

Fertility and Productivity Indices at Some Grape Varieties for White Quality Wines in Climatic Conditions of Vineyard Tarnave, During the Year 2010

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Abstract. In order to estimate the quantity of crop in a vineyard, the farmers can use the fertility and productivity elements. The four grape varieties: ‘Muscat Ottonel’, ‘Neuburger’, ‘Traminer roz’ and ‘Sauvignon blanc’, registered value between 0.55 and 1.26 for relative fertility coefficient, 1.71 and 2.08 for absolute fertility coefficient. The highest value of relative productivity index was calculated at ‘Traminer roz’ variety (86.94), and the lowest at ‘Neuburger’ variety (58.85).

Keywords: grape variety, fertility, productivity, climatic conditions,

INTRODUCTION

Ecoclimatic condition are decisive, in order to obtain a proper crop of the variety, when it comes to production and quality.

Fertility and productivity are biological characteristics, describing agrobiological and technological value of grape varieties. These two characteristics are correlated between them, and influence in a direct way the grape production (Stoian and Nămoșanu, 2006).

Fertility can be appreciated after the fertile shoots percentage, and the fertility coefficient is either absolute or relative. Productivity is influenced by grape weight, specific for each variety (Pop, 2010).

MATERIALS AND METHODS

The research has been carried out S.C.D.V.V. Blaj, in Vineyard Târnavă, and it concerned the fertility and productivity at grapes influenced by the climatic condition of the year 2010. Biological material consisted of ‘Muscat Ottonel’, ‘Sauvignon blanc’, ‘Traminer roz’ and ‘Neuburger’ varieties. In order to establish the fertility coefficient and the productivity indices, were studied 25 block vine/variety.

To calculate the fertility, it is necessary to register buds number on block, total number of shoots, total fertile shoots and inflorescences number. Fertility coefficient can be absolute (Cfa) and relative (Cfr).

$$Cfa = \frac{\text{Number of inflorescences}}{\text{Number of fertile shoots}}$$

$$Cfr = \frac{\text{Number of inflorescences}}{\text{Number of total shoots}}$$

The productivity can be calculated through absolute productivity indices (Ipa) and relative productivity indices (Ipr), using the following formulas:

$$Ipa = Cfa \times Gm \qquad Ipr = Cfr \times Gm,$$

with : Cfa – absolute fertility coefficient,
Cfr – relative fertility coefficient,
Gm – average grape weight.



Fig. 1. 'Sauvignon blanc' variety (photo original)



Fig. 2. 'Traminer roz' variety (photo original)



Fig. 3. 'Muscat Ottonel' variety (photo original)



Fig. 4. 'Neuburger' variety (photo original)

During the year 2010, the maximum temperature was registered in August (38.0 °C) and the lowest temperature in January (-22.7 °C). The biggest quantity of rainfall was in June (155.4 mm).

Tab. 1

Climatic conditions of year 2010

Month	Average of monthly temperatures(°C)		Extreme temperatures (°C)		Temperaturea sum °C			Rainfall sum (mm)	
	Normal	2010	Minimum	Maximum	Activ	Util	Global	Normal	Real
January	-2.7	-2.7	-22.7	16.1				26.3	39.2
February	-0.1	1.9	-14.9	18.4				21.2	23.4
March	4.7	5.1	-9.0	25.1			66.7	23.9	51.0
April	10.4	11.1	-2.0	27.0	378.2	91.2	386.2	68.3	78.2
May	15.2	16.8	-3.9	32.2	497.1	197.8	505.1	80.2	99.2
June	18.3	19.3	6.3	36.5	572.4	273.1	572.3	93.6	155.4
July	19.8	21.5	11.4	36.9	654.3	345.2	654.3	99	86.0
August	19.3	21.6	8.2	38.0	653.2	342.1	653.3	64	42.4
September	15.1	14.8	3.9	29.4	491.5	205.2	491.7	56.7	38.0
October	9.5	10.7	-2.8	29.1	202.2	65.2	298.4	36.6	67.5
November	3.8	4.8	-4.1	20.4				36.5	50.2
December	-1.1	-2.2	-17.6	16.5				33.3	43.0
Sum	112.2	122.7			3449	1519.8	3638	640.6	773.5
Average	9.35	10.22						53.38	64.58

RESULTS AND DISSCUSION

In the conditions of year 2010, ‘Traminer roz’ variety had an average of 54 inflorescences per block vine, and the biggest relative fertility coefficient (1.26), while ‘Neuburger’ variety had only 16 inflorescences per block vine, and the lowest value for relative fertility coefficient, of only 0.55. All the varieties registered an absolute fertility coefficient >1 (Tab. 2).

‘Neuburger’ has the average weight of 107 g, but it has the lowest value at relative productivity indice, only 58.85. At ‘Traminer roz’ and ‘Sauvignon blanc’ the values of relative productivity indice have almost the same level (86.94, respectively 86.87) (Tab. 3).

Tab. 2

The fertility of four grape varieties from Vineyard Târnave

Variety	Total shoots/block vine	Fertil shoots/block vine	Inflorescences/block vine	Relative fertility coefficient	Absolute Fertility coefficient
	No.	No.	No.		
Muscat Ottonel	35	16	31	0.89	1.94
Neuburger	29	9	16	0.55	1.78
Sauvignon blanc	36	17	29	0.81	1.71
Traminer roz	43	26	54	1.26	2.08

Tab. 3

The productivity of four grape varieties from Vineyard Târnave

Variety	Average weight of a grape bunch (g)	Weight of 100 grape grains (g)	Relative fertility coefficient	Absolute Fertility coefficient	Relative productivity index	Absolute productivity index
Muscat Ottonel	84	145	0.89	1.94	74.76	162.96
Neuburger	107	170	0.55	1.78	58.85	190.46
Traminer roz	69	101	1.26	2.08	86.94	143.52
Sauvignon blanc	107.25	166	0.81	1.71	86.87	183.40

CONCLUSIONS

Ecoclimatic conditions from Târnave Vineyard are proper in order to obtain a good quality at grape variety used for white quality wine.

'Neuburger' variety was affected by low temperatures from the winter 2009-2010, and this can be seen from the value of relative productivity index, only 58.85.

The biggest production was registered at 'Sauvignon blanc' variety, with a relative productivity index of 86.87, and a average weight of a grape bunch of 107.25 g.

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