THE AMPELOGRAPHIC COLLECTION BELONGING TO THE FACULTY OF HORTICULTURE IAŞI, AS VITICULTURAL SOURCE OF GERMPLASM

COLECŢIA AMPELOGRAFICĂ A FACULTĂŢII DE HORTICULTURĂ IAŞI, SURSĂ DE GERMOPLASMĂ VITICOLĂ

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Abstract. *Ampelographic collection of Faculty of Horticulture was founded in 1985, registered in the International Catalogue of Ampelographic Collections, since 1994. Recognized as an important center for the preservation of genetic diversity of vines and source of germplasm, currently, collection occupies an area of 1.8 hectares and comprises 175 species and varieties belonging to the Vitis genus, of which 114 varieties belonging to Vitis vinifera, 32 interspecific direct producers hybrids and 29 species, varieties and clones of rootstocks. Initially created for teaching purposes, ampelographic collection is a valuable applicative base for research, into its territory it runs a series of experiments, necessary to research contracts, and for the preparation of license, disertation and doctoral thesis or for elaboration of scientific papers.*

Key words: ampelographic collection, grape varieties, genetic resources, Iaşi.

Rezumat. *Colecţia ampelografică a Facultăţii de Horticultură din Iaşi, a fost înfiinţată în anul 1985, fiind înscrisă încă din anul 1994 în Catalogul Internaţional al Colecţiilor Ampelografice. Recunoscută ca un important centru de conservare a diversităţii genetice a viţei de vie şi sursă de germoplasmă, în prezent colecţia ocupă o suprafaţă de 1,8 ha şi cuprinde un număr de 175 de specii şi soiuri ale genului Vitis, din care: 114 soiuri aparţinând speciei Vitis vinifera; 32 hibrizi producători direcţi interspecifici şi 29 specii, soiuri şi clone de viţe portaltoi. Creată iniţial în scop didactic, colecţia ampelografică constituie şi o valoroasă bază aplicativă a cercetărilor în domeniu, pe teritoriul său desfăşurându-se o serie de experienţe necesare contractelor de cercetare, întocmirii lucrărilor de licenţă, diseraţie şi doctorat sau pentru elaborarea unor lucrări ştiinţifice.*

Cuvinte cheie: colecţie ampelografică, soiuri de struguri, genofond, Iaşi.

INTRODUCTION

Ampelographic collection of the Faculty of Horticulture belonging to the University of Agricultural Sciences and Veterinary Medicine (UASMV Iasi), is located in the CIa european vine growing zone being part of V.

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Adamachi agricultural farm Iasi, and it has as geographic coordinates 27°53' east longitude and 47°09' north latitude, taking advantage of a favorable microclimate for growing vine (fig. 1).

Wishing to integrate education with research and production, in 1985, came the need to collect valuable indigenous genetic resources in a new ampelographic collection. This, has been extended every year, with new romanian and cosmopolitan creations and rootstock varieties, with special genetic value. Today is one of the major centers of vine biodiversity in Romania, not by the area they occupy, but through the important number of species and varieties that it contains.

This study, is a brief account of the main groups of species and varieties of vines, existing in the ampelographic collection belonging to the Faculty of Horticulture Iasi, adapted to specific climatic conditions of this area.

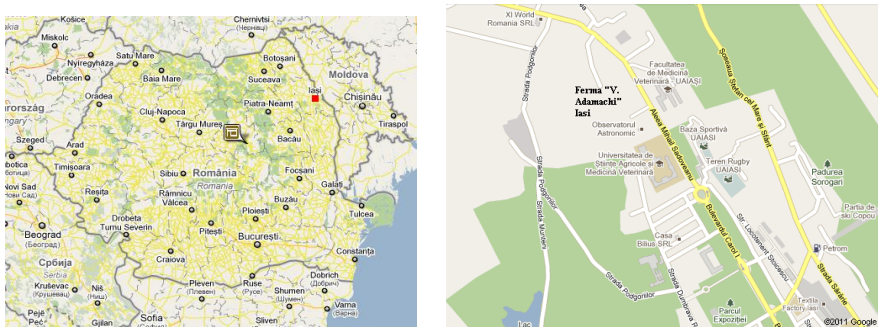

Fig.1 - Location of the ampelographic collection of Faculty of Horticulture Iasi, Romania (source: Google maps)

MATERIAL AND METHOD

Ampelographic collection of the Faculty of Horticulture, belonging to Experimental Teaching Station of USAVM Iaşi, occupies an area of 1.8 hectare, and is structured, on the main production, in: table grapes varieties with extra early and early maturation, table grapes varieties with medium maturation, table grapes varieties with late maturation, seedless varieties, white table wines varieties, white quality wines varieties, rose and red table wines varieties, rosé and red quality wines varieties, hybrids direct producers for table grapes, hybrids direct producers for wine grapes, rootstock species and varieties.

The land, where was established the ampelographic collection, has an altitude of 150-160 m, S-SV exposure, 6-7% slope inclination and rows orientation is the N-S direction. Cambic chernozem soil is formed on the seam of shale sands, deep ground water are at over 2.5 - 3 meters depth.

Ampelographic collection of Faculty of Horticulture, was founded in 1985, initially comprising: 21 varieties of table grapes, 3 seedless varieties, 34 varieties of grapes for white wines, 3 varieties for aromatic wines, 17 varieties of grape for red wines and 28 rooted rootstocks. In 1990, the collection was supplemented with another 12 varieties of table grapes and 26 direct producers

hybrids. Currently, ampelographic collection includes a number of 175 species and varieties, belonging to the genus *Vitis*, of which 114 varieties of the *Vitis vinifera* species, 32 interspecific direct producers hybrids and 29 species, varieties and clones of rootstocks. Each genotype is represented by 20 plants (*Vitis vinifera* varieties and direct producers hybrids), and rootstock vines in number of 8 plants.

Among *Vitis vinifera* varieties, 39 are for table grapes, 3 varieties of seedless grapes, 22 for white table wines, 22 for quality white wines, 4 varieties for aromatic wines, 15 varieties for table wines and 9 varieties for red quality wines (tab. 1). At these varieties, can be added Chasselas doré variety, with two parcels, which are used to monitor various experiments, carried out in the viticultural specific research programs of the Faculty of Horticulture Iaşi.

Table 1

Structure of ampelographic collection of Faculty of Horticulture, Iaşi

Genotype	Total number of varieties	of which:													
		Table grapes varieties		seedless varieties		white table wines varieties		white quality wines varieties		varieties for aromatic wines		red table wines varieties		red quality wines varieties	
		Old varieties	New creations	Old varieties	New creations	Old varieties	New creations	Old varieties	New creations	Old varieties	New creations	Old varieties	New creations	Old varieties	New creations
Vitis vinifera var.	114	21	18	3	-	16	6	18	4	3	1	12	3	7	2
Direct producers hybrids	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rootstocks	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	175	21	18	3	-	16	6	18	4	3	1	12	3	7	2

Fig. 2 - Ampelography collection of Faculty of Horticulture Iaşi

Rootstock used is Berlandieri x Riparia Kober 5 BB. Planting distances are 2.2/1.2 m, half high leading form, bilateral cord with cutting in fruit links (stems of 2 fruitful eyes and fertile offshoots of 4-5 eyes), which ensure an average load

of 40-45 buds/stock. Soil maintenance is done in the form of “black field”, and maintenance operations of vines are specific to industrial vineyard ecosystem (fig. 2).

The collection is recorded since 1994 in the International Catalogue of Ampelographic Collections, published under auspices of the European Bank of genus Vitis genetic resources under the code "ROM 14"and has the right of genetic material international exchange, in the form of cuttings and seeds, subjected to actual legislation (Ţârdea C. et al., 1999).

RESULTS AND DISCUSSIONS

Iasi city, is the county residence and the most important urban center in northeastern Romania. It is located in the eastern part of Moldova area, the Moldavian Plain, on the Bahlui River, a affluent of Jijia. “V. Adamachi” Farm, that including the ampelographic collection, is situated on one of the city's seven hills, Copou hill.

Temperature is specific to temperate continental lands, with some excesive nuances. Annual average temperature is 9.6°C, the highest monthly average temperatures was recorded in July, and lowest monthly average temperatures in January. Absolute minimum temperatures in winter descends to -26 to -32°C and threatening vines about two years of 10 (Mustea M., 2004). At Iasi absolute minimum was -30°C and was recorded in 1929 and 1937.

The average length of the vegetation period is 180 days and annual global radiation 115-125 Kcal/cm2. Actual amount of insolation during growing season is 1460 hours, and the sum of active temperatures is 3120°C. Average annual precipitation were 531.7 mm, of which 340 mm during the growing season. Precipitations distribution is uneven, in high-precipitations months May (June, July) was recorded 68 – 76 mm, compared with the period December - March, when it was recorded only 28 – 32 mm, monthly. The dominant winds in this area are the north-west winds, especially during the summer, to which is added during the winter the east wind (Crivăţ - Chill wind). Average date of last frost is April 17th and the limit date was May 25th (Rotaru Liliana et al., 2009).

Among existing varieties of vines in the ampelographic collection, the most valuable are the table grapes varieties: Muscat Perlă de Csaba (Bronnerstraube x Muscat Ottonel), Regina viilor (Queen Elisabeth x Muscat Perlă de Csaba), Chasselas doré, Muscat de Hamburg (Frankenthal x Muscat de Alexandria), Muscat d’Adda (self-pollination seeds of Muscat de Hamburg), Coarnă neagră, Coarnă albă (considered local varieties), and seedless varieties like: Sultanină albă (sin. Kiş mis alb), Sultanină neagră (sin. Kiş miş negru), Perlette (Sultanină albă x Regina viilor),.

In the ampelographic collection exist an impressive number of romanian new creations for table grapes like: Muscat Timpuriu de Bucureşti (Coarnă albă x Regina viilor), Victoria (Cardinal x Afuz ali), Timpuriu de Cluj (Crâmpoşie x Frumoasă de Ghioroc), Aromat de Iaşi (free insemination of Tămâioasă românească), Cetăţuia (Crâmpoşie x Frumoasă de Ghioroc),

Silvania (Bicane x Chasselas doré), Napoca [Alphonse Lavallée x (Regina viilor x Muscat de Hamburg)], Gelu (free insemination of Coarnă neagră, hybrid seeds irradiated with X-ray), Paula (Bicane x Aromat de Iaşi), Splendid (Black rose x Regina viilor), Transilvania (Black rose x Cardinal), Someşan [self-insemination of (Regina viilor x Muscat de Hamburg x Regina viilor)], Milcov (Coarnă neagră x Muscat de Hamburg), Xenia (Bicane x Muscat de Hamburg), Tamina (Bicane x Muscat de Hamburg), Coarnă neagră selecţionată (free insemination of Coarnă neagră variety).

With particular importance in wine production, can be mentioned the varieties for quality white wines like: Chardonnay, Fetească albă, Fetească regală, Frâncuşă, Furmint, Grasă de Cotnari, Pinot gris, Riesling italian, Traminer roz, Furmint de Miniş, for quality red wines: Cabernet sauvignon, Fetească neagră, Merlot, Pinot noir, Negru de Drăgăşani (Dobrei A. et al, 2005).

Among varieties for aromatic wines, are noted varieties: Muscat Ottonel, Tămâioasă românească and Busuioacă de Bohotin.

Old Romanian varieties for wine grapes, especially for table wines, are well represented in the ampelographic collection: Ardeleancă, Braghină, Berbecel, Cioinic, Cruciuliţă, Creaţă de Banat, Galbenă de Odobeşti, Gordan, Gordin, Mustoasă de Măderat, Zghihară de Huşi, Mioriţa, Băbească gri, Roz de Miniş. Interspecific direct producers hybrids in number of 32 varieties, romanian creations: Brumăriu, Purpuriu, Radames, Andrevit, or international creations: Moldova, Frumoasa albă, Decabriski, Strasanski, Viorica, Flacăra, Luminiţa, Isabelle, Perlă de Zala, Muscat de Pölöskey, Bianca, Medina, SV 12375 (Villard blanc), SV 18283 (Garonnet), SV 18315 (Villard noir), SV 18402, SV 12303, SV 39-522, Chambourcine (Joahnes Seyve 26-205), Seibel 5455 (Plantet), Salvador (Rotaru Liliana et al., 2005).

Rootstocks are present in large numbers (29), as species, hybrids and clones. Among rootstocks existing in ampelographic collection, we mention: Riparia gloire, Rupestris du Lot, Rupestris Viala, Riparia x Monticola 1 R, Riparia x Rupestris 101-14 MG, Riparia x Rupestris 3306 C, Riparia x Rupestris 3309 C, Riparia x Rupestris Brémont, Berlandieri x Riparia 420 A, Berlandieri x Riparia 33 EM, Berlandieri x Riparia Selecţia Oppenheim 4, Berlandieri x Riparia Kober 5 BB, Berlandieri x Riparia Crăciunel 13, Berlandieri x Riparia Crăciunel 26, Berlandieri x Riparia 125 AA, Berlandieri x Rupestris Richter 31, Berlandieri x Rupestris Richter 57, Berlandieri x Rupestris 140 Ruggeri, Chasselas x Berlandieri 41 B, Solonis x Riparia 1616 C, Aramon x Rupestris Ganzin 1, Mourvedre x Rupestris 1202 C.

CONCLUSIONS

1. Ampelographic collection belonging to Faculty of Horticulture, Iasi (NE Romania), is one of the most complete collections, in this area, famous for the diversity of existing varieties here.

2. Initially, comprising especially old Romanian variety, the ampelographic collection was completed over time, currently holding over 170

species, varieties, hybrids and clones of vines with different origins.

3. Established for teaching purposes, being a "laboratory" in nature where students carry out their part of practical training and scientific research, ampelographic collection is a valuable base of applied research in the field, on it territory is performed a series of experiments necessary of research contract and development of scientific papers.

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REFERENCES

1. Dobrei A., Rotaru Liliana, Mustea M., 2005 – *Cultura viţei de vie*. Editura “Solness”, Timişoara.

2. Mustea M., 2004 – *Viticultură*. Ed. Ion Ionescu de la Brad, Iaşi.

3. Rotaru Liliana, Mustea M., Stoleru V., Petrea Gabriela, 2009 - *The evaluation of north eastern vineyards from Romania for implementation of sustainable viticulture*. Lucrări Ştiinţifice USAMV Iaşi, seria Horticultură, anul LII, vol. 52, pp. 737-742.

4. Rotaru Liliana, Petrea Gabriela, 2006 – *Rezistenţa la ger a hibrizilor înnobilaţi în condiţiile ecoclimatice ale podgoriei Iaşi.* Lucrări Ştiinţifice USAMV Iaşi, seria Horticultură, vol. 1 (49), p 723-727.

5. Ţârdea C., Liliana Rotaru, M. Mustea, 1999 - *Conservarea diversităţii genetice la viţa de vie.* Lucrări Ştiinţifice USAMV Iaşi, seria Horticultură, vol. 1 (42), p. 32-40.