AGROBIOLOGICAL CHARACTERISTICS OF SOME SEEDLESS CULTIVARS AND ELITES FROM NIVV GENOFOND

CARACTERISITCI AGROBIOLOGICE ALE UNOR SOIURI ŞI ELITE APIRENE DIN GENOFONDUL I.N.V.V. DIN R. MOLDOVA

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Abstract. *Seedless cultivars and elites from Genogond of National Institute for Viticulture and Oenology were studied according to agrobiological, technological and ampelographic characters. It was establish the diversity of genotypes by ripening period, berry size, firmness of flesh as well as by resistance to winter conditions. These cultivars permit to diversify the assortment for table grape consumption and, according the potential of sugar accumulation, it is possible technological processing of grapes for production of stewed fruits, jam, raisins.*

Rezumat. *S-a efectuat studiul agrobiologic, tehnologic şi ampelografic a unor soiuri şi elite apirene prezente în Genofondul Institutului Naţional pentru Viticultură şi Vinificaţie. S-a constatat diversitatea genotipurilor după perioada de coacere, mărimea bobului, consistenţa pulpei, cât şi după rezistenţa la condiţiile de iernare. Soiurile studiate permit diversificarea sortimentului de soiuri cu struguri pentru masă, iar reieşind din potenţialul de acumulare a zăharurilor este posibilă procesarea tehnologică a strugurilor pentru producerea compoturilor, dulceţei, stafidelor.*

Viticultural assortment for the table grapes can be diversified and improved through the cultivars with seedless qualities. Taking into consideration the permanently growing requirements of the consumers for seedless grapes for fresh consumption, stewed fruit, jam, raisins it were performed researches on agrobiological characters of the cultivars and their behaviour in different conditions of the ecosystems (Damian D. et al., 1997), creation of new seedless varieties with resistance to unfavorable conditions of environment (Savin Gh., 2005). Though they have high demand on market and some advantages in comparision with the grapes with seeds, area ocupied by seedless varieties in the Republic of Moldova is very limited. They are necessary studies of seedless cultivars, introduced during the last 15 years in Genofond of INVV (Savin Gh., Popov A., 2005) in order to elaborate new proposals for improvment of local grapevine assortment or their usage in genetic amelioration of grapevine.

MATERIAL AND METHOD

The research took place in 2006-2007. In study were included cultivars and elites that were introduction in the viticulture Genofond of INVV (Chişinău) during the last 15 years (Table 1). The plantation distances are of 1,5/2,5-3 m. and 1,75/2,5-3m using the system of half height stem cultivation, not protected during the winter period. The plantation middle age is of 15 years. The bush conduct, the agrofitotechnical work took place according to the norms in force.

Ampelographic description were effectuated according international methodology (Bulletin I.C.V.V., 1988; Ţîrdea, Rotaru, 2003). Also were determined the fertility coefficients and productivity index, the frost resistance qualities, the sugar and acidity content in the must, the technological index of grapes and berries (according Ampelografia RPR, 1959). As reference was taken homologated cultivar Kişmiş lucistîi.

Table 1

The main ampelographic characters of seedless sorts and elites (Genofond INVV)

Cultivar name	Country of origin	Characters of bunch		Characters of berry		
		shape	size	shape	size	skin colour
Călina	Romania	Cylinder-conical	Medium	Obtuse-ovate	Medium	Pink
Centennial Seedless	USA	Cylinder	Large	Narrow elliptic	Large	Green-yellow
Flame Seedless	USA	Cylinder-conical	Medium	Oblate	Small	Dark red
G-V-6	Bulgaria	Cylinder-conical	Medium-large	Narrow elliptic	Medium-large	Green with pink spots
Kişmiş lulucistîi	Moldova	Cylinder-conical	Medium-large	Narrow elliptic	Large	Pink
Mecita	Ukraine	Conical	Medium	Ovate	Small	Pink
Perlon	USA	Conical	Large	Obtuse-ovate	Large	Red intense-purple
TAD-V06	USA	Conical	Medium	Oblong	Large	Green-yellow

The research period corresponded to years with complicated climatic conditions – unfavorable for viticulture winter of 2005-2006 and prolonged drought in 2007 aggravated by high temperature in the summer up to 40°C.

RESULTS AND DISCUSSIONS

The growth vigor of the vine was influenced both the climate conditions and genetic potential of cultivars. The rate of affected buds after winter condition was the least for cultivars Călina (36,1%) and TAD-V06 (38,3%) and the greatest for Kişmiş lucistîi (85,5%), Perlon (78,1%) and Centennial seedless (77,6%). As a result Călina had a big vegetative growth, while Kişmiş lucistîi, Centennial seedless and Perlon had a weak beginning in vegetation.

The estimation of agrobiological peculiarities allows to distinguish and to select the cultivars by the development of phonological stages from bud burst to maturity of the berry (Table 2). The earliest bud burst was established for cultivars Călina, Mecita and TAD-V06, while for Centennial seedless – by 6-7 days late in comparison to reference cultivar Kişmiş lucistîi. It was not essential differences between the beginnings of bloom, but there are difference concerning the duration of this stage – from 4 days (for Călina and Flame seedless) to 7-8 days (for Perlon and G-V-6).

The period of grape ripening for studied cultivars is from 15th of July (Flame seedless) to 5th of August (G-V-6). The stage of the maturity of berries occurs at 16th – 18th of August for the cultivars Flame seedless, Centennial Seedless and TAD-V06, followed by Kişmiş lucistîi and Călina (22-23 August). At the end of August reach the necessary conditions for consumption cultivars Perlon and Mecita. The most tardive

maturity reach the elite G-V-6 – in the second decade of September. The differences that were revealed during these two years of studies allowed us to do the preliminary classification of cultivars in the occurrence of the stage of full maturity of the berries: Flame seedless, Centennial seedless, Kişmiş lucistii - early-medium; Mecita, Perlon, Călina – medium and G-V-6 – medium-late. This distribution allows the diversification of the assortment of grapes for fresh consumption from the middle of August to the middle of September.

Table 2

The development of phenological stage of seedless cultivars (Genofond of INVV, mean value for 2006-2007)

Cultivar name	Bud burst	Bloom		Ripening	Full maturity of the berries	Leaves falling	Vegetation period, days
		begi-ning	end				
Călina	28.04	04.06	08.06	23.07	23.08	21.10	175
Centennial seedless	06.05	01.06	07.06	21.07	18.08	21.10	169
Flame seedless	02.05	01.06	05.06	15.07	16.08	22.10	174
G-V-6	25.04	02.06	10.06	01.08	12.09	20.10	178
Kişmiş lulucistîi	30.04	03.06	09.06	05.08	22.08	22.10	175
Mecita	28.04	01.06	06.06	25.07	29.08	22.10	176
Perlon	02.05	04.06	11.06	22.07	28.08	21.10	171
TAD-V06	28.04	02.06	08.06	20.07	18.08	22.10	172

During these years the leaves falling was caused by frosts in the autumn.

In order to estimate the quality of grapes and, in particular, as raw material for food industry, were done the technological estimation of cultivars (Table 3).

Table 3

The mechanical analysis of the grapes of seedless cultivars and elites (Genofond of INVV, mean value for 2006-2007)

Cultivar name	The grape weight, g	The weight of 100 berries, g	Sugar content of must, g/dm^3	Acid content of must, g/dm^3	Must volume per 1 kg of grapes, l	Husks of grapes per 1 kg of grapes, g
Călina	347,4	207,1	211	6,2	0,721	254,3
Centennial seedless	300,4	291,4	215	7,7	0,591	207,1
Flame seedless	416,4	194,5	228	7,5	0,606	226,3
G-V-6	513,6	462,8	191	6,1	0,662	196,7
Kişmiş lucistîi	254,1	384,9	215	6,2	0,644	345,3
Mecita	260,0	182,4	200	4,2	0,604	331,0
Perlon	426,5	463,3	143	6,7	0,572	191,7
TAD-V06	284,8	278,0	198	7,2	0,593	206,8

As a result of the analyses was found out that the mean weight of the grapes is between 254 and 513 gr. Cultivars Perlon, Flame Seedless and G-V-6 have medium-high weight of the grapes, while Mecita and Kişmiş lucistîi - the smallest. The mean weight of a hundred berries at the studied sorts varies between 182,4 gr. (Mecita) and 463 gr. (Perlon).

Sugar content in must vary between 143 g/dm3 for cultivar Perlon and 228 g/dm3 for Centennial seedless. As a result of the organoleptic evaluation of the fresh grapes all cultivars were high appreciated. The highest estimation had the cultivars with big and crispy berries as Centennial seedless and Kişmiş lucistîi - 8,7; Flame seedless and TAD-V06 - 8,5. The rest of the cultivars were appreciated by marks from 8,2 to 8,4. Obtained results denote the possibility to use these cultivars both for production of grape for fresh consumption and for technological processing for production of stewed fruits and jam.

CONCLUSIONS

Between studied seedless grapevine cultivars and elites the most resistant to winter condition were remarked Călina and TAD-V06, while the cultivars Kişmiş lucistîi and Centennial seedless were the most sensible.

Preliminary classification of cultivars by stage of full maturity of the berries is the following: Flame seedless, Centennial seedless, Kişmiş lucistii - early-medium; Mecita, Perlon, Călina – medium and G-V-6 – medium-late, that allows the diversification of the assortment of grapes for fresh consumption from the middle of August to the middle of September.

Variation of sugar content in must between 143 g/dm3 (Perlon) and 228 g/dm3 (Centennial seedless) denote the possibility to use these cultivars both for production of grape for fresh consumption and for technological processing for production of stewed fruits and jam.

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