AGROBIOLOGICAL AND TEHNOLOGICAL CHARACTERIZATION OF SOME NEWTABLE GRAPES VARIETIES GROWN IN THE COPOU IASI WINE CENTER

CARACTERIZAREA AGROBIOLOGICĂ ŞI TEHNOLOGICĂ A UNOR SOIURI NOI DE VIŢĂ DE VIE CULTIVATE ÎN CENTRUL VITICOL COPOU IAŞI

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Abstract. *Climatic factors of the ecosystem directly influence the vegetative development of the grapevine, the production obtained and its quality. The present paper aimed the agrobiological and technological characterization of two varieties for table grapes, Azur and Transilvania, created in Romania, cultivated in the climatic area of the Copou – Iasi wine center,productive and ameliorating valuable varieties, but less widespread in the N-E area of the country. The study was carried out in the period 2018-2019, being made observations and determinations on the vegetation phenophases, grape yield and quality, in relation to the ecological factors. The analysed grapevine varieties riped the grapes in the first half of September (IVth epoch), being notable for their good fertility, high yield and quality, efficiently capitalizing the climatic and pedological resources of Iasi vineyard.*
Key words: table grapes, new varieties,phenology, grape yield

Rezumat. *Factorii climatici din ecosisteminfluențează în mod direct dezvoltarea vegetativă a viței de vie, producția obținută şi calitatea acesteia. Lucrarea de față avut ca scop caracterizarea agrobiologică şi tehnologică a două soiuri pentru struguri de masă create în țara noastră, Azur şi Transilvania, cultivate în arealul climatic al centrului viticol Copou - Iaşi, soiuri valoroase productiv şi ameliorativ,dar mai puțin răspândite în zona de N-E a țării. Studiul s-a desfăşurat în perioada 2018-2019, fiind efectuate observații şi determinări privind parcurgerea fenofazelor de vegetație, productivitatea şi calitatea recoltei, în relație cu factorii ecologici. Soiurile de viță de vie analizate aumaturat strugurii în prima jumătate a lunii septembrie (epoca a IV-a), remarcându-se prin fertilitate bună, producții ridicate şi de calitate, valorificând eficient resursele climatice şi pedologice ale Podgoriei Iaşi.*
Cuvinte cheie: struguri de masă,soiuri noi, fenologie, productivitate.

INTRODUCTION

Knowing the agrobiological and technological profile of grape cultivars is indispensable for the selection and maintenance in culture of genotypes with

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superior features in terms of grape yield and quality, as well as for the expansion in culture of varieties well adapted to climate conditions and corresponding to consumer requirements (Filimon *et al*., 2016). Grapevine genotypes behave differently under the influence of climate change, depending on their ability to adapt to higher temperatures and drought stress (Creasy and Creasy, 2009).

The aim of this study was to evaluate the agrobiological and technological characteristics of the new table grape autochthonousvarieties Azur and Transilvaniain the pedoclimatic conditions of the N-E area of Romania (Iasi vineyard),in order to capitalize the genetic potential of these varieties and to a better understandingof their capacity to adapt to the climatic conditions of the mentioned vineyard.

MATERIAL AND METHOD

The study was conducted in the years 2018 and 2019, the plant material being represented by two Romanian varieties for table grapes: Azur (Coarnă neagră × Cardinal), created at the Drăgăşani Grapevine Research Station and Transilvania (Black rose × Cardinal), created at the Cluj-Napoca Horticultural Research Station.

The vineyard soil is chernozem, the planting distances are 2.2/1.2 m in the semi-high cultivation system, semi-protected over the winter.The research focused on observations and determinations regarding the vegetation phenophases, productivity, quantity and quality of the crop, in direct relation with ecological factors. Total acidity (g/L tartaric acid) and sugars (g/L) were determined according to OIV (2016).

RESULTS AND DISCUSSIONS

From the climatic point of view, in the period 2018 - 2019 the average of annual temperatures were higher than the multiannual (30 years) value (9.8 °C) reaching10.6°C, in 2018 and 11.6°C, in 2019. Winter of the year 2018 was classified as hot, due to higher temperature registered, with a maximum airtemperatureof 10.7 °C, registered in January and an absolute minimum temperature of −19.7 °C, recorded on 24.01.2018. Winter of the year 2019 was thermally normal, the absolute minimum temperature not exceeding −12.0°C, without affecting the viability of winter buds.

In the Copou - Iaşi wine center, the year 2018 was considered normal in terms of air temperature and amount of precipitations.However, rainfall were unevenly distributed during the vegetation period, with more than half of the annual amount recorded in the June and July (403.8 mm, from a total of 727.8 mm).The year 2019 was classified as dry, with a rainfall deficit. The presence of high temperatures and rainfall during the vegetation period favored the harmonious development of the foliar apparatus, with a positive influence on sugar and phenolic compounds accumulation in grapes.

The climatic conditions directly influenced the vegetation phenophases, starting with budding, between 16th and 27thApril, followed by flowering, between 24thMay and 12thJune and grape harvest, between 23rdJuly and 3rdAugust. The data presented in table 1 indicates that in the year 2018, under the influence of

annual meteorological factors, the vegetation phenophases occurred with 2 to 15 days earlier, compared to 2019.

Table 1

Phenological data of Azur and Transilvaniavarieties in Iasi vineyard (2018-2019)

Variety	Azur		Transilvania	
Phenophase / Year	**2018**	**2019**	**2018**	**2019**
Budburst	16.IV	25.IV	19.IV	27.IV
Blooming	24.V	09.VI	26.V	12.VI
Veraison	23.VII	03.VIII	25.VII	03.VIII
Grape maturation	11.IX	18.IX	15.IX	19.IX
Leaf fall	5. XI	7.XI	5. XI	7.XI

In the conditions of the Copou - Iaşi viticultural ecosystem the technological maturity of grapes occurred in the first half of September, the harvesting being established at a gluco-acidimetric index between 25 and 30. The cycle of the active vegetation period totaled a number of 183 - 195 days, ending with the normal cessation of metabolic processes (leaf fall), between 5th and 7th November.

In the period 2018-2019, the grapes weight of Azur variety was 335 g, the weight of 100 berries was 350-390g and the value of the berry index, represented by the number of berries per 100 g of grapes, was 27.11, confirming the inclusion of this genotype in the category of table grape varieties (tab. 2).

Table 2

The main physico - chemicaland productivity characteristics of the studied varieties (2018-2019)

Variety / Features /Year	Azur			Transilvania		
	2018	**2019**	**Mean**	**2018**	**2019**	**Mean**
Grape weight (g)	318.00	352.00	335.00±24.04	430.00	518.00	474.00±62.23
Rachis weight (g)	8.00	11.00	9.50±2.12	11.30	12.50	11.90±0.85
Berries weight per cluster (g)	310.00	341.00	325.50±21.92	418.70	505.50	462.10±61.38
Weight of 100 berries (g)	350.00	390.00	370.00±28.28	657.00	710.00	683.50±37.48
Berry weight (g)	3.50	3.90	3.70±0.28	6.50	7.10	6.80±0.42
Skin weight (g)	20.00	22.00	21.00±1.41	30.00	32.00	31.00±1.41
Pulp weight (g)	318.00	355.00	336.50±26.16	612.00	662.00	637.00±35.36
Seeds weight (g)	12.00	13.00	12.50±0.71	15.00	16.00	15.50±0.71
Structure index	38.75	31.00	34.88±5.48	37.05	40.44	38.75±2.40
Composition index	9.94	10.14	10.04±0.14	13.60	13.79	13.70±0.13
Berry index	28.57	25.64	27.11±2.07	15.38	14.08	14.73±0.92
Yield (kg/vine stock)	3.82	4.22	4.02±0.28	4.73	5.18	4.96±0.32
Sugars (g/L)	175.00	172.00	173.50±2.12	165.00	153.00	159.00±8.49
Total acidity (g/L tartric acid)	5.79	5.58	5.69±0.15	5.87	6.07	5.97±0.14
Sugar/ acidity ratio	30.22	30.82	30.52±0.42	28.11	25.20	26.66±2.06

In the case of the Transilvania variety, the grape weight exceeded 430 g, reaching 518 g in 2019, with an average berry weight of 6.80 ± 0.42 g. The value

of the structure index, represented by the ratio between the berries weight and the rachis weight, was 38.75± 2.40, specific to large berry table grape varieties.

For both studied varieties, the physico-chemical characteristics of grapes, including grape wheight and sugar accumulation, were higher compared to the data presented by Stroe (2012), in the ecopedoclimatical conditions of western (Cluj-Napoca) and southern (Drăgăşani and Bucharest) wineyards of Romania.

In the climatic conditions of the Copou - Iaşi wine center, the average production per grapevine stock of the studied varieties varied between 3.82 kg (Azur variety) and 5.18kg for the Transilvania variety.

The potential of sugar accumulation in must at grape full maturity showed values specific to varieties for table grapes, respectively 173.50 ± 2.12 g/L for the Azur variety and 159.00 ± 8.49 g/L for the Transilvania variety.

CONCLUSIONS

1. The climatic conditions in the reference years have positively influenced the development of vegetation phenophases of the analyzed table grape varieties, high temperatures during the summer and the presence of precipitations favoring the maturation of grapes, with a balanced sugar/acidity ratio.

2. In the climatic conditions of the Copou - Iaşi wine center, the Transilvania variety was characterised by high yield and quality grapes.

3. The Azur variety was defined by an earlier maturation of grapes, compared to the Transilvania variety and medium-sized grapes (335g), with anaverage sugar concentration of over 173 g/L.

4. The experimental results obtained indicate that the studied varieties can successfully complete the conveyor of table grapes varieties in the N-E area of Romania.

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