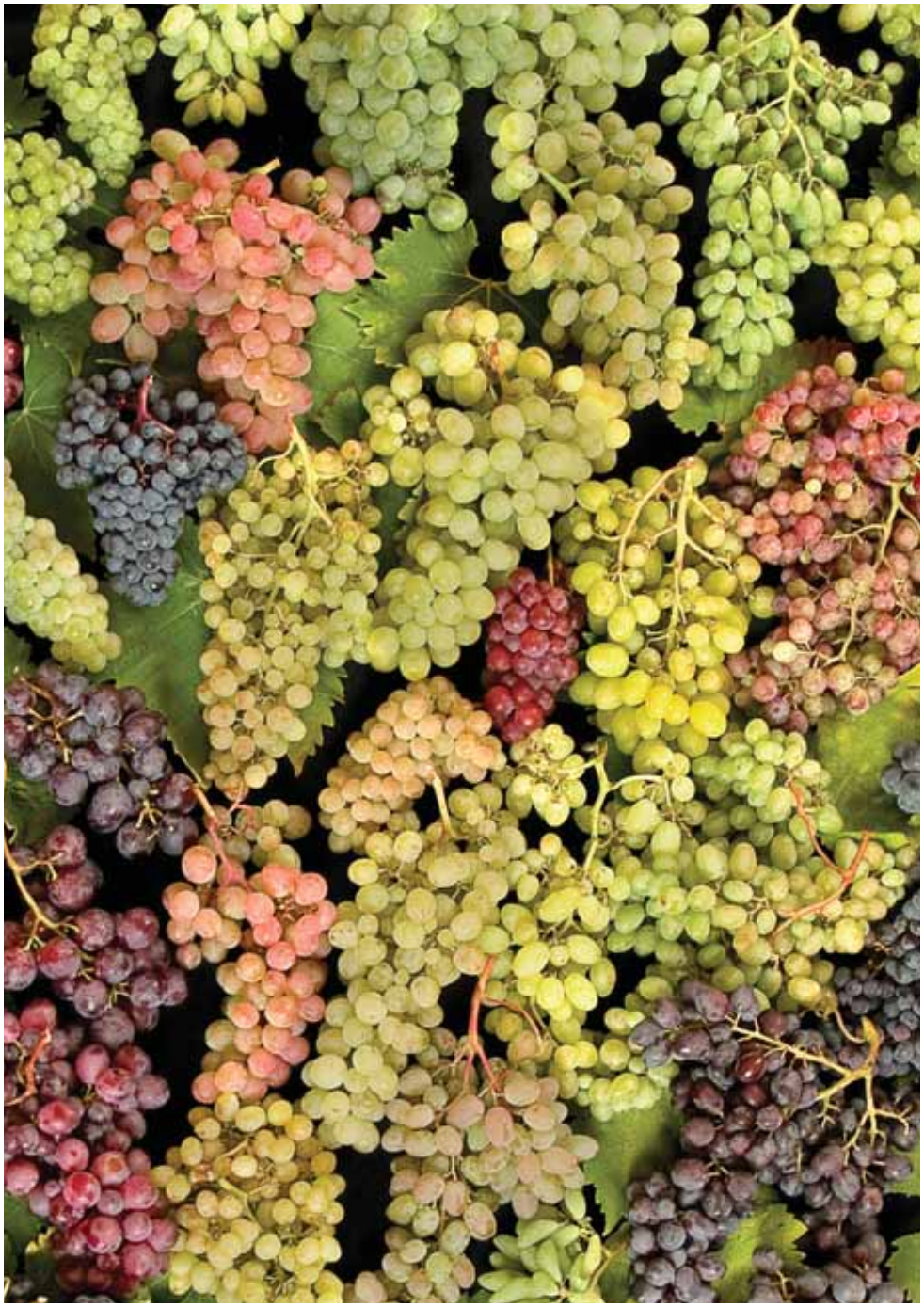
European Cooperative Programme for Plant Genetic Resources

ECP/GR

Report of a Working Group on *Vitis*

Second Meeting, 18-20 September 2012, Siebeldingen, Germany

L. Maggioni, J. Engels, E. Maul, J. Ortiz and E. Lipman



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The European Cooperative Programme for Plant Genetic Resources (ECPGR) is a collaborative programme among most European countries aimed at contributing to national, sub-regional and regional programmes in Europe to rationally and effectively conserve *ex situ* and *in situ* Plant Genetic Resources for Food and Agriculture and increase their utilization. The Programme, which is entirely financed by the member countries, is overseen by a Steering Committee composed of National Coordinators nominated by the participating countries and a number of relevant international bodies. The Coordinating Secretariat is hosted by Bioversity International. The Programme operates through nine networks in which activities are carried out through a number of permanent working groups or through ad hoc actions. The ECPGR networks deal with either groups of crops (cereals; forages; fruit; oil and protein crops; sugar, starch and fibre crops; vegetables) or general themes related to plant genetic resources (documentation and information; *in situ* and on-farm conservation; inter-regional cooperation). Members of the working groups and other scientists from participating countries carry out an agreed workplan with their own resources as inputs in kind to the Programme.

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Grape diversity. Courtesy of © E. Maul, Institut für Rebenzüchtung Geilweilerhof, Siebeldingen, Germany.

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CONTENTS

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http://www.ecpgr.cgiar.org/networks/fruit/vitis/vitis_wg_meeting_2012/presentations.html

SUMMARY REPORT OF THE MEETING

Introduction

The second meeting of the Working Group on *Vitis* of the European Cooperative Programme for Plant Genetic Resources (ECPGR) was held from 18 to 20 September 2012 in Siebeldingen, Germany. It was organized in collaboration with the Julius Kühn-Institut (JKI), Institut für Rebenzüchtung (Institute for Grapevine Breeding) Geilweilerhof.

On behalf of Reinhard Töpfler, Director, Institut für Rebenzüchtung Geilweilerhof, Erika Maul welcomed all the participants and introduced them to the activities of JKI in Geilweilerhof. The institute is focused on developing markers for resistance and quality components for breeding new grapevine varieties. It also holds a collection of more than 3700 cultivars, breeding lines and species of *Vitis* and is an Information Centre for Vine and Wine, maintaining databases such as the *Vitis* International Variety Catalogue (VIVC) and the European *Vitis* Database (EVDB).

Jésus Ortiz, Chair of the Working Group (WG), welcomed the participants from 19 countries and noted a very good representation from South-Eastern Europe countries. He conveyed the apologies from a few members who were unable to attend the meeting. He thanked the participants who had submitted country reports for the interesting and unique information. He was pleased about the increasing size of the WG and invited all participants to briefly introduce themselves.

J. Ortiz presented the agenda and apologized for the absence of Rafael Ocete, who was originally scheduled to talk about *Vitis sylvestris*, but was eventually unable to attend.

Update on ECPGR

Lorenzo Maggioni, ECPGR Coordinator, updated participants on the status of the ongoing Phase VIII (2009-2013) of the ECPGR Programme. The budget of the *Vitis* WG and its planned use were presented. He cautioned that unspent funds of the WG would not be immediately available for new activities; the Secretariat would have to seek approval from the Steering Committee (SC) for disbursement. The SC has at present frozen the unspent funds, given that a few member countries still have outstanding dues. The participants were informed about the outcome of the ECPGR Independent External Review (July 2010) and the process followed by the SC for the decision to be taken in December 2012 on the future of the ECPGR, based on the "Options Paper" being prepared by the ECPGR Executive Committee. The new goal and objectives of the ECPGR, as agreed by the SC in Bratislava (December 2010), were presented. The main changes to the mode of operation of the ECPGR in the next Phase, as provisionally proposed by a SC Task Force, were also explained to the Group.

Chair's report

Jésus Ortiz presented a summary of the WG's activity and progress since the last meeting in Palić, Serbia and Montenegro (June 2003), based on country reports provided by members prior to this meeting. Full reports will be posted on the ECPGR *Vitis* WG Web page after the meeting. Members who had not yet sent in their report could still provide it to the Chair for inclusion with the rest on the Web site.

The status of *Vitis* germplasm collections in Europe, according to data provided in the country reports, is presented in Appendix II (pp. 23-26). The status of characterization of the collections varies; morphological characterization has advanced in most cases. However, a minimum descriptor list should be defined to harmonize the information across countries. Physiological characterization is less complete: maturity period and yield data are sometimes available, and data on resistance to biotic and abiotic stress are rarely present. Graphic documentation is very useful and available in many cases. Most local databases are prepared to become available online. The six microsatellites recommended by the WG for molecular characterization are used by most collections. An increasing number are using the three additional recommended microsatellites. In some cases 20 or more microsatellites are used, even if these high numbers are not necessary for simple characterization. Molecular characterization is used to identify varieties, detect homonymies and synonymies, and to document accessions in the databases. Parentage studies are also carried out sometimes.

National online databases from Croatia, Czech Republic, France, Germany, Italy and Spain were presented.

Examples of the number of varieties grown for producing wine in each country showed that the diversity in use is very limited (Table 1).

Table 1. Number of cultivars grown for wine production in European countries

Country	Number of cultivars	Percentage of area
Albania	9	70%
Bosnia and Herzegovina	4	80%
Croatia	12	80%
Czech Republic	13	80%
France	14	80%
Georgia	4	87%
Germany	12	80%
Italy	18	50%
Portugal	16	80%
Spain	13	80%

Lists were also compiled of table grape-growing areas. Italy and Spain, followed by France, Portugal and Cyprus had the largest areas.

The main international varieties grown in Europe are listed in Appendix III (p. 27). Three varieties (Cabernet Sauvignon, Merlot and Chardonnay) are the most widespread.

Recently published catalogues of varieties in some European countries were listed (the figures in brackets indicate the number of varieties described):

- France: Catalogue des variétés et clones de vigne cultivés en France (in 2012: 317 cvs. for fruits and 31 cvs. for rootstocks; see http://plantgrape.plantnet-project.org)
- Germany: Guide des cépages (300)
- Italy: Vitigni d'Italia (365)
- Portugal: O grande livro das castas (58)
- Russian Federation: [Varieties grown in the south of Russia] (215)
- Spain: Variedades de vid en España (185)

Recommendation

- The WG Web page and the European *Vitis* Database should include links to the national and international databases and sources of information on *Vitis* genetic resources.

Workplan

- The ECPGR Secretariat and the European *Vitis* Database Manager will provide links on the *Vitis* WG and the *Vitis* Database Web sites to the databases and publications listed by J. Ortiz in his presentation (**by end September 2012**).

Report on COST Action FA1003

Osvaldo Failla reported on COST Action FA1003 on "East-West Collaboration for Grapevine Diversity Exploration and Mobilization of Adaptive Traits for Breeding" (http://www.cost.eu/domains_actions/fa/Actions/FA1003). The Action was initiated in 1999 to respond to the need to ensure long-term conservation of the otherwise threatened grapevine diversity in the Caucasus and northern Black Sea area.

A project funded by the government of Luxembourg was then carried out between 2004 and 2008, the main results of which are:

a. A large number of local varieties of Armenia, Azerbaijan, Georgia, Moldova, Russian Federation and Ukraine were effectively preserved in the collections thanks to continuing financial support;
b. A successful collaborative network was set up among institutions, allowing researchers from Eastern Europe to improve their scientific knowledge in the research centres of Western Europe;
c. Local varieties of grapevine and wild vines from the area were included in a joint investigation;
d. Information disseminated about the project increased interest in the biodiversity of local grapevine germplasm;
e. A list of 1283 autochthonous varieties (2600 accessions) from ten East European grapevine collections located in Armenia, Azerbaijan, Georgia, Moldova, Russian Federation and Ukraine was compiled;
f. Nearly 75% of them (= 952 varieties) were found solely in these ten collections; the remaining 25% are mainly distributed in grapevine collections of other East European countries. Out of the total number of autochthonous varieties, about 740 exist in only one location and are therefore considered to be threatened.

Collaboration between East and West continues thanks to the COST Action funded by the European Commission (EC) from November 2010 to November 2014 and coordinated by the University of Milano. The scientific context for this Action is based on the understanding that the grapevine genepool is particularly threatened in the marginal areas of its distribution range.

Grapevine genetic resources in the areas of their primary domestication (South-Eastern Europe, particularly the Caucasus) are still poorly known, although they contain still untapped diversity and richness. Scientists and breeders need to work together at international level to generate knowledge about this valuable diversity, its patterns, processes and correlation with traits such as biotic and abiotic stress resistance/tolerance and grape quality.

The Action aims to develop a collaborative network that will share experiences, responsibilities, information and materials for the development and improvement of genotyping and phenotyping methods for association genetics studies. The main objective is to define a core collection that can represent and conserve the highest genetic diversity with the lowest number of plant accessions. The intention is also to improve the impact of the research by creating beneficial knowledge, ensuring long-term conservation and enhancing the quality of grape production in Europe.

The Action involves 33 countries and will expand to 35 with the imminent inclusion of Serbia and Turkey. All the Old World grape countries are therefore represented. The main activity focus areas are organized in Working Groups, focusing on: 1) Identification and characterization of genetic resources (R. Töpfler and E. Maul); 2) Development of phenotyping and genotyping methodologies (R. Bacilieri and P. This); 3) Phenotyping of core collections and association genetics research (S. Grando) and 4) Strategy for conservation and sustainable use (M. Faltus and R. Ocete).

Mid-way from the conclusion of the COST Action, a number of objectives have been reached:

- Characterization carried out on 595 cultivars by the end of 2012;
- Leaves or cuttings of around 350 cultivars shipped to laboratories carrying out simple sequence repeat (SSR) marker analysis;
- 19 laboratories will carry out SSR marker analysis; within the runtime of the project about 2700 genotypes could be fingerprinted;
- Upload of all data on the European *Vitis* Database is in progress;
- Definition of protocols for phenotyping is in progress and a network of institutions involved in the phenotyping trials has been set up;
- Two workshops were held:
  - Workshop on association genetics studies in grapevines, and
  - Joint workshop with COST Action FA0807 on "Integrated management of phytoplasma epidemics in different crop systems". The intention is to develop proposals to define proper strategies for sanitary quarantine for grapevine plant propagation material to ensure sustainable conservation of germplasm.

The project INNOVINE, "Combining innovation in vineyard management and genetic diversity for a sustainable European viticulture", was recently approved for funding by the European Union (EU) under the Seventh Framework Programme (FP7), with a financial contribution of € 6 million for 48 months. The project also involves several members of the COST Action; a specific Work Package will be devoted to "Exploiting the genetic diversity in grapevine".

Workplan

- After the meeting O. Failla will send to all *Vitis* WG members an invitation to join the COST Action so that they can be provided access to the European *Vitis* Database to upload their data. They will also be able to establish agreements with COST partners and send them samples of accessions identified as candidates for inclusion in the European Collection for fingerprinting.

Status of *Vitis* germplasm preservation in Europe

Erika Maul recalled that 30 years ago in April-May 1982 the second meeting of a "Working Group on *Vitis* Genetic Resources" took place in Thessaloniki, Greece. The meeting reviewed the situation of *Vitis* germplasm conservation in European countries, where conservation activities had barely started. In 1982, the International Organisation of Vine and Wine (Organisation Internationale de la Vigne et du Vin, OIV) therefore passed a resolution recommending the collection of germplasm in the centres of diversity; maintenance of *Vitis* species, cultivars and clones in collections; intensification of research on *in vitro* storage; research and development of international cooperation between genebanks and free exchange of genetic material. To draw a realistic picture of germplasm conservation, it is useful to know the status of conservation in each country of cultivars, species, breeding

material, mainly in *ex situ* public collections, as well as the preservation of natural habitats of *Vitis sylvestris* and on-farm preservation of old autochthonous varieties by vine growers.

Recent European measures allow marketing of conservation varieties, but grapes are excluded from Commission Directive 2008/62/EC of 20 June 2008, "providing for certain derogations for acceptance of agricultural landraces and varieties which are naturally adapted to the local and regional conditions and threatened by genetic erosion and for marketing of seed and seed potatoes of those landraces and varieties".

Activities in European countries were enhanced and Europe-wide cooperation was intensified through the implementation of four projects (GenRes081, Black Sea Project, GrapeGen06 and COST Action FA1003) and the establishment of the ECPGR *Vitis* Working Group.

Achievements to date include:

- Description of accessions according to FAO/IPGRI *Multi-Crop Passport Descriptors* (MCPDs), following the format used in the European Plant Genetic Resources Catalogue or European Internet Search Catalogue (EURISCO);
- Characterization of mainly neglected autochthonous cultivars, according to agreed descriptors;
- Genotyping using nine SSR markers for assessing trueness-to-type;
- On-farm evaluation;
- Inventory of *Vitis sylvestris* populations;
- Registration of all data in the European *Vitis* Database.

The number of records in the European *Vitis* Database is higher than that in the *Vitis* International Variety Catalogue (VIVC), which shows that conservation is an important concern.

A number of questions pertaining to safety-duplication need to find an answer from the European *Vitis* Database:

- How many different cultivars are preserved?
- Which are the unique accessions?
- Which are the neglected cultivars?
- Which cultivars are in danger of extinction?
- Which are the most valuable accessions for breeding purposes?

In order to enable the European *Vitis* Database to answer the above questions, the following steps should be taken by the collection curators:

- Intensify efforts to assign the VIVC variety number to accessions, tagging different designations (synonyms) with the same number;
- Accelerate assessment of trueness-to-type in collections;
- Use the SSR marker data available until now to identify unique fingerprints, in combination with ampelographic and bibliographic data;
- Fill the FAO/IPGRI passport descriptor 20 SAMPSTAT (Biological status of accession) using the following *Vitis*-specific codes:
    - 340. Local neglected cultivar, officially registered, grown to a very limited extent (example: Nascetta)
    - 350. Local neglected cultivar under evaluation (example: Montanera)
    - 360. Local neglected cultivar in danger of extinction (example: Gouais blanc).

The VIVC has a search module for investigating the status of germplasm conservation in Europe; it still needs to be implemented in the European *Vitis* Database. Nonetheless the

search for unique varieties depends on the assignment of a VIVC variety number to each accession.

In April 2012, a search on the European *Vitis* Database gave the following results:

- Total number of accessions: 31 856
- Trueness-to-type = yes: 9944
- VIVC variety number = not NULL: 5669
- Unique accessions: 1489
- Two accessions/cultivar: 842
- Three accessions/cultivar: 570

Discussion

O. Failla asked about the procedure followed by the DB Manager to obtain updates from data providers and the update frequency. E. Maul replied that this was done through reminders from the DB Manager and that there was no established frequency.

J. Engels asked whether there is discrepancy between the European *Vitis* DB and EURISCO. E. Maul confirmed that there are discrepancies, as some curators, who may not be informed of the procedure, do not provide their data to their National Focal Points.

Recommendations

- All WG members are invited to make sure that the corresponding VIVC variety number is assigned to each accession.
- All WG members are invited to contact their National Inventory Focal Point (http://www.ecpgr.cgiar.org/index.php?id=2501&tx_wfqbe_pi1[uid]=14) and include their collection data in the National Inventories for upload to EURISCO.
- To conserve existing diversity, participants recommended a relaxation of restrictive regulations such as Council Regulation (EC) No 1234/2007 of 22 October 2007 establishing a common organization of agricultural markets and specific provisions for certain agricultural products (Single Common Market Organisation (CMO) Regulation) and Commission Directive 2008/62. This will allow on-farm cultivation, which is a guarantee for conservation of genetic diversity. Intra-varietal diversity in particular is often difficult to conserve in field genebanks.

The European *Vitis* Database, status and progress report

Erika Maul reminded the Group that the objectives of the European *Vitis* Database (www.EU-VITIS.de) were to monitor the preservation of genetic resources, provide facilitated access to comprehensive information and enhance the use of genetic resources. The Database also aims to enhance knowledge on grapevine diversity, facilitate identification of the most valuable germplasm (such as the most appropriate accessions, MAAs, for the European Collection), monitor health status and duplications, and responds to the ethical claim of maintaining the cultural heritage and preserving germplasm for future generations.

The GenRes081 and GrapGen06 projects helped to build and further develop the European *Vitis* Database, which currently includes passport data for 35 105 accessions from 41 grapevine collections in 22 European countries. Characterization data are included for 2305 accessions of old and endangered varieties with little or no description in the past. Results of genotyping with sequence tagged microsatellite site (STMS) markers are documented for 4364 accessions. The Database also records 222 *Vitis sylvestris* populations, from which 631 *Vitis sylvestris* plants are preserved in seven repositories in seven countries. On-farm evaluation is also documented for 54 cultivars.

E. Maul reviewed various features offered by the European *Vitis* Database:

- Tools for descriptor recording and data upload, retrievable by "Descriptors/file formats"
- Search options by MCPD data to obtain accession-specific information or photographs
- Search options by ampelographic or microsatellite data for identification purposes
- Microsatellite data in the public domain available through subscription
- "Catalogue of varieties" offering users a one-page description of an accession downloadable as a PDF document
- Evaluation data of neglected cultivars maintained on-farm
- Institute codes and contact data
- Link to the European Catalogue of Nationally Registered Varieties
- Private level access features:
  - Reminder to send MCPD data to the National Inventory Focal Point
  - On-line uploading applications
  - Module for interactive modification of records
- Export options.

Discussion

J. Engels asked whether hosting and maintenance of the European *Vitis* Database by JKI was input in kind to ECPGR and E. Maul confirmed, adding that JKI believes the database is not only useful, but also a prestigious undertaking.

The Group acknowledged with appreciation and commended JKI's offer to maintain the European *Vitis* DB as an input in kind to the ECPGR.

European Catalogue of Nationally Registered Varieties

Erika Maul informed the Group about the creation, within the framework of GrapeGen06, of the European Catalogue of Nationally Registered Varieties. This catalogue, which identifies synonyms within and between national catalogues, is a reliable document of validated synonyms, established with the ampelographic expertise of researchers from 11 participating countries. The catalogue can be accessed from the Web page of the European *Vitis* Database (http://www.eu-vitis.de/publicnatcat/dbQuickSearch.php?retval=4100). From the 1902 varieties that are registered in the EU, 1246 are registered in one single country. Heterogeneity within official names is significant, as are the synonymies within national catalogues and the European Catalogue.

Discussion

J. Ortiz commented that many synonymies are published in the literature, but they are sometimes not true synonymies.

O. Failla commented that some names can be considered synonyms of the same variety, but the clonal assortment found in the various vine-growing regions is such that there are geographical differences. In his opinion, synonymies, even if they indicate the same monophyletic origins, identify existing differences; therefore, the different names should be retained to maintain the diversity.

Recommendations

- The Group acknowledged that the European Catalogue of Nationally Registered Varieties is currently the most reliable and up-to-date source of information for the definition of synonyms of registered varieties in Europe.

Synonymy, homonymy and misnaming. Possible guidelines for updating OIV's International list of vine varieties and synonyms

For the definition of grapevine synonymies in the Spanish collection, J. Ortiz used the OIV "International list of vine varieties and their synonyms"[1], which is a very useful document, but also rich in errors. Fifty descriptor codes were selected from OIV, UPOV and IPGRI and 862 accessions were characterized.

Many leaf shape measurements were recorded by ampelographers, but as this was very time-consuming, introduction of the use of microsatellites significantly increased discriminating power. Agronomical and oenological evaluations were also valuable.

Microsatellite analysis should be the first step for identifying synonymies. Material found molecularly identical requires further morphological analysis to verify if there is any difference. A number of evident (sometimes unexpected) synonyms were identified. The results indicated that 163 molecular patterns actually corresponded to 176 different varieties, as detected through subsequent morphological analysis.

J. Ortiz recommended the following steps for characterization, management and documentation of a *Vitis* germplasm bank:

1. Select and analyse a small number of adequate microsatellite loci, specifically VVS2, VVMD5, VVMD7, ssrVrZAG47, ssrVrZAG62 and ssrVrZAG79; a database of these with previous information exists.
2. Compare the results to the database.
3. Different patterns in microsatellites correspond to different varieties, which will subsequently be characterized by ampelography.
4. Identical patterns in microsatellites will be confirmed or rejected as synonymies based on ampelographic characterization.
5. A reduced number of ampelographic descriptors, around 32, have proved useful for the indicated characterization.

Clearly discriminating characters should be selected as they can be objectively scored and are not subject to change in different environments.

Characterization of accessions in the different collections

Discussion

J. Ortiz requested members to submit their suggestions for minimum descriptors to be used for detecting synonyms; he pointed out that a small number of descriptors would be sufficient, although a wider characterization requires more descriptors.

O. Failla commented that ripening profile and fruit composition should also be described. The ampelometric measurements are very time-consuming, but they are particularly useful for detecting possible intra-varietal variability. High-throughput methods should be developed for phenotyping and analysing grape composition for at least three years.

E. Maul recommended using the 48 descriptors given in the European *Vitis* Database and also suggested adopting the methodology of Martinez and Grenan (1999)[2]. It involves preparation of herbaria-like drawings according to the concept of "Typical leaf", and to eventually consider creating herbaria.

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[1] Multilingual versions available from http://www.oiv.int/oiv/info/frplubicationoiv#listinter

[2] Martinez MC, Grenan S. 1999. A graphic reconstruction method of an average leaf of vine. Agronomie 19:491-507.

O. Failla proposed introducing the concept of "like-to-type", since certain varieties have been selected by farmers over centuries and have thus accumulated both phenotypic and genotypic variability around the same type. It is important to conserve this variability, which is at risk of being lost by the "true-to-type" approach.

Recommendations

- The Group recommended using at least the 9 SSRs for determining the identity of an accession and the 48 descriptors of GrapeGen06 for trueness-to-type testing.

Germplasm mobilization for sustainable conservation strategy. Sanitary aspects

O. Failla mentioned the need to safety-duplicate the material of core collections.

A new protocol for the movement of propagation material across the countries from within and outside the EU needs to be proposed to facilitate the movement of germplasm.

The collection from Uzbekistan needs to be surveyed and possibly duplicated.

A sustainable strategy for germplasm conservation and evaluation should include diagnostic protocols and disease control. Moreover, germplasm mobilization offers a real opportunity to reduce the risk of losing biodiversity. In this context, specific protocols for germplasm circulation among collections, including specific quarantine procedure management and more general aspects for the phytosanitary management of grapevine repositories should be developed to ensure the health of germplasm under conservation.

According to the EU Directive 2000/29 import of material from outside the EU is prohibited to prevent the spread of harmful organisms. Import is allowed only for trials or scientific purposes and for work on varietal selection; the quarantine procedure is onerous, time-consuming and expensive. Since all the pests present in the Caucasus and Central Asia are already present in Europe, there is probably no risk of importing new pests; the quarantine procedure could hence be simplified. The major current problem is long-term indexing, which is required for detecting organisms that are already present in the EU. An alternative quarantine strategy would include the following steps:

A. Pre-shipping conditions

1. Check for disease presence in the field on the mother plant, at appropriate time;
2. Selection (exclusion of all symptomatic vines);
3. ELISA/PCR tests for known harmful pathogens (positive statement in phytosanitary certificate) of grapevine;
4. Collecting woody canes;
5. Dipping in appropriate insecticide and fungicide;
6. Consignment with the appropriate phytosanitary certificate (specific additional declaration).

B. Post-entry controls

7. Arrival in "Post Entry Quarantine Station", under official control by the National Plant Protection Organization (NPPO);
8. Visual testing (insects, mites, epiphytic bacteria and fungi);
9. Detection, isolation and identification of epiphytic bacteria and fungi (using analytical kits for microbial species identification, e.g. Biolog)
10. ELISA or RT-PCR (for relevant viruses harmful to grapevine , phytoplasmas on dormant cuttings);
11. (Bench) grafting on appropriate rootstock;

12. Production of rooted plants;
13. Field planting (in isolated conditions or upon verification of vector's absence);
14. Monitoring during experimental activity.

C. Final tests for official release

- Environmental sequencing (Metagenomics + Basic Local Alignment Search Tool (BLAST) analysis or similar) to determine the presence of harmful organisms not present in the EU;
- Pest Risk Analysis (for Pests);
- Further specific tests for trade purposes;
- (See PM 4/8(2) EPPO "Pathogen-tested material of grapevine varieties and rootstocks").[3]

The proposed protocols are based on the concept of applying modern genomics techniques to the study of communities of microbial organisms directly in their natural environments, thus bypassing the need for isolation and laboratory cultivation of individual species.

The new proposed protocol will include best practices, detection methodology, *in vitro* protocols to recover infected material and special quarantine protocols for the transfer of genetic resources. The time for transfer of material into the EU from outside can thus be reduced from 7 years to 1 year.

Discussion

T. Zahavi enquired whether it would not be preferable to propagate explants *in vitro* for transfer of safe material. O. Failla replied that *in vitro* propagation works for only a few genotypes, and it would be very expensive to fine-tune the protocol for many varieties.

J. Engels asked if the FAO/IBPGR guidelines for the safe movement of germplasm should be updated. O. Failla replied that the guidelines are very complicated and require thermotherapy, which may modify the endophytic population and render the material more vulnerable to infections following water thermal treatment. He also clarified that the European Central Phytosanitary Service should receive the proposal made by the COST group through a member country and include it in its meeting agenda.

J. Ortiz commented that the collections should be checked for infection as the presence of virus may alter characterization results.

Recommendation

- The Group welcomed the initiative to promote a simplified protocol and will evaluate the proposed final version.

Workplan

- O. Failla, Coordinator of the COST Action, will send to the Chair the proposed simplified protocol for the movement of propagation material across countries within and outside the EU (expected **by the end of 2012**).
- Upon reception of the proposed protocol from O. Failla, the Chair will circulate it within the WG, compile comments received over two weeks and inform O. Failla about the WG's opinion on the protocol.

[3] (2008), Pathogen-tested material of grapevine varieties and rootstocks. EPPO Bulletin 38:422–429. doi: 10.1111/j.1365-2338.2008.01258.x

A European Genebank Integrated System (AEGIS): status, progress, discussion of future work

Update on AEGIS

Jan Engels, AEGIS Coordinator, presented the 12 major milestones and the key components of AEGIS, including the Memorandum of Understanding (MoU) and the Associate Membership Agreement (AMA) that underpin membership to AEGIS. Thirty-two countries have signed the MoU and 46 genebanks have signed Associate Membership Agreements with their respective National Coordinators. J. Engels briefly described the main elements of the AEGIS Quality System (AQUAS).

Special attention was paid to the European Collection, consisting of dispersed accessions ("unique and/or important") that have been identified and approved as European Accessions by the holding countries upon confirmation by the respective Crop Working Group; these are maintained by genebanks as a virtual collection. In order to provide a legal foundation to the Collection as stipulated by the International Treaty, an MoU is signed with countries that accept the responsibility for long-term conservation of the European Accessions and for making this material available to users. By signing the MoU, the countries agree to conserve and manage the European Accessions in accordance with agreed quality standards.

The main parties involved in selecting the European Accessions are the Crop Working Groups (WGs) with their technical expertise and the countries holding the germplasm and accepting to place the selected accessions in the European Collection. A simplified selection procedure for the European Accessions has been proposed and is being used by a number of WGs. Applying the selection requirements that each European Accession has to fulfil, as a first step the WG elaborates a list for a given crop from the entire pool of accessions maintained in European genebanks, using the data available in EURISCO and the respective Central Crop Database (CCDB). In case two or more accessions identified as candidate European Accessions turn out to be duplicates, crop-specific selection criteria – to be defined by each WG – are used for identifying the Most Appropriate Accessions (MAAs) of that group of potential duplicates. Alternatively, candidate European Accessions could be identified by the WG member countries with a focus on genetically unique accessions that have their origin in the respective countries and that are offered to the WG for inclusion in the European Collection.

The list of selected candidates or the agreed accessions is sent by the WG to the National Coordinator (NC) in each of the holding countries with a request to consider the selected accessions maintained in the country for inclusion in the European Collection. The NC, in close consultation with the respective holding institute(s), then informs the WG whether or not the selected accessions can be included in European Collection. The accessions selected and accepted for inclusion in the European Collection have to be flagged subsequently in EURISCO as AEGIS Accessions by the EURISCO National Focal Point.

Certain aspects related to the AEGIS Quality System (AQUAS) were mentioned and will be addressed in more detail in the presentation on genebank standards (see p. 15).

J. Engels briefly mentioned the AEGIS Grant Scheme and the Seventh Framework (FP7) project proposals (i.e. EUROGENEBANK and Plant Gene Access).

Discussion

E. Maul remarked that the purpose of AEGIS is not to conserve only threatened accessions, but any possible material. This is easier than selecting only the threatened accessions. AEGIS is also a good opportunity to harmonize the modalities for transfer of material.

Accessions to be included in the European Collection (AEGIS)

Discussion of preliminary selection criteria proposed by the European *Vitis* Database Manager and determination of final criteria

E. Maul indicated that one option is to start with the following categories:

- European cultivars (traditional cultivars of minor importance or in danger of extinction: local cultivars, historical cultivars or cultivars of cultural importance)
- Cultivars and genotypes with outstanding traits for breeding and research (also of non-European origin)
- *Vitis* species (wild grapevine from America, Asia and Europe representing the genetic diversity of the species).

On the other hand, no candidate accessions would be selected for the time being among:

- Cultivars protected by Plant Breeders' Rights
- Widely grown cultivars.

The proposal would then be to start with:

1. **Rare cultivars to the best available knowledge**, e.g. only one single accession maintained over all repositories (based on available data) or a local neglected cultivar under evaluation (SAMPSTAT 350) or in danger of extinction (SAMPSTAT 360);

2. **Genetically unique to the best available knowledge** (not related to any other cultivar) (assessment based on SSR marker data). It is still an ambitious objective, as genetic fingerprints of all accessions maintained in collections are not available and comparison of fingerprints between collections still needs to be done.

It is suggested building up from a small base, starting with minor and neglected cultivars of European countries.

The above presentation was prepared on the assumption that only accessions for the European Collection that correspond with established priorities would be included. However, the ensuing discussion proceeded on the understanding that all unique and important accessions should be considered for inclusion in the European Collection.

Discussion

E. Maul wanted to know what should be done with collections in institutions that are not AEGIS Associate Members. L. Maggioni replied that as all ECPGR member countries are expected to sign the AEGIS agreement in the near future, all the important collections are expected to become Associate Members.

J. Engels remarked that the Group should decide which material of a given variety and with what genetic pattern should be included in the European Collection (all clones of a variety or a selection?).

O. Failla clarified that the COST Action focuses on a core collection for association genetics studies. He agreed with the approach proposed in the presentation and suggested adding the category of "like-to-type" accessions to the existing categories.

D. Maghradze agreed with the criteria proposed by E. Maul for the prioritization of the European Collection accessions.

L. Maggioni clarified that including accessions in the European Collection implies a long-term commitment for conserving the material according to standards agreed by the WG and making it available by issuing the Standard Material Transfer Agreement.

The WG Chair requested WG members to indicate if any accessions conserved in their country qualified as old autochthonous and neglected varieties that could become part of the European Collection. Table 2 below is a compilation of the replies received.

Table 2. Proposed number of autochthonous varieties to be included in the European Collection

Country	Estimated number of old autochthonous and neglected cultivars	Remarks
Albania	106	47 are duplicated in another collection
Austria	30-40	
Azerbaijan	500-600	70% are local cultivars
Bosnia and Herzegovina	30	Some are probably from other countries
Croatia	128	Some of the unique autochthonous cultivars are duplicated in the country, 40-50 need safety-duplication
Cyprus	15	
Czech Republic	1	
Georgia	525	Some of them are duplicated in the country
Germany	20	
Hungary	100	Duplicated to some extent in the country
Israel	15-20	All from the Middle East, all duplicated in the country
Italy	500	Neglected cultivars exist only in collections. To a high extent, duplicated in the country
Montenegro	16	From 203 old cultivars that originated in the country
Poland	76	Possibly of Polish origin, all are duplicated
Serbia	30-40	Most of them are duplicated in the country
Slovakia		Not to be defined at the moment
Slovenia	30	Duplicated to a great extent in the country
Spain	350	Duplicated to a great extent in the country

Recommendations

- It was recommended that each WG member provide a list of proposed accessions for inclusion in the European Collection.

Workplan

- All WG members will send to the Chair and DB Manager their lists of accessions proposed for inclusion into the AEGIS European Collection, together with information on country of origin, accession name, accession number, berry colour, VIVC variety number and common use, **not later than 30 November 2012.**
- All WG members proposing accessions for AEGIS will send the passport data of the proposed accessions to their respective National Inventory Focal Point for inclusion into EURISCO, **not later than 30 November 2012.**
- All WG members will send the lists of accessions proposed for inclusion into AEGIS that are conserved by an AEGIS Associate Member institute to their respective National Coordinator for approval and immediate flagging as "part of AEGIS" in the appropriate EURISCO descriptor, **not later than 30 November 2012.** If the Associate Membership Agreement (AMA) has not been signed by that date, the action will be carried out **upon signing of the AMA**.

- The DB Manager will prepare a Web page in the European *Vitis* Database to display the list of candidate accessions that have been proposed but not yet entered into AEGIS **by January 2013**.
- For countries having signed the AEGIS MoU but not the Associate Membership Agreement (AMA) with the *Vitis* germplasm holding institute, the *Vitis* WG member should contact the National Coordinator to sign the AMA **as soon as possible,** if this is intended by the two parties to the AMA**.**
- The WG Chair, with support of the DB Manager, will monitor the above-described process and accelerate inclusion of additional accessions into the European Collection.

Safety-duplication of European Accessions (AEGIS)

Introduction to AEGIS policy

J. Engels pointed out the importance of safety-duplication of existing and future accessions in the European Collection and referred to the specific points related to safety-duplication in the AEGIS Quality System (AQUAS), the "Strategic Framework Policy Guide"[4] and the AEGIS MoU. He presented the principles that underpin safety-duplication and introduced the draft "AEGIS Safety-duplication Policy" and the next steps proposed for its finalization.

Proposal of standards for safety-duplication arrangements of European *Vitis* accessions

(General discussion)

J. Ortiz distinguished the two concepts: the conscious "safety-duplication" of individual accessions at another genebank and the existence of "duplicates" of accessions that are conserved in other genebanks. For *Vitis,* the latter are accepted in the European Collection to increase the level of conserved clonal variability of a given variety.

Priority should be given to accessions that are not duplicated anywhere, and measures taken to ensure that they are safety-duplicated at least within the country.

J. Ortiz reported that the Spanish national collection is located in Madrid and largely duplicated in southern Spain. In addition, the regional collections maintain their own material; therefore most of the accessions are duplicated within the country.

M. Gardiman reported that his institute (Consiglio per la Ricerca e la Sperimentazione in Agricoltura - Centro di Ricerca per la Viticoltura (CRA-VIT) in Conegliano, Italy) has safety-duplicated part of its material at a site near Rome. There are more than 40 *Vitis* collections in Italy; it can therefore be assumed that most of the accessions have several duplicates within the country, although this is not clearly established. About half the Italian accessions are maintained in 4-5 collections; it should therefore be possible to clarify the situation at least for the major collections.

E. Maul commented that it is necessary to decide whether duplication within countries is an acceptable form of safety-duplication; how many plants should make up the duplicate; and which recipient genebanks are prepared to accept and maintain safety-duplicated material.

J. Ortiz proposed that each genebank should inform the WG how many safety-duplicates it can maintain.

E. Maletić commented that it is very expensive to graft the duplicates.

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[4] ECPGR. 2009. A Strategic Framework for the Implementation of a European Genebank Integrated System (AEGIS). A Policy Guide. European Cooperative Programme for Plant Genetic Resources (ECPGR). Bioversity International, Rome, Italy.
(See http://aegis.cgiar.org/documents/constitutional_documents.html).

O. Failla reminded the Group that phytosanitary certificates should not be overlooked; also, whether these certificates can be issued by phytosanitary services. However, it is currently not possible to import material from countries outside the EU; safety-duplicates from non-EU countries should therefore be maintained in other non-EU countries.

Recommendations

- The Group approved the draft AEGIS Safety-duplication Policy.
- Each *Vitis* European Accession should have one safety-duplicate within the country, as is already being practiced in many cases, and another safety-duplicate in a different country.
- Whenever duplicates of European Accessions already exist in another Associate Member institute, their identity should be confirmed by microsatellite fingerprinting and ampelographic analysis before they can be flagged as AEGIS safety-duplicates. However, the providing genebank should ensure that the recipient agrees to conserve that accession as a safety-duplicate. The provider will then flag that accession as an AEGIS safety-duplicate in EURISCO.

Workplan

- Genebank curators of accessions proposed for inclusion into AEGIS will identify whether or not duplicates of these accessions exist in other countries and propose to the curators of the institutes holding these duplicates to consider accepting them as formal safety-duplicates (**as soon as possible after designation of accessions as part of the European Collection).**
- For *Vitis* accessions that are not safety-duplicated, curators will establish safety-duplicates **as soon as possible** within their country.

Standards for the conservation of Vitis *accessions*

Introduction to AEGIS standards

Jan Engels updated the meeting on the current situation of the generic technical genebank standards that form an integral part of the AEGIS Quality Management System (AQUAS). During the development of the generic technical standards for seed germplasm by a number of WGs, it was decided to join the FAO Genebank Standards updating process. A number of ECPGR members commented on the draft "Orthodox seed genebanks standards", and the Secretariat participated in the Expert Consultation. An advance draft was discussed by the FAO Commission on Genetic Resources for Food and Agriculture during its meeting in July 2011. A revised draft document was issued, including a section on the evaluation standards requested by the Commission. In addition, the Commission had requested the FAO to develop standards for field genebanks and for *in vitro*/cryopreservation of non-orthodox seeds and vegetatively propagated crops. The first drafts were discussed at an Expert Consultation in January 2012; a final draft with all three components will be prepared for the next Intergovernmental Technical Working Group meeting in November 2012 for discussion and endorsement. The final revised draft document "Genebank Standards" will be submitted at the next meeting of the Commission in April 2013. The current drafts can be found on the FAO and AEGIS Web sites.

Introduction to generic operational standards for non-orthodox seeds and clonally-propagated plants (FAO document)

J. Ortiz had prepared a summary of the document and went through the draft technical standards for each of the ten activities. The following points were considered and discussed *(comments from the WG are indicated in italics):*

1. Choice of location
   Agro-ecological conditions should be similar to the environment of origin, but it is suggested to relax the requirement to "as similar as possible".
   Existing genebanks do not always have adequate facilities for propagation and quarantine.
2. Acquisition of germplasm
   Quarantine process should only be required when needed (i.e., it is not needed within the EU).
3. Establishment of field collections
   Sufficient number of plants. WG collections in the Group maintain between 3 (minimum) and 6 plants, spaced at 1 m.
4. Field management
   Recommendations regarding rootstocks need to be given.
5. Regeneration and propagation
6. Characterization
7. Evaluation
8. Documentation
9. Distribution
10. Security and safety-duplication.

Recommendations

The Group agreed that the FAO generic standards were generally acceptable for the *Vitis* WG, with the addition of the following *Vitis*-specific standards:

- Activity 3: The minimum number of plants per accession should be 4, and in case of new introductions, at least 5.
- Activity 3: The same rootstock should be used in each collection and it should be the most suitable for the given soil conditions, as well as of the highest sanitary standard (i.e., certified virus-free).
- Activity 6: A minimum of the 48 descriptors recommended by the WG should be used for characterization.
- Activity 6: A minimum of the 9 SSRs recommended by the WG should be used for molecular characterization.

Additional general aspects

1. A few member countries expressed concern about the increasing costs of implementing the European Collection, including the cost of safety-duplication and of raising conservation quality standards (e.g., the standard of minimum number of plants per accession). Participants agreed on the need to raise funds specifically for the implementation of AEGIS. Governments that have signed the AEGIS MoU should be seen as the primary source of such funds within the respective countries. Assistance of the ECPGR Secretariat and the Working Group could be enlisted for capacity building to cope with critical situations.
2. A successful achievement of this meeting was the integration in the European *Vitis* Database of *Vitis* germplasm from several new countries (Albania, Bosnia and Herzegovina, Israel, Montenegro and Poland). Moreover, young researchers were sent as new country representatives, which augurs well for continuation of the work. They were all invited to join COST Action FA1003.
3. E. Maul offered to circulate to the Group the genebank manual that she is preparing on the conservation standards currently in use at the JKI.

Workplan

- Whenever a critical financial situation occurs in a given country/institution that would put the survival of important germplasm at risk, or in case the implementation of AEGIS provisions is seriously jeopardized, the WG members concerned are invited to submit well justified and detailed requests for funding support. These requests will be sent to the WG Chair and the ECPGR Secretariat. Requests receiving endorsement from the WG will be prioritized for funding by the ECPGR (Networks' budgets); the Secretariat will also approach other donors.
- Although a number of new WG members attended the meeting, it was noted with regret that several important *Vitis*-growing countries were not represented. The Chair will contact the non-attending WG members for the necessary follow-up to the agreed workplan, particularly the agreed steps on the establishment of the European Collection as well as other recommendations.

Excursion to *Vitis sylvestris* population on Ketsch Island

(A detailed report including photographs by Grzegorz Łysiak is available at http://www.ecpgr.cgiar.org/networks/fruit/vitis/vitis_wg_meeting_2012.html).

On the last day of the meeting, an excursion was organized to Ketsch Island (Ketscher Rheininsel), a 460-hectare nature protection area of supra-regional importance, which is home to many rare and endangered animal and plant species; for many of them, the island is the only habitat.

Dr Reinhard Töpfer, Director of the host institute JKI, joined in the visit, and Ernst Ph. Heene, from the Botanical Garden of the Karlsruhe Institute of Technology, guided the participants round the island. They were shown several very large individuals of *Vitis sylvestris* Gmel., which occurs naturally on the island. About 90 plants of this species have been identified and marked, and they are observed regularly. They can be easily identified in autumn when the leaves turn an intense red. The participants were impressed by the efficient preservation of the species.

Conclusion

Presentation of the report and adoption of recommendations and workplan

The report was discussed and approved after few modifications.

Election of Chair and Vice-Chair

Jésus Ortiz informed the Group that after nine years as Chair of the WG, he was stepping down from the position; he suggested David Maghradze as the next Chair and Edi Maletić to continue as Vice-Chair. The Group welcomed the proposals and both nominees accepted.

Closing remarks

Thanks were given to Erika Maul and her support staff for arranging the meeting very efficiently and in a pleasant atmosphere.

APPENDICES

Appendix I. Workplan 2012-2013

(Agreed at the second meeting of the Working Group on Vitis*, 18-20 September 2012, Siebeldingen, Germany)*

Activities	Responsibility	Deadline
Dissemination of information		
Provide links from the *Vitis* WG and Database Web sites to the databases and publications listed by J. Ortiz in his presentation	ECPGR Secretariat and European *Vitis* Database Manager	End September 2012
COST Action FA1003		
Send an invitation to all *Vitis* WG members to join the COST Action	O. Failla	Immediately after the meeting
Germplasm mobilization for sustainable conservation strategy. Sanitary aspects		
Send to the Chair the proposed simplified protocol for the movement of propagation material across countries within and outside the EU	O. Failla	End 2012
Circulate the document received from O. Failla within the WG, compile the comments received within two weeks and inform O. Failla about the WG's opinion on the protocol	Chair	Upon reception of the proposed protocol from O. Failla
Selection of accessions to be included in the European Collection (AEGIS)		
Send to the Chair and DB Manager the list of accessions proposed for inclusion into AEGIS, together with information on country of origin, accession name, accession number, berry colour, VIVC variety number and common use	All WG members	30 November 2012
Send passport data of the proposed accessions to their respective National Inventory Focal Point for inclusion into EURISCO	All WG members	30 November 2012
Send the lists of accessions proposed for inclusion into AEGIS that are conserved by an AEGIS Associate Member institute to their respective National Coordinator for approval and immediate flagging as "part of AEGIS" in the appropriate EURISCO descriptor	All WG members	30 November 2012, or upon signing of the Associate Membership Agreement if it has not yet been signed by that date

Activities	**Responsibility**	**Deadline**
Prepare a Web page in the European *Vitis* Database to display the list of candidate accessions that have been proposed but not yet entered into AEGIS	DB Manager	January 2013
Contact the National Coordinator to sign the Associate Membership Agreement (AMA)	*Vitis* WG members of countries having signed the AEGIS MoU but not the Associate Membership Agreement with the *Vitis* germplasm holding institute, if appropriate.	As soon as possible
Monitor the above-described process and accelerate inclusion of additional accessions into the European Collection	WG Chair, supported by the DB Manager	Ongoing process
Proposal of standards for safety-duplication arrangements of European *Vitis* accessions		
Identify whether or not duplicates of these accessions exist in other countries and propose to the curators of the institutes holding these duplicates to accept these accessions as formal safety-duplicates	Genebank curators of accessions proposed for inclusion in AEGIS	As soon as possible after designation of accessions as part of the European Collection
Establish safety-duplicates within their country	Curators of collections containing *Vitis* accessions that are not safety-duplicated	As soon as possible
Additional general aspects		
Submit to the WG Chair and the ECPGR Secretariat well justified and detailed requests for funding support. Requests endorsed by the WG will be prioritized for funding by the ECPGR (Networks' budgets); the Secretariat will also approach other donors	WG members facing a critical financial situation in their country/institution that would put the survival of important germplasm at risk, or in case the implementation of AEGIS provisions is seriously jeopardized	On an ad hoc basis
Contact WG members who did not attend the meeting for the necessary follow-up to the agreed workplan	WG Chair	Ongoing

Appendix II. *Vitis* germplasm collections in Europe

Country	Year of update	Collection	Number of accessions							
			Vitis vinifera	Native cultivars	Other *Vitis* sp.	Table grapes	*Vitis sylvestris*	Hybrids	Rootstocks	TOTAL
Albania	**2012**	Genebank	106	106			24		8	**138**
Albania	**2012**	Agricultural Technology Transfer Center of Vlora	140	57						**140**
Armenia	**2003**	Botanical Garden of the Academy of Sciences of Armenia								**45**
Armenia	**2003**	Scientific Centre of Farming and Agrichemistry								**30**
Armenia	**2003**	Scientific Research Institute of Viticulture, Wine making and Fruit growing								**65**
Azerbaijan	**2012**	Genetic Resources Institute of the Azerbaijan National Academy of Sciences (Absheron Experimental Station)	290	190	5	150	30	20	8	**346**
Azerbaijan	**2012**	Genetic Resources Institute of the Azerbaijan National Academy of Sciences (Tovuz Experimental Station)	160	110		80				**160**
Azerbaijan	**2012**	Azerbaijan Scientific Research Institute of Viticulture and Winemaking	320	200			18	40	4	**380**
Azerbaijan	**2012**	Institute of Bioresources of the Azerbaijan National Academy of Sciences (Nakhichevan)	150	120	2		10	30		**180**
Azerbaijan	**2012**	Azerbaijan State Agrarian University (Ganja)	120	70				10		**130**
Belarus	**2012**	Fruit Breeding Department, Institute for Fruit Growing, Samokhvalovitchy	32		22			218		**272**
Bulgaria	**2003**	Institute of Viticulture and Enology of Pleven								**2000**
Croatia	**2012**	Faculty of Agriculture, Zagreb, experimental station Jabina. National collection	128	128						**128**
Croatia	**2012**	Faculty of Agriculture, Zagreb, experimental station Jabina. Introduced cvs.	57			24		12		**93**
Croatia	**2012**	Institute for Adriatic Crops and Carst Reclamation, Split	90							**130**
Croatia	**2012**	Collection of native grapevine cultivars of Primorsko-Goranska county	22	22						**22**
Croatia	**2012**	Collection of native grapevine cultivars of Hrvatsko zagorje-Donja Pacetina, Krapinsko-Zagorska county	18	18						**18**

Country	Year of update	Collection	Number of accessions							
			Vitis vinifera	Native cultivars	Other *Vitis* sp.	Table grapes	*Vitis sylvestris*	Hybrids	Rootstocks	TOTAL
Cyprus	**2012**	Agricultural Research Institute, Saittas Experimental Station	40	15		28			10	**78**
Cyprus	**2012**	Agricultural Research Institute, Achelia Experimental Station				38			8	**46**
Czech Republic	**2012**	Crop Research Institute in Prague - Research Station for Viticulture in Karlštejn	269				0	5	0	**274**
Czech Republic	**2012**	Ampelos a.s. Znojmo-Vrbovec	269				6	5	6	**286**
Czech Republic	**2012**	Mendel Agricultural and Forestry University, Faculty of Horticulture Lednice na Morave	19				1	7	7	**34**
France	**2012**	Institut National de la Recherche Agronomique (INRA), Experimental Station of "Domaine de Vassal"	5500		250		200	1100	480	**7530**
France	**2012**	Institut Français de la Vigne et du Vin (IFV), Pôle Matériel Végétal, Domaine de l'Espiguette								**5250**
France	**2012**	33 other regional partners								**15375**
Georgia	**2012**	Skra 1	75	75						**75**
Georgia	**2012**	Skra 2	440	440			5			**440**
Georgia	**2012**	Vachebi	312	312					7	**312**
Georgia	**2012**	Telavi 1	146	146						**146**
Georgia	**2012**	Telavi 2	573	500	5					**573**
Georgia	**2012**	Jighaura	780	500					8	**780**
Georgia	**2012**	Shumi	271	179						**271**
Georgia	**2012**	Kindzmarauli	400	400						**400**
Georgia	**2012**	Mukhrani	181	181						**181**

Country	Year of update	Collection	Number of accessions							
			Vitis vinifera	Native cultivars	Other *Vitis* sp.	Table grapes	*Vitis sylvestris*	Hybrids	Rootstocks	TOTAL
Germany	**2012**	Julius Kühn-Institut, Bundesforschungsinstitut für Kulturpflanzen (JKI)	1092		342			1642		**3076**
Germany	**2012**	Dienstleistungszentrum Ländlicher Raum Rheinpfalz	221		3			14		**238**
Germany	**2012**	Forschungsanstalt Geisenheim	271		19			26		**316**
Germany	**2012**	Staatliches Weinbauinstitut Freiburg	82							**82**
Germany	**2012**	Staatliche Lehr- und Versuchsanstalt für Wein- und Obstbau	537		35			98		**670**
Germany	**2012**	Bayerische Landesanstalt für Weinbau und Gartenbau	40					2		**42**
Germany	**2012**	Bundessortenamt	8							**8**
Hungary	**2012**	Research Institute for Viticulture and Enology (RIVE) Eger	217	15	14	54	-	492	5	**741**
Hungary	**2012**	University of Pannónia Georgikon Faculty (Keszthely)	294	9	10	113	2	290	160	**558**
Hungary	**2012**	Research Institute for Viticulture and Enology (RIVE) Badacsony	141				59			**200**
Hungary	**2012**	Corvinus University (Budapest and Research Institute for Viticulture and Enology (RIVE) Kecskemét)								**1764**
Hungary	**2012**	University of Pécs, Institute of Viticulture and Enology	1020	100	33	385	6	409	39	**1524**
Italy	**2012**	Consiglio per la Ricerca e la Sperimentazione in Agricoltura - Centro di Ricerca per la Viticoltura (CRA-VIT), Conegliano (TV)	2947		20	(428)		123	160	**3250**
Italy	**2012**	Consiglio per la Ricerca e la Sperimentazione in Agricoltura - Unità di ricerca per l'uva da tavola e la vitivinicoltura in ambiente mediterraneo (CRA-UTV), Turi (BA)	3023			(718)			118	**3141**
Italy	**2012**	Fondazione E. Mach – S. Michele a/A (TN)	1700		70			130	240	**2140**
Italy	**2012**	Università di Milano	979		120					**1099**
Italy	**2012**	Consiglio Nazionale delle Ricerche - Istituto di Virologia Vegetale (CNR-IVV), Grugliasco (TO)	750		20			10	20	**800**
Italy	**2012**	37 other collections in the country	12362		173			15	124	**12674**

Country	Year of update	Collection	Number of accessions							
			Vitis vinifera	Native cultivars	Other *Vitis* sp.	Table grapes	*Vitis sylvestris*	Hybrids	Rootstocks	TOTAL
Macedonia FYR	**2003**	Institute of Agriculture, Department of Viticulture, Skopje								**180**
Montenegro	**2012**	*Vitis* collection at Podgorica	408	203						**408**
Portugal	**2012**	Instituto Nacional de Investigação Agrária e Veterinária (INIAV)	934							**934**
Portugal	**2012**	Direcção Regional de Agricultura do Algarve (DRAAlg)	129			76				**205**
Portugal	**2012**	Direcção Regional de Agricultura do Norte (DRAN), Santa Bárbara	170							**170**
Portugal	**2012**	Direcção Regional de Agricultura do Centro (DRAC), Nelas	65							**65**
Portugal	**2012**	JMF, Wine Company	439							**439**
Portugal	**2012**	Esporao, Wine Company	180							**180**
Portugal	**2012**	Associação *Portuguesa* para a Diversidade da Videira (PORVID)	12							**12**
Portugal	**2012**	Universidade de Trás-os-Montes e Alto Douro (UTAD)	80							**80**
Spain	**2012**	Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario (IMIDRA), El Encín, Alcalá de Henares (Madrid)	1229			489	725	71	903	**3417**
Spain	**2012**	Instituto de las Ciencias de la Vid y el Vino (ICVV), La Grajera, Logroño (La Rioja)	2058			122		8	7	**2195**
Spain	**2012**	Centro de Investigación y Formación Agraria (CIFA), Rancho de la Merced, Jerez de la Frontera (Cádiz)	1236			503		54	128	**1921**
Spain	**2012**	16 other collections in the country	2582			342	48	12	82	**3066**

Appendix III. Main international varieties grown in Europe

Varieties	Countries (ISO code)								
	BiH	CYP	CZE	DEU	FRA	HRV	ITA	PRT	SPA
Alicante Bouschet	x				x			x	x
Blaufränkisch				x					
Blaufränkisch (Frankovka)			x			x			
Cabernet Franc		x			x				x
Cabernet Sauvignon	x	x			x	x	x	x	x
Carignan		x			x			x	
Chardonnay		x		x	x	x	x	x	x
Chasselas Blanc				x	x				x
Chenin					x				x
Folle Blanche					x				x
Gamay					x				
Gewurztraminer					x				x
Graševina (Welschriesling)						x			
Grenache					x	x			x
Malbec = Cot					x				x
Mataro (= Mourvèdre)		x			x				
Merlot	x			x	x	x	x	x	x
Morrastel-Bouschet or Gran Negro									x
Müller-Thurgau (Mueller Thurgau)		x	x						
Muscat à petits grains blancs					x				
Muscat d'Alexandrie					x				
Nielluccio = Sangiovese					x		x		
Pinot blanc				x	x	x	x		
Pinot gris (Pinot grigio)				x	x		x		
Pinot Meunier				x	x				
Pinot noir (Rulandské modré)			x	x	x			x	x
Portugieser				x					
Riesling (Ryzlink rýnský)			x		x				x
Riesling Weiss (Ryzlink vlašský)			x	x	x				
Saint Laurent (Svatovavřinecké)			x						
Sauvignon blanc				x	x	x	x	x	x
Schiava Grossa				x					
Semillon					x				
Sylvaner green					x				
Syrah		x						x	x
Tannat									
Traminer					x (weiss)	x			x
Ugni blanc = Trebbiano toscano					x	x	x		
Veltliner Gruen (Veltlínské zelené)			x						
Viognier					x				x
Zweigeltrebe			x						

Appendix IV. Acronyms and abbreviations

AEGIS	A European Genebank Integrated System
AMA	Associate Member Agreement
AQUAS	AEGIS Quality System
CCDB	Central Crop Database
CIFA	Centro de Investigación y Formación Agraria) Rancho de la Merced, Jerez de la Frontera (Cádiz), Spain
CNR-IVV	Consiglio Nazionale delle Ricerche - Istituto di Virologia Vegetale (National Research Council - Institute of Plant Virology), Italy
CRA	Consiglio per la Ricerca e la Sperimentazione in Agricoltura (Agricultural Research Council), Italy
CRA-UTV	Consiglio per la Ricerca e la Sperimentazione in Agricoltura - Unità di ricerca per l'uva da tavola e la vitivinicoltura in ambiente mediterraneo (Agricultural Research Council - Research Unit for Viticulture and Enology in Southern Italy), Turi, Italy
CRA-VIT	Consiglio per la Ricerca e la Sperimentazione in Agricoltura - Centro di Ricerca per la Viticoltura (Agricultural Research Council – Research Centre for Viticulture), Conegliano, Italy
DRAAlg	Direcção Regional de Agricultura do Algarve, Portugal
DRAC	Direcção Regional de Agricultura do Centro, Nelas, Portugal
DRAN	Direcção Regional de Agricultura do Norte, Santa Bárbara, Portugal
EC	European Commission
ECPGR	European Cooperative Programme for Plant Genetic Resources
ELISA	Enzyme-linked immunosorbent assay
EPPO	European and Mediterranean Plant Protection Organization
ETSIA	Escuela Técnica Superior de Ingenieros Agrónomos (Higher Technical School of Agricultural Engineering), Madrid, Spain
EU	European Union
EURISCO	European Internet Search Catalogue
EVDB	European *Vitis* Database
FAO	Food and Agriculture Organization of the United Nations
IBPGR	International Board for Plant Genetic Resources *(now Bioversity International)*
ICVV	Instituto de las Ciencias de la Vid y el Vino (Institute of Grapevine and Wine), La Rioja, Spain
IFV	Institut Français de la Vigne et du Vin (French Vine and Wine Institute)
IHVO	Institute of Horticulture, Viticulture and Oenology, Tbilisi, Georgia
IMIDRA	Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario, El Encín, Alcalá de Henares (Madrid), Spain
INIAV	Instituto Nacional de Investigação Agrária e Veterinária, Portugal

INRA	Institut National de la Recherche Agronomique (National Institute for Agricultural Research), France
IPGRI	International Plant Genetic Resources Institute *(now Bioversity International)*
ISO	International Organization for Standardization
JKI	Julius Kühn-Institut, Bundesforschungsinstitut für Kulturpflanzen, Germany
MAA	Most Appropriate Accession *(for AEGIS)*
MCPD	Multi-crop Passport Descriptors
MoU	Memorandum of Understanding
OIV	Organisation Internationale de la Vigne et du Vin (International Organisation of Vine and Wine), Paris, France
PCR	Polymerase chain reaction
PGR	Plant genetic resources
PORVID	Associação Portuguesa para a Diversidade da Videira (Portuguese Association for Grapevine Diversity)
RIVE	Research Institute for Viticulture and Enology, Hungary
SC	Steering Committee
SSR	Simple sequence repeat
STMS	Sequence tagged microsatellite site
UPM	Universidad Politécnica de Madrid (Polytechnic University of Madrid), Spain
UPOV	Union Internationale pour la Protection des Obtentions Végétales (International Union for the Protection of New Varieties of Plants), Geneva, Switzerland
UTAD	Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal
VIVC	*Vitis* International Variety Catalogue
WG	Working Group

Appendix V. Agenda

***Second Meeting of the ECPGR Working Group on* Vitis**
18-20 September 2012, Siebeldingen, Germany

Monday, 17 September

Arrival of participants

Tuesday, 18 September

8:30-9:00	**Introduction** • Welcome by Reinhard Töpfer, Director, Institut für Rebenzüchtung Geilweilerhof *(15 min.)* • Welcome by J. Ortiz, Chair of the Working Group *(15 min.)*
9:00-9:15	Self-introductions by the participants
9:15-9:30	Presentation of the agenda and adjustments
9:30-9:50	**Update on ECPGR** *(L. Maggioni)*
9:50-10:30	**Chair's report** *(J. Ortiz)* Summary of WG's activity and progress since last meeting, based on country reports provided by members before the meeting *(including time for general discussion)*
10:30-11:00	*Coffee break*
11:00-11:30	**Report of the COST FA1003 action** *(O. Failla) (20 min. + 10 min. discussion)*
11:30-12:00	**Status of *Vitis* germplasm preservation in Europe** *(E. Maul) (20 min. + 10 min. discussion)*
12:00-12:30	**The European *Vitis* Database, status and progress report** *(E. Maul) (20 min. + 10 min. discussion)*
12:30-14:00	*Lunch*
14:00-14:30	**European Catalogue of nationally registered varieties** *(E. Maul) (20 min. + 10 min. discussion)*
14:30-15:30	**Characterization of accessions in the different collections** *(All members)*
15: 30-16:30	**Synonymy, homonymy and misnaming. Possible guidelines for updating OIV's International list of Vine Varieties and Synonyms** *(J. Ortiz) (Introduction + open discussion)*
16:30-17:00	*Coffee break*
17:00-18:00	**Germplasm mobilization for sustainable conservation strategy. Sanitary aspects** *(presented by O. Failla)*

Wednesday, 19 September

AEGIS: status, progress, discussion of future work

08:30-09:10 **Update on AEGIS** *(J. Engels - 30 min. + 10 min. discussion)*

9:10-10:30 **Accessions to be included in the European Collection (AEGIS)**
Discussion of preliminary selection criteria proposed by the *Vitis* Database Manager and determination of final criteria *(E. Maul)*

10:30-11:00 *Coffee break*

11:00-12:30 **Accessions to be included in the European Collection (AEGIS) (cont.)**
Compilation of first lists of possible AEGIS accessions *(General discussion, led by E. Maul)*

12:30–14:00 *Lunch*

Safety-duplication of European Accessions (AEGIS)

14:00-14:20 Introduction to AEGIS policy *(J. Engels)*

14:20-14:40 Proposal for standards for safety-duplication arrangements of European *Vitis* accessions *(General discussion)*

Standards for the conservation of *Vitis* accessions:

14:40-15:10 • Introduction to AEGIS policy*(J. Engels)*

15:10-15:30 • Introduction to generic operational standards for non-orthodox seeds and clonally-propagated plants (FAO document) *(J. Ortiz)*

15:30-16:00 • Elaboration of *Vitis*-specific standards if FAO generic standards are not sufficient *(J. Ortiz)*

16:00-17:00 **Summary of recommendations and workplan**

Thursday, 20 September

08:30-13:00 **Drafting of the report** *(ECPGR Secretariat + one or two volunteers)*
Excursion to *Vitis sylvestris* population on Ketsch Island

13:00-14:30 *Lunch*

14:30-15:30 **Presentation of the report and adoption of recommendations and workplan**

15:30-16:30 **Conclusion**
Election of Chair and Vice-Chair
Closing remarks

16:30-17:00 *Coffee break and end of meeting*

Social dinner

Friday, 21 September

Departure of participants

Appendix VI. List of participants

***Second Meeting of the ECPGR Working Group on* Vitis**
18-20 September 2012, Siebeldingen, Germany

N.B. Contact details of participants updated at the time of publication. The composition of the Working Group is subject to changes. The full list, constantly updated, is available from the Vitis *WG's Web page (http://www.ecpgr.cgiar.org/networks/fruit/vitis.html).*

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