variety has proven to have a higher sugar content accumulation capacity in Tohani.

2. Dose rates of variant V_2 (N_{150} P_{200} K_{200}) have determined an increase of total acidity from juice grape in Topoloveni (5,1 mg/l H_2SO_4).

3. Fetească neagră variety behaviour analysed in the 2 vineyards centres, has proven that even a good quality vine can be obtain in both centres, however in the Tohani centre the vine quality it is slightly better.

4. Increased dose rates on variant V_2 (N_{150} P_{200} K_{200}) have influenced negatively the anthocyanin in Fetească neagră variety at both centres.

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