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Mobilization of Adaptive Traits for Breeding

FULL PROGRAM & ABSTRACT BOOK

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IDENTIFICATION AND CHARACTERIZATION OF GRAPEVINE GENETIC RESOURCES MAINTAINED IN EASTERN EUROPEAN COLLECTIONS

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INTRODUCTION – The Near East and in particular Caucasus region are considered as the cradle of viticulture and the area of domestication. Already in the 1920’s Negrul first suggested the Caucasus as the grapevine gene centre. His perception was based on the abundantly thriving wild wines and the enormous morphologic diversity he encountered. Being both gene and domestication centre for grapevine a genetic wealth is highly expected in that area. A survey of the grapevine genetic resources present in Armenia, Azerbaijan, Georgia, Moldova, Russian Federation and Ukraine which took place from 2003 to 2007 in the scope of the project “Conservation and Sustainable Use of Grapevine Genetic Resources in the Caucasus and Northern Black Sea Region” was funded by the government of Luxembourg and managed by Bioversity. The outcome of 5 years intensive collaboration was the estimation that the maintained 2654 accessions may belong to 1283 cultivars. But trueness to type assessment by morphology and genetic fingerprinting still needed to be done. In the scope of COST Action FA1003, 1098 mainly *Vitis vinifera* accessions and 76 *Vitis sylvestris* individuals were analyzed by molecular markers. In addition to the six countries mentioned above Albania, Austria, Bulgaria, Croatia, Hungary, Lithuania, Romania, Slovakia and Slovenia participated, too.

AIMS AND SCOPES –The study aimed at determination of the accessions identity by molecular markers, confirmation of identity by morphology and bibliographical references, estimation of germplasm existing in the countries of origin only and identification of endangered germplasm to initiate duplicate conservation.

MATERIALS AND METHODS – Nine SSR-markers (VVS2, VVMD5, VVMD7, VVMD25, VVMD27, VVMD28, VVMD32, VrZag62, VrZag79) recommended by the European project GrapeGen06 were applied and analyzed either by the countries mentioned above or by Western European laboratories. DNA extraction, PCR and fragment size determination was carried out according to each laboratories protocol. Fingerprints were checked by seven SSR-marker databases (3 from Italy, 2 from Spain, France and Germany) for matching allelic profiles.

RESULTS AND DISCUSSIONS – From the 1098 mainly *Vitis vinifera* accessions, 997 turned out to be indigenous to the participating countries. The remaining 101 accessions were Western European cultivars (e.g. Luglienga bianca, Madeleine Angevine and Pinot), hybrids (e.g. Silva and Spulga), rootstocks (e.g. Rupestris du Lot and SO4) and new crosses (e.g. Ametyst and Neronet). The 997 fingerprints investigated further resulted in 658 unique profiles/cultivars. Somatic mutation was considered when respective information was available like for Rkatsiteli B and Rkatsiteli Vardisperi RS. From the 658 unique profiles/cultivars 54% were maintained in the countries of origin only. In addition 46% from the 658 unique profiles/cultivars existed in only one Eastern European collection. The analysis of more accessions maintained in Eastern European countries will reduce that proportion but might on the other hand add further unique fingerprints as well. With respect to cultivar identity confirmation/rejection the study revealed unambiguously the necessity of morphologic description and photos (a) for comparison with bibliography, (b) for a clear and explicit definition of the cultivar and (c) the detection of sampling errors and misnomers.

CONCLUSIONS AND POSSIBLE APPLICATIONS – With respect to cultivar identity assessment the study revealed the necessity of morphologic description and photos (a) for comparison with bibliography, (b) for a clear and explicit definition of the cultivars identity and (c) for the detection of sampling errors and misnomers. Intense exchange between collection curators and skilled personnel are needed to work on questionable accessions. Duplicate preservation needs to be initiated for the rare and thus endangered accessions. Documentation of the entire information in the European *Vitis* Database will assist both germplasm maintenance and documentation of cultivar specific data. The importance of the accession number is again emphasized. To draw a real picture of the situation continuation of fingerprinting is recommended.