COMPARATRIVE STUDY OF SEEDLESS GENOTYPES PRESENTED IN GRAPEVINE GENOFOND OF THE REPUBLIC OF MOLDOVA

STUDIU COMPARATIV AL GENOTIPURILOR APIRENE ÎN GENOFONDUL VITICOL AL REPUBLICII MOLDOVA

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Abstract. *The results of estimation of agrobiodiversity of one fragment from the genetic resources with diverse level of seedless, accumulated in grapevine Genofond of the Republic of Moldova are presented. It was established the presence of large range of characters favorable for involving of genotypes in breeding programs: attractiveness and large size of bunch and berry; very early and late time of full maturity of the berry; advanced resistance to winter conditions. Some of cultivars have all characteristics necessary for submission to State Commission for Crop Variety Testing in order to be included in the list of cultivars admitted for multiplication and cultivation in Republic of Moldova (e.g. Apiren roz extratimpuriu, Călina). By the time of full maturity of the berry were revealed: very early and early - Apiren roz extratimpuriu, Interlaken, Perlette; medium – Călina and VIII-1-24; late - XI-37-38.*

Key words*:* grapevine, seedless, resistance

Rezumat. *În lucrare sunt prezentate rezultatele estimării agrobiodiversităţii unui fragment din resursele genetice cu grad diferit de apirenie acumulate în Genofondul viticol al Republicii Moldova. A fost stabilită prezenţa unui spectru larg de caractere favorabile antrenării genotipurilor în programele de ameliorare genetică: aspect atractiv şi mărime strugure şi bob; maturare de consum foarte timpurie şi târzie; rezistenţă avansată la condiţiile de iernare. Unele soiuri întrunesc toate însuşirile necesare prezentării în Comisia de Stat de Testare a Soiurilor de Plante în scopul includerii lor în lista soiurilor admise pentru multiplicare şi cultivare în Republica Moldova (de ex., Apiren roz extratimpuriu, Călina). După perioada de maturare de consum a boabelor s-au evidenţiat: foarte timpurii şi timpurii - Apiren roz extratimpuriu, Interlaken, Perlette; medii - Călina şi VIII-1-24; tardive –XI-37-38.*

Cuvinte cheie*:* viţă de vie, apirenie, rezistenţă

INTRODUCTION

The list of grapevine varieties admitted for multiplication and cultivation in the Republic of Moldova includes six seedless varieties (Registrul soiurilor de plante al Republicii Moldova, 2009), five of them are the creations of autochthonous ameliorators. Varieties Kishmish lucistyi, Apiren alb, Apiren roz (with early-medium time of full maturity o berries) and Kishmish moldovenesc (with late time of full maturity of berries) are used for the production of fresh grapes (Damian D. et al., 1997; Savin Gh. et al., 2007). Varieties Romulus and Apiren negru

de Grozesti have respectively medium and medium-late time of full maturity. Was established the possibility of technological processing of these varieties. Concerning the degree of resistance to abiotic and biotic unfavorable factors of environment, and especially to winter conditions, can be distinguished susceptible cultivars Kishmish lucistyi and Kishmis moldovenesc (*V.vinifera*) and varieties with relative or advanced resistance – Apiren alb, Apiren roz and Apiren negru de Grozesti. At the same time world tendency in increasing the rate of consumption of fresh seedless grapes and the necessity in diversification the products of technological processing of grapes, requires future amelioration and completion of existing assortment. Preliminary evaluation of some seedless genotypes, accumulated at the Institute, denote the possibilities to achieve these objectives.

MATERIAL AND METHOD

The estimations were performed during the 2005-2009 in Institute's Genofond, on the group of seedless varieties and elites, various by country of origin, size and aspect of bunch, color of the berries: Apiren alb, Apiren negru de Grozeşti, Apiren roz, Apiren roz Basarabean, Apiren roz extratimpuriu, VIII-1-24, XI-37-38 (from Republic of Moldova), Călina (from Romania), Centennial seedless, Flame seedless, Interlaken, Perlette, Romulus (from USA) and Mecita (from Ukraina).

Soil and climatic conditions on experimental plots corresponds to the viticulture zone Codru, characterized by mean length of period of active vegetation equal to 175-185 days, during which is accumulated the sum of effective temperatures equal to 3000-3200°C. The average temperature of the warmest month (June) is 21,0…22,0°C and of the coldest month (January) is -3,5…-4,5°C. Annual sum of atmospheric precipitations is 400-525 mm, from which 265-315 mm during the period of active vegetation. Some of the years of studies had been characterized by unfavorable climatic conditions for grapevine: the temperatures under -30°C during the winter of 2005-2006, prolonged drought and temperatures under +40°C in the summer of 2007.

Applied agrotechnical methods correspond to recommended ones for industrial vineyards. Ampelographic descriptions, agrobiological estimations were performed according the OIV Descriptor list for grape varieties and Vitis species (2009). For statistical data manipulation was used the software STATGRAPHICS Plus 5.1.

RESULTS AND DISCUSSIONS

The selection of genotypes for study was performed in order to identify the premises for diversification of existing assortment, inclusive of seedless varieties: expansion of the period of consumption of fresh grapes with both very early and late time of full maturity of the berries; multiple biological resistance to abiotic and biotic unfavorable factors of environment; ecologically pure products.

For the studied genotypes the length of the period of bud burst – physiological maturity of berries vary between 119-173 days. Bud burst begun between 14 of April and 8 of May and time of full bloom between 1 and 24 June. The very early and early time of physiological maturity of berries was established for varieties Interlaken, Apiren roz extratimpuriu, Flame seedless, followed by Centennial seedless and Kismish lucistyi (the second decade of August). The varieties Calina and Mechita begin the maturity from the third decade of August

and Romulus, Apiren roz, Apiren negru de Grozesti and elite VIII-1-24 - from the first decade of September. Elite XI-37-38 has late time of physiological maturity of berries. In table 1 the fertility and productivity of studied genotypes are presented.

Table 1

Fertility and productivity of studied seedless genotypes (mean value for 2005-2009)

Name of genotype	% of viable buds	Coefficients of fertility		Indices of productivity	
		absolute	relative	absolute	relative
Apiren alb	62,7	1,15	0,61	413,20	219,17
Apiren negru de Grozeşti	87,3	1,52	1,22	325,13	260,96
Apiren roz	71,5	1,26	0,88	475,52	332,11
Apiren roz Basarabean	79,0	1,62	1,26	435,78	338,94
Apiren roz extratimpuriu	82,6	1,21	0,78	147,02	94,77
Călina	52,8	1,32	0,65	467,15	230,04
Centennial seedless	21,1	1,25	0,60	410,25	196,92
Flame seedless	50,3	1,12	0,80	428,06	305,76
Interlaken	53,6	1,50	1,02	239,40	162,79
Kiş-miş lucistâi	32,4	1,20	0,50	378,00	157,50
Mecita	55,2	1,50	0,82	521,10	284,87
Perlette	35,3	1,21	0,60	548,86	272,16
Romulus	63,3	1,48	0,92	444,44	276,28
VIII-1-24	25,6	1,05	0,60	437,33	249,90
XI-37-38	47,2	1,17	0,72	949,69	584,42

The high resistance to winter conditions (according the % of viable buds after winter) was established (Figure 1) for homologated varieties Apiren negru de Grozesti, Apiren roz, Apiren roz Basarabean and for newly studied Apiren roz extratimpuriu. Very sensible to winter conditions are genotypes Centennial seedless, Kishmish lucistyi and VIII-1-24. The remaining genotypes have intermediary position by resistance to winter conditions, but ensure obtaining of yield in unfavorable years. Significant differences, relative to general mean value of viable buds, is attested for Apiren negru de Grozesti, Apiren roz extratimpuriu and Apiren roz Basarabean – in direction of increasing the percent of viable buds, and for Centennial seedless, Kishmish lucistyi, Perlette and VIII-1-24 – in direction of decreasing the percent of viable buds.

Concerning the weight of single bunch, the majority of genotypes have medium bunches (300-450 grams). The elite XI-37-38 have the bunches with high or very high weight (up to 812 grams), as well as medium berry (4,5 grams). The remaining genotypes have little or little-medium weight of berry.

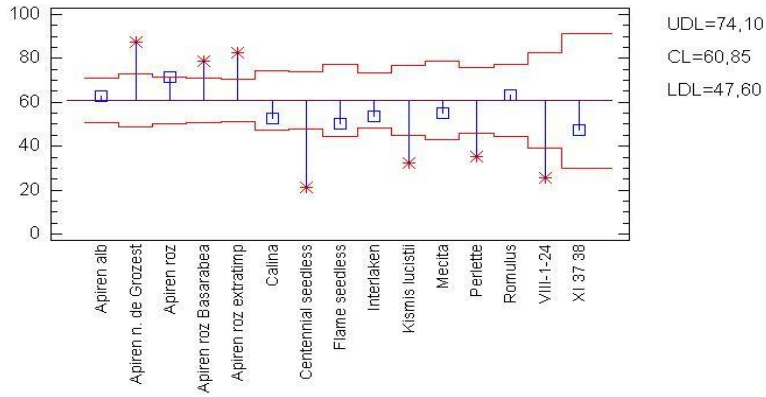

Fig. 1. Mean value (for 2005-2009) for percent of viable buds after winter

Must be noted the presence of cultivars with specific flavor of berry (slightly Muscat or other attractive specific aroma), increasing its commercial value.

CONCLUSIONS

1. The presence of wide diversity of characters, separately or in the same genotype, favorable for future amelioration of seedless grapevine assortment, was constated: very early and early time of physiological maturity of berries (Apiren roz extratimpuriu, Interlaken); advanced or relative resistance to winter conditions (Apiren roz extratimpuriu, Calina); medium – high weight of single bunch; presence of specific aroma.

2. The diversity of valuable characteristics of studied genotypes allows foundation of pre-breeding field and initiation of pre-breeding, and simultaneously or late of breeding programs in order to create new, preponderantly seedless varieties, with complex qualitative properties.

3. For varieties Apiren roz extratimpuriu and Călina the files a prepared to be passed in State Commission for Test of Plant Varieties.

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