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STUDIES REGARDING SOME GRAPE VARIETIES IN DEALU BUJOR VINEYARD DURING 2015-2016

STUDII ASUPRA UNOR SOIURI DE STRUGURI DIN PODGORIA DEALU BUJOR ÎN CONDIŢIILE ANILOR 2015 ŞI 2016

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Abstract. *As a result of different climatic influence, the characteristic phenophases of vines are constantly changing. Their evolution is extremely important for obtaining a qualitative final product, be it wine or table grapes. The present article follows the maturation period of some grape varieties (Fetească albă, Fetească regală, Băbească gri, Fetească neagră and Băbească neagră) in the Dealu Bujor vineyards. The obtained results from the maturation dynamics can be used for the creation of specific viticultural databases, to represent in a clear and concise way the region's oenological potential in the current climate.*
Keywords: Dealu Bujor vineyard, local grape varieties, maturation dynamics, maturation period

Rezumat. *Ca urmare a schimbărilor climatice la care suntem martori în ultimii ani, fenofazele caracteristice plantei de viţei-de-vie se schimbă în mod constant. Evoluţia lor este extrem de importantă pentru obţinerea unui produs finit calitativ, fie el vin sau struguri de masă. Prezentul articol analizeaza perioada de maturare a anumitor soiuri de struguri (Fetească albă, Fetească regală, Băbească gri, Fetească neagră şi Băbească neagră) în podgoria Dealu Bujor. Rezultatele obţinute din analiza dinamicii maturării strugurilor pot fi utilizate pentru crearea unor baze de date viticole specifice, care să reprezinte într-un mod clar şi concis potenţialul oenologic al regiunii în climatul actual.*
Cuvinte cheie: podgoria Dealu Bujor, soiuri autohtone de struguri, dinamica maturarii, perioada de maturare

INTRODUCTION

The optimum time for harvesting grapes is determined according to their state of physiological, full, technological and commercial maturity. It is believed that a certain varieties hve reached full maturity when the berries have reached the maximum weight, when acidity and sugar content are stagnating or developing very slow (Ciubucă *et al.,* 1999).

The temperate-continental climate of the Dealu Bujor vineyard is characterized by dry and very warm summers, very cold winters, the average annual temperature being 9.5 °C in the north and 10 °C in the south. The amount of precipitation is insufficient (approximately 450 mm annual average), with the

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addition of high evapotranspiration (680 mm/year) and arid wind, which explains the high deficiency of aero-edaphic humidity during the extended drought periods in July –August (Teodorescu *et al*., 1987, Teodorescu, 1954).

MATERIAL AND METHOD

Five grape varieties (Feteasca albă, Fetească regală, Băbească gri, Băbească neagră, Fetească neagră) specific to the Dealu Bujor vineyard were studied and during the two years we aimed to determine the characteristic indices of grape maturity and technological maturity.

The annual and vegetation rainfall values, as well as average temperature were recorded during the two years, using the metorological station from SCDVV Bujor.

The dynamics of grape maturation are followed by the determination, from time to time, after the grapes enter veraison, of the following indices: the mass of 100 berries; sugar content and acidity content, according to OIV standards.

RESULTS AND DISCUSSIONS

In the two years the study was conducted (2015-2016), the rainfall had values that approached the multiannual average (448 mm) and during the vegetation period: 454 mm.

Temperature-wise, during this period (July-September), the average temperature was 28.3 °C in July, 25.8 °C in August and 20.4 °C in September. Very close temperatures were reported in May, June and August, being a thermally balanced year.

It has been noticed, following the analyses (tab. 1), that at Fetească albă the evolution of the parameters (sugar content, acidity and the mass of 100 berries) stops after 14th of September, the values remaining relatively constant until harvest. The mass of 100 berries has a maximum value on 31st of August (148 g), so it can be concluded that full maturity occurs around this date. After full maturity, the weight decreases, reaching 139 g, the berries loose a portion of the accumulated water, the sugars' concentration increases, the value rising from 194 g/L to 215 g/L and the acidity dropping from 4.7 g/L to 3.8 g/L tartaric acid.

Table 1

Maturation dynamics of grapes in 2015

Date	Grape variety	Mass of 100 berries	Concentration of sugars g/L	Total Acidity g/L tartaric acid
17.08	Feteasca Albă	141	183	6.1
	Fetească Regală	142	148	7.9
	Băbească Gri	192	122	11.1
	Băbească Neagră	170	124	12.7
	Fetească Neagră	122	188	9.1

24.08	Fetească Albă	143	188	5.4
	Fetească Regală	149	161	6.9
	Băbească Gri	206	134	10.8
	Băbească Neagră	180	148	11.9
	Fetească Neagră	128	196	7.2
31.08	Fetească Albă	148	194	4.7
	Fetească Regală	157	180	6.5
	Băbească Gri	239	154	7.6
	Băbească Neagră	192	170	9.8
	Fetească Neagră	133	212	6.8
07.09	Fetească Albă	146	210	4.4
	Fetească Regală	159	196	6.1
	Băbească Gri	240	188	6.5
	Băbească Neagră	198	189	9.1
	Fetească Neagră	126	252	5.5
14.09	Fetească Albă	139	215	3.8
	Fetească Regală	157	199	5.8
	Băbească Gri	238	196	6.1
	Băbească Neagră	197	202	7.6
	Fetească Neagră	-	-	-
21.09	Fetească Albă	-	-	-
	Fetească Regală	154	210	5.1
	Băbească Gri	230	202	5.2
	Băbească Neagră	195	210	6.8
	Fetească Neagră	-	-	-
28.09	Fetească Albă	-	-	-
	Fetească Regală	-	-	-
	Băbească Gri	228	220	4.1
	Băbească Neagră	193	222	5.3
	Fetească Neagră	-	-	-

For Feteasca regală, full maturity takes place around 7th of September, when the mass of 100 berries reaches 159 g, then drops very little, to 154 g, a value observed on 21st of September, when the sugars' concentration increased,

compared to the full maturity value, from 196 g/L, to 210 g/L and the acidity decreased from 6.1 g/L to 5.1 g/L.

Băbească gri records maximum value of the mass of 100 berries in the same period as Fetească regală, respectivelly 240 g. It decreases to 228 g, sugar concentration increases from 188 g/L to 220 g/L, and acidity drops from 6.5 g/L to 4.1 g/L tartaric acid by 28th September, for harvest.

Băbească neagră reaches full maturity over the same period, reaching a maximum mass of 100 berries (198 g) on 7th of September, then decreases to 193g until 28th of September, when the sugars increase from 189 g/L to 222 g/L and the acidity decreases from 9.1 g/L to 5.3 g/L tartaric acid.

Fetească neagră reaches maturity around 31st of September, just like Fetească albă. It reaches a mass of 100 berries of 133 g, then by overmaturation it decreases to 126 g and the variety reaches 252 g/L sugars, 5.5 g/L tartaric acid, being the variety with the highest sugar concentration in year 2015.

In 2016, samples were taken on 16th, 22nd and 29th of August, 5th, 12th, 19th and 26th of September.

Table 2

Maturation dynamics of grapes in 2016

Date	Grape variety	Mass of 100 berries	Concentration of sugars g/L	Total Acidity g/L tartaric acid
16.08	Fetească Albă	121	172	8.9
	Fetească Regală	125	154	11.2
	Băbească Gri	163	119	18.4
	Băbească Neagră	148	119	22.7
	Fetească Neagră	120	160	13.4
22.08	Fetească Albă	129	186	6.6
	Fetească Regală	131	160	10.7
	Băbească Gri	186	143	13.7
	Băbească Neagră	170	138	16.8
	Fetească Neagră	132	197	10.2
29.08	Fetească Albă	134	199	5.9
	Fetească Regală	146	168	8.2
	Băbească Gri	188	148	12.6
	Băbească Neagră	180	152	12.1
	Fetească Neagră	130	220	9.6
05.09	Fetească Albă	130	210	4.8
	Fetească Regală	151	176	7.1

	Băbească Gri	191	164	9.6
	Băbească Neagră	182	174	10.5
	Fetească Neagră	-	-	-
12.09	Fetească Albă	129	218	4.5
	Fetească Regală	154	188	6.5
	Băbească Gri	194	180	8.1
	Băbească Neagră	189	187	7.2
	Fetească Neagră	-	-	-
19.09	Fetească Albă	127	220	4.4
	Fetească Regală	152	202	5.9
	Băbească Gri	192	188	7.6
	Băbească Neagră	185	204	6.8
	Fetească Neagră	-	-	-
26.09	Fetească Albă	-	-	-
	Fetească Regală	-	-	-
	Băbească Gri	190	202	7.1
	Băbească Neagră	-	-	-
	Fetească Neagră	-	-	-

In Fetească albă variety, maturity occurs approximately in the same period as the previous year, but it recorded a decrease in the mass of 100 berries, from 148 g to 134 g, reaching up to 127 g at harvest. The sugar concentration reaches from 220 g/L (19th of September), a value close to that recorded in 2015. Acidity is slightly more pronounced, reaching 5.9 g/L at maturity, then decreasing to 4.4 g/L at harvest.

At Fetească regală, the ripening and harvesting period and the values of the three parameters remain very close to those of the previous year. Thus, the maturity is recorded on 12th of September, harvesting takes place with a one week difference, on 19th of September. Concentration of sugars increases from 188 g/L to 202 g/L, acidity drops from 6.5 g/L to 5.9 g/L tartaric acid, and the mass of 100 berries drops from 154 g to 152 g.

In the case of Băbească gri variety, we noticed significant differences in acidity and berry mass values. The acidity at maturity is very high, 8.1 g/L tartaric acid and until harvest it reaches 7.1 g/L tartaric acid, higher than the one recorded in the previous year. The mass of 100 berries is lower, 194 g at maturity and 190 g at harvest, and the sugars reach a maximum concentration of 202 g/L.

Băbească neagră grapes no longer have any variations after 19th of September and reaches full maturity a week earlier on 12th of September.

Compared to the previous year, even higher acidity values were obtained, while, for 100 berries and sugars, they decreased. With a mass of 189 g, sugars of 187 g/L and an acidity of 7.2 g/L tartaric acid, overmaturation leads to a mass of 185 g, sugars of 204 g/L and acidity of 6.8 g/L tartaric acid.

Fetească neagră progresses faster in 2016 than in 2015, full maturity takes place on 22nd of September and after the 29th, it does not record any variation. As with the other black varieties analyzed, we noticed a lower mass of 100 berries, fewer sugars and more pronounced acidity. Thus, at maturity it reaches 10.2 g/L tartaric acid, then this value decreases to 9.6 g/L tartaric acid. The maximum sugar value is 220 g/L at harvest time.

CONCLUSIONS

Generally, comparing the values obtained from analyzes carried out on samples collected in the two years, we noticed higher acidity values in 2016, while in 2015, sugar concentrations were higher. As for the mass of 100 berries, it had lower values in 2016, as rainfall was scarce during the growing season.

In the conditions of the Dealu Bujorului vineyard, during the two years in which the study was conducted, technological maturity was reached after the full maturity. It is also very important to follow acidity in order to make possible corrections of the acidity of musts and even of wines that are poorer in acids or of too high acidity and to appreciate the quality of the wines to be obtained: lower acidity wines are flat, unpleasant to taste, and the too acid ones are perceived as harder to drink.

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