

Report of a Working Group on Cucurbits

Second Meeting, 8-10 November 2010, Tbilisi, Georgia
M.J. Díez, W. van Dooijeweert, L. Maggioni and E. Lipman





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Melon (*Cucumis melo* L.) variety 'Primal F1' grown in Samohvalovich village, Minsk region. Courtesy © O. Myshkevich, Institute of Vegetable Production, Minsk, Belarus.

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Related presentations can be downloaded from
http://www.ecpgr.cgiar.org/networks/vegetables/cucurbits/cucurbits_wg_georgia_nov2010.html

SUMMARY OF THE MEETING

Introduction

Welcome by the local organizers and opening remarks

Alexander Zubiashvili, of the Plant Genetic Resources Department at the Y.N. Lomouri Institute of Farming, welcomed the Working Group on Cucurbits of the European Cooperative Programme on Plant Genetic Resources (ECPGR) to Georgia and briefly described the activities of the Georgian genebank for cucurbit genetic resources. The Director of the Institute, Avtandil Mumladze, also wished the Group a fruitful meeting.

Guram Aleksidze, Vice-President of the Academy of Sciences and National Coordinator for Georgia, was pleased to host the Working Group on Cucurbits in Georgia. He hoped that strengthened collaboration between the countries will help address the various problems of cucurbit genetic resources in Georgia.

Lorenzo Maggioni, ECPGR Coordinator, welcomed the Group on behalf of ECPGR and thanked the local hosts for their renowned hospitality.

María José Díez, Chair of the Working Group, welcomed the participants, particularly the new members from Belarus, Greece, Italy, and Montenegro. She summarized the objectives of the meeting and invited the participants to briefly introduce themselves. She also presented the agenda of the meeting.

Update on ECPGR

L. Maggioni updated participants on the status of the ECPGR Programme during the ongoing Phase VIII (2009-2013). The main decisions of the last Steering Committee meeting held in Sarajevo, Bosnia and Herzegovina, September 2008 were summarized, including the priorities for the Phase (the highest being the sharing of responsibilities), the budget and the planned actions of the Cucurbits Working Group (WG). He also presented the current status of the European Plant Genetic Resources Catalogue (also known as the European Internet Search Catalogue, EURISCO) with its data on more than 1 million accessions from 41 countries. Countries can now designate their material as Multilateral System accessions in EURISCO; so far, 212 000 European accessions had been designated by 13 countries. The Documentation and Information Network of the ECPGR had elaborated a concept to include non-standardized characterization and evaluation data into EURISCO. The results and recommendations of the ECPGR Independent External Review that took place in July 2010 at Bioversity Headquarters, Rome, were summarized.

Discussion

A question was raised about the difference between EURISCO and the Central Crop Databases.

The difficulty for new members to understand the structure and mode of operation of ECPGR was reiterated.

Recommendation 1

The Chair should send a list of links to selected documents of relevance to the WG members so that they can familiarize themselves with the Programme and better understand their own role.

Report on the Working Group's activities

M.J. Díez outlined the history of the Working Group, from its establishment (2003) up to the most recent meetings. The current number of members is 25. The main achievements of the WG were highlighted: establishment of the European Central Cucurbits Database (ECCUDB); development of minimum descriptor lists for cucumber, melon, and watermelon and of a draft list for *Cucurbita* spp.; progress in black box safety-duplication and in collection of information about non-governmental organizations in some countries for subsequent collaboration with them.

M.J. Díez reminded the Group about the priority areas for ECPGR Phase VIII and the four Network goals for this Phase. Three of them are related to AEGIS: to develop mechanisms for determining the Most Appropriate Accessions (MAAs), to agree on quality standards for maintaining the MAAs and to adapt Central Crop Databases (CCDBs) for the identification of MAAs. The fourth goal is to improve the level of safety-duplication. She reviewed the workplan agreed at the third meeting of the ECPGR Vegetables Network held in Catania (Sicily) in November 2009, in which many items concern the implementation of AEGIS by the Cucurbits WG.

The current budget for Phase VIII was reviewed, indicating that €13 520 were available for this meeting and €7840 are available for implementation of safety-duplication (€5365), development and implementation of a specific algorithm to facilitate the identification of duplicates (€825) and to strengthen collaborations with the *In situ* and On-farm Conservation Network (€1650).

AEGIS – General Introduction

The background, objectives and perceived benefits of the initiative for A European Genebank Integrated System (AEGIS) were summarized by L. Maggioni. As of November 2010, 25 countries have signed the Memorandum of Understanding (MoU) and become members of AEGIS. An important agreement was reached on the development of the AEGIS Quality System (AQUAS); a discussion paper on its principles is posted on the Web site¹. The Steering Committee reached an agreement on the requirements for the European Accessions, thus establishing the scope of AEGIS.

The template being developed by the EPCGR Secretariat for the genebank operational manuals was almost complete. The Secretariat will also propose generic genebank standards for approval by the ECPGR Steering Committee. As the FAO *Genebank Standards*, published in 1994, are also being updated, the same standards will possibly be adopted for AEGIS. No distinction will be made between “preferred” and “acceptable” standards; instead, one set of overall standards will be defined as “targets”. Crop-specific standards will have to be approved by the respective WGs.

The main product of AEGIS will be the European Collection, consisting of dispersed MAAs; the Collection will be a virtual European genebank. The Secretariat proposed a simplified procedure that the WGs could follow for identifying the MAAs.

By signing the MoU, countries accept responsibilities for long-term conservation and availability of the European Accessions, and for conservation and management of the accessions according to agreed quality standards. Conservation and management strategies for each crop need to be prepared by the respective Crop Working Group or the Network Coordinating Group and approved by the Steering Committee.

¹ Available from <http://aegis.cgiar.org/index.php?id=4042>

The second call for a Competitive Small Grant Scheme was launched in October 2010 to facilitate the establishment and operation of AEGIS.

EURISCO is the information portal for the European Collection. In this catalogue, accessions are flagged as (AEGIS) European Accessions.

Discussion

Willem van Dooijeweert sought clarification on the timing and adoption of the revised FAO *Genebank Standards* and its relationship with the template for the preparation of the operational genebank manual. L. Maggioni explained that the template for operational genebank manuals was also intended to serve as a guideline for the definition of the generic standards. However, since the FAO *Genebank Standards* are being revised at the same time, the possibility of adopting the same standards, if satisfactory, for AEGIS, was considered. A draft *Genebank Standards* document should be available for comments before the end of the year.² Meanwhile, the genebanks will finalize their operational genebank manuals, independently of the standards that will eventually be adopted by FAO (and AEGIS).

AEGIS – Most Appropriate Accessions

One of the main objectives of AEGIS is the selection of the Most Appropriate Accessions (MAAs). The process for establishing this collection is critical for the achievement of a rational and effective conservation system. The *AEGIS Strategic Framework* document³ outlines an iterative process between the WG crop experts and the countries invited to contribute accessions for the European collection; the process is already under way.

M.J. Díez explained the roadmap for selecting the MAAs:

1. The WGs (or a small group of experts) compile an accession list per crop, drawing information from EURISCO and the CCDBs and therefore taking into consideration the complete “pool” of existing accessions as potential candidates;
2. All the selected accessions must meet the previously defined **selection requirements** and the **crop-specific criteria** developed by each WG;
3. The WGs send their lists of candidate accessions to the respective National Coordinators (NCs);
4. Simultaneously, the WGs request the NCs to check if any other accessions conserved in the country could be included in the European Collection;
5. The NCs, in close consultation with the holding institute(s) and as the National Focal Points (NFPs), indicate to the WGs whether or not the proposed and possible new accessions can be included in the European Collection;
6. The WGs look for alternative accessions not confirmed by the NCs;
7. The WGs examine the feedback received from the NCs and make a final selection of accessions to be included in the European Collection;
8. The final decision is communicated to the respective NCs;
9. The accepted accessions are flagged by the respective NCs/NFPs in EURISCO;
10. The WGs must revise and update the list of European accessions regularly;
11. Special proposals or arrangements for crops of interest to the WGs, but currently not covered by any Network or WG, should be invited.

² Update at the time of publication (July 2011): the “Draft revised Genebank Standards for the Conservation of Orthodox Seeds” are available online from the FAO Web site (<http://www.fao.org/agriculture/crops/core-themes/theme/seeds-pgr/itwg/5th/en/> under “Information documents”, CGRFA/WG-PGR-5/11/Inf.3).

³ Available from http://aegis.cgiar.org/documents/constitutional_documents.html

Discussion

W. van Dooijeweert said that this Group will need to operate by email or conference calls for finalizing the definition of the MAAs after the meeting. Voluntary sub-groups can be established for specific crops.

AEGIS Quality System

AEGIS aims to establish a European Collection, which will be a virtual European Genebank maintained in accordance with agreed quality standards. Its material must be freely available in accordance with the terms and conditions set out in the International Treaty on Plant Genetic Resources for Food and Agriculture. The Steering Committee decided to establish AQUAS, which stands for "AEGIS Quality System", as an important part of AEGIS. W. van Dooijeweert informed the Group about progress in the development of AQUAS and showed the information presented on the AEGIS Web site. He highlighted the six principles of the system.

The Secretariat had drafted a template for "operational genebank manuals – seed", which will enable an overview of genebank management practices of the ECPGR members. Once all these data are collected, they can be used in establishing Generic Operational Standards for all partners in AEGIS; a draft of the document will be submitted to the Cucurbits WG for its comments. A roadmap for setting the standards is given in the document "Workplan towards the establishment of AQUAS". W. van Dooijeweert indicated the URLs to both documents (<http://aegis.cgiar.org/aquas.html>).

Subsequent to the generic standards, each WG will develop crop-specific standards. The Cucurbits WG has to develop standards for different cucurbit crops. These crop-specific standards have to be derived from the agreed operational genebank manual, but it is not ready yet. W. van Dooijeweert therefore offered to prepare a first draft based on the target areas for crop-specific technical standards. The suggested target areas are:

- a. Collecting/Acquisition
- b. Regeneration/Propagation
- c. Drying and other preparatory steps
- d. Storage
- e. Seed quality and viability monitoring
- f. Distribution
- g. Characterization.

Discussion

The WG should first establish what is specific to cucurbits, so that the areas of conservation that need specific guidelines can be identified. The methodology should be defined according to the crop and the purpose. A few examples were given: determination of the number of plants to be picked for the collecting methodology; extracting seeds (through fermentation); determination of the minimum number of required plants and the pollination methodology (use of insects, type of flower, ideal climatic conditions, regulation of flowering with pot size) for the regeneration methodology. Bees were said not to be necessary to ensure proper regeneration.

The minimum number of plants for regeneration and pollination methods can be proposed as standards and other indications as guidelines. According to the participants, 10 plants are needed for regeneration of *Cucurbita* spp., cucumber, melon and watermelon.

Workplan

1. *The Secretariat will prepare a separate document with the regeneration guidelines extracted from the report of the first meeting of the Cucurbits WG (Plovdiv, 2005)⁴, and upload it to the Web site.⁵*
2. *Katarzyna Niemirowicz-Szczytt will prepare the first draft of guidelines for regeneration of cucumber, melon, watermelon and Cucurbita, based on the existing guidelines (by the end of November 2010). The draft will include aspects related to collecting, seed quality and viability monitoring, distribution and characterization. Supplementary information on the regeneration of watermelon and C. moschata will be added to the draft by M. José Díez (by 15 December 2010). The draft will then be circulated by the Chair to the Group. All the WG members will be requested to send comments by the end of January 2011. A final version will be produced by the Chair by the end of April 2011 and sent to the Secretariat for uploading to the Web site.*

Implementation of AEGIS by the Cucurbits Working Group**Quality of passport data**

W. van Dooijeweert introduced the subject of quality of passport data as required for the identification of probable duplicates. Databases have to be first screened for unique and duplicate material in order to identify the Most Appropriate Accessions (MAAs). Good passport data are needed for this. He summarized the presentation given at the Vegetables Network (VEGNET) meeting in Catania in 2009 on searching for probable duplicates in the ECPGR Tomato Database. Many duplicates could not be identified during this exercise because of the lack of data or wrong data.

Macros were used for the search, but these must be improved for enhanced automation. The search for duplicates must be done all over again when new data are entered in a database. The Centre for Genetic Resources, The Netherlands (CGN) wrote a project proposal for the improvement and development of macros for searching duplicates in EURISCO or CCDBs; it was submitted to the AEGIS Grant Scheme. W. van Dooijeweert thought the proposal had high eligibility because of the benefits and relevance for all WGs and Database Managers.

W. van Dooijeweert showed the Group some examples of data that could be entered incorrectly into EURISCO or a CCDB. "Genus" and "Species" are sometimes not entered according to agreed nomenclature or "Species" is unknown. "Origin Country" is often confused with "Donor Country". "Collecting Number" and "Donor Number" are often missing. He stressed again that identifying material for the European Collection started with good data in the databases. These data could be improved; all partners were requested to check their data and update them.

The database in which the status of an accession is flagged is EURISCO. Therefore, data that are currently in the ECCUDB but not in EURISCO should also be integrated into EURISCO. WG members were asked to check whether their data figures in EURISCO; if not, they should contact their National Coordinator to add the missing data to EURISCO.

⁴ Díez MJ, van Dooijeweert W, Maggioni L, Lipman E, compilers. 2008. Report of a Working Group on Cucurbits. First Meeting, 1-2 September 2005, Plovdiv, Bulgaria. Bioversity International, Rome, Italy.

⁵ <http://www.ecpgr.cgiar.org/networks/vegetables/cucurbits.html>

Discussion

The example of data from the N.I. Vavilov Research Institute of Plant Industry (VIR), St. Petersburg, in EURISCO was cited. The entry for the descriptor "Species" for melon was "*Cucumis melo* L." instead of "*melo*". As a result, 1135 melon accessions conserved in the Russian Federation cannot be detected.

Quality of passport data in the European Cucurbits Database

M. José Díez reported that the following actions had been undertaken recently to improve the quality of the ECCUDB for the identification of the MAAs: data from EURISCO were included in the ECCUDB, other data were taken from the Web pages of some holding institutions and some more were obtained from emails sent to several members of the Cucurbits WG. The quality of the information in the strategic fields required for identification of duplicates was thus improved. For example, up to 57.03% of the field ACCNAME was filled compared with 17.44% before the improvements. More data were specifically presented regarding melon, as this crop was selected to carry out a case study during the meeting. The percentage of ACCNAME fields filled in was comparatively high (63% to 100%) for collections holding more than 100 accessions. Improvement of the ECCUDB will be pursued before it is used to identify the possible duplicates and the MAAs.

Recommendation 2

Each WG member was urged to improve the quality of data that are sent to the National Inventory Focal Point (for EURISCO) or to the Central Crop Database Manager.

Recommendation 3

The Database Manager was requested to advise the curators to correct their data when specific errors were identified.

List of crop-specific selection criteria to identify MAAs

M. José Díez listed the proposed criteria to be followed by the WG for the selection of cucurbits MAAs.

Discussion

The Group agreed that hybrids should be excluded from AEGIS since they cannot be regenerated without the parental lines.

K. Niemirowicz-Szczytt said that many samples collected in Poland were hybrids, even if this is not known for certain. In some species, specifically cucumber, it was difficult to identify the status of the sample.

It was also remarked that the same accession name and the same collecting location were not reliable criteria to conclude that the accessions were duplicates.

The criteria for choosing MAAs from among potential duplicates were discussed and approved (Box 1).

Box 1
Criteria to be followed by the Working Group
for the selection of MAAs for Cucurbits

A. Criteria for selection of unique accessions

- Split the analysis into different crops
- Assign a small group of experts for each crop
- Improve the quality of ECCUDB with EURISCO and holders' data
- Do not include hybrids. Include landraces, wild cucurbits, old varieties and breeding material
- Identify accessions received from other collections (check DONORCODE and DONORNUMB):
 - Do not include accessions that are still available in the collection of origin
 - If accessions were donated from genebanks outside the ECPGR area (e.g. USDA, Japan, etc.): select as MAA
- Study the field ACCENAME:
 - Accessions with unique ACCENAME: select as MAA
 - Accessions with the same ACCENAME:
 - If they are from different origins: select as MAA
 - If they (two or more) are from the same place (country, locality): potential duplicates (in case of wild material select all the accessions)
 - ◆ With characterization data:
 - Select all the accessions if they look different
 - If not, follow the sequence of "Without characterization data"
 - ◆ Without characterization data
 - Accessions collected with an interval of more than 10 years: select all the accessions
 - Accessions collected with an interval of less than 10 years:
 - Select the accession having undergone the fewest regeneration cycles or select one at random until new information is obtained
 - Accessions without ACCENAME:
 - Include if they have a unique origin
 - Do not include if no additional information is available

B. Additional crop-specific criteria

As cucurbits are allogamous plants, the number of seeds of the collected sample and the number of plants used for regenerating the accession (one regeneration or more) should be considered when these data are available. The order of priority of these criteria is the following:

- The number of plants used in the regeneration trials
- The number of regeneration cycles
- The number of seeds of the original sample

The Group split into three sub-groups and carried out an exercise for identifying MAAs of melon by analysing the collections of Bulgaria, Portugal and Ukraine.

The following conclusions were drawn:

- In the case of accessions with the same name and same location, additional information is needed on the morphology of the accessions, before deciding whether they should be considered duplicates;
- Several data were missing or incorrect;
- Whether material donated by a different genebank is still available from the donor institute needs to be investigated;
- Different collection numbers are an insufficient indication that the corresponding accessions are different.

The Group agreed that to pursue the identification of MAAs, the quality of the ECCUDB had to be improved and decided that it should meet again on an ad hoc basis. The Group also agreed to split the task between the following five crop groups (volunteers for each crop group are indicated between brackets):

1. *Cucumis sativus* and wild relatives (W. van Dooijeweert)
2. *Cucumis melo* and wild relatives (M. José Díez)
3. *Citrullus lanatus* and wild relatives (A. Myshkevich)
4. *Cucurbita* species and wild relatives (M. Ercolano)
5. Other genera (B. Schmidt).

Recommendation 4

Well-known hybrids should not be included in AEGIS; however, segregating populations derived from self-pollination of hybrids may be included, with the indication “Breeding/research material” (code 400) in the field SAMPSTAT.

Workplan

3. *The Database Managers will improve the quality of the Database through further interactions with the WG members and, when ready, they will alert the crop group volunteers that they can start the analysis of the ECCUDB for MAA identification (the Database should be ready for analysis by the beginning of April 2011). An outline of the expected mode of operation and time-frame will be provided by the DB Managers to the crop group volunteers.*

Status reports of National Collections

The members from Belarus, Greece and Montenegro presented the status of cucurbit genetic resources in their countries. They were given extra time for their presentation since there were no previous reports from these countries.

The other members (Bulgaria, Georgia, Germany, Italy, The Netherlands, Poland, Portugal, Spain and Ukraine), whose presentations had been published in previous WG reports, were asked to give a 5-minute update on the status of cucurbit genetic resources in their country.

The presentations are not incorporated in this report but will be uploaded to the Web page of the ECPGR Cucurbits WG.

Discussion

The collection in Belarus is currently stored in refrigerators at +5°C. About 15 varieties of the collection originate from Belarus.

The Greek Genebank will send data to EURISCO in the near future. Seeds are conserved in good conditions.

Montenegro was equipped with modern genebank facilities procured through the South East European Development Network on Plant Genetic Resources (SEEDNet) project. However, the genebank did not have sufficient staff currently to operate it. The option to store safety-duplicates in a different genebank was suggested.

Liliya Krasteva, Bulgaria, informed the Group that most data of the Bulgarian cucurbit collection were included in EURISCO, and the remaining will be transferred to EURISCO soon.

Katarzyna Niemirowicz-Szczytt, Poland, informed the Group that vegetables collections in Poland are coordinated by Teresa Kotlińska, and this arrangement is working well. The main collection is in Radzików and some smaller collections are located in other institutions. All material that is regenerated in the Warsaw University of Life Sciences is sent to Skierniewice and is then deposited in Radzików.

M. José Díez explained that part of the Spanish collection of cucurbits is replicated in three locations (Alcalá de Henares in Madrid, Valencia and Zaragoza). But henceforth, duplicates will be maintained only at the National Centre for Genetic Resources in Madrid.

Alexander Zubiashvili informed that the Georgian Genebank held 100 cucurbits accessions. Data on these accessions will be sent to the ECCUDB and EURISCO.

Valdemar Carnide reported that there had been no further collecting missions for *Cucurbita* in Portugal since the last meeting.

Oksana Shabetia gave an overview of the cucurbit material in Ukraine. All material is conserved at -18°C, and there are no regeneration backlogs.

Discussion of workplan

Current status of the European Cucurbits Database

M.J. Díez presented the current status of the ECCUDB. As of November 2010, the Database contains passport data of 27 489 accessions representing 21 genera and 72 species, as follows: *Cucumis*, 42.38% of the accessions; *Cucurbita*, 29.92%; *Citrullus*, 25.39%. Characterization data are available for 775 accessions of *Cucumis sativus*, 107 of *Citrullus lanatus* and 53 of *Cucurbita pepo*; the Database also contains 223 images of *Citrullus lanatus*, *C. sativus* and *C. pepo*. The data were contributed by 39 institutions from 23 countries. Information on a core collection of *Cucurbita pepo* along with characterization data and images is included. The Database is searchable for passport data. Detailed information about the donor institutes is included in the "Contributors" section and an explanation of the descriptors, in the "Database description" section. The "On-line taxonomy" section presents information on taxonomy and Web pages of interest related to cucurbits. Institutions conducting on-farm conservation activities in Germany, The Netherlands and Spain are also indicated.

Future tasks are the improvement of the quality of passport and characterization data, to be implemented both by uploading new data and reviewing the existing information. More images will also be added.

Discussion

The Database is currently not searchable for characterization data, but this problem will be resolved in the near future. There are no immediate plans to include molecular data in the Database.

Workplan

See previous workplan item (p. 8).

Planning safety-duplication

Since its inception, the Cucurbits WG has given high priority to the improvement of safety-duplication. W. van Dooijeweert reminded the Group why safety-duplication is so important and indispensable for germplasm that is added to the European Collection. Safety-duplicates must preferably be sent for long-term storage to a foreign country. The Svalbard Global Seed Vault is also a suitable option for safety-duplication.

He cautioned that not all material in European genebanks is safety-duplicated yet for reasons that were mentioned earlier by WG members. Given the importance of safety-duplicates, the Chair and Vice-Chair had reserved about €5000 from the WG budget to support safety-duplication arrangements by members, who can apply for a small amount. The application for these funds must be well formulated and will be evaluated by the Chair and the Secretariat. W. van Dooijeweert cited the successful black box arrangement between the Institute for Plant Genetic Resources (IPGR) in Bulgaria and the CGN in The Netherlands. Georgia had also initiated a similar arrangement for safety-duplication of cucurbits with the CGN.

The table showing the safety-duplication status for the different countries, published in the report of the ad hoc meeting of the WG in Warsaw in 2008⁶, was updated during the meeting (Appendix I, p.15).

Workplan

4. The Chair will request the WG members not present at the meeting to send information to complete the safety-duplication status table.
5. The Secretariat will upload the updated table to the Web site of the Cucurbits WG.

Minimum descriptors

The minimum descriptor lists for cucumber, melon and watermelon were developed and approved by the Cucurbits WG. For *Cucurbita* species, the list was still a draft; for other cucurbits genera such as *Lagenaria* and *Momordica*, the descriptors had still to be approved. M.J. Díez informed that some members encountered problems while using the *Cucurbita* descriptors. The existing draft was reviewed by all the members present, and a few modifications were made and approved. The Group also agreed that the *Cucurbita* descriptors could also be used for the *Lagenaria* genus; however, a new minimum descriptors list was needed for *Momordica*.

Discussion

The Group decided that the development of the descriptors list for *Momordica* was not a priority for the Group since it is a minor cucurbit with relatively little importance. Meanwhile, members could use the descriptors from the International Union for the Protection of New Varieties of Plants (UPOV) for this cucurbit.

⁶ [http://www.ecpgr.cgiar.org/index.php?id=644&user_biodiversitypublications_pi1\[showUid\]=5099](http://www.ecpgr.cgiar.org/index.php?id=644&user_biodiversitypublications_pi1[showUid]=5099)

Recommendation 5

Minimum descriptors for *Momordica* will not be developed by the Group for the time being, but UPOV descriptors can be used when necessary.

Recommendation 6

Information about the use of the cucurbit crops (e.g., *Lagenaria*, squashes and F1 hybrids such as *C. maxima* x *C. moschata* that are used commercially as rootstocks for other cucurbit crops) can be sent to the Database Manager in PDF format for uploading.

Non-governmental organizations' activities on Cucurbits

In situ and on-farm conservation and management is one of the four priorities established by the ECPGR Steering Committee for Phase VIII (2009-2013). The use of genetic resources can be promoted through cultivation of crops stored in *ex situ* collections.

A field was created in the ECCUDB to cover activities of non-governmental organizations (NGOs) involved in on-farm conservation. In the ad hoc meeting in Warsaw in October 2008, partners were requested to send a list of all NGOs dealing with genetic resources and on-farm management to the Database Manager. These lists will be included in the Database. W. van Dooijeweert presented the new feature, adding that only Germany, The Netherlands and Spain had so far sent in their lists. He requested other members to send their lists to the Database Manager so that the NGO overview could be completed.

Knowledge about on-farm conservation of Cucurbits and its possibilities could also be strengthened through increased collaboration between the On-farm Conservation and Management WG and the Cucurbits WG. This was suggested by the On-farm WG during the meeting of all Network Coordinating Groups in Bonn in 2006. The Chair and Vice-Chair of the Cucurbits WG had planned to attend the meeting of the ECPGR Wild Species Conservation in Genetic Reserves WG and the On-farm Conservation and Management WG, 13-16 September 2010 in Funchal (Madeira), Portugal. But due to logistic problems they could not do so. They plan to participate in the next meeting of the On-farm WG and benefit from its knowledge.

Some ideas for cooperation with NGOs were presented and discussed.

Discussion

L. Maggioni informed the Group that the University of Perugia, Italy, had launched an "On Farm / In Garden Contact Database" (<http://www.sharinginformation.eu/>), where information on European institutions involved in on-farm conservation can be entered and retrieved online.

Recommendation 7

All WG members are invited to register with the Perugia database and directly enter information concerning on-farm conservation activities in their countries.

Workplan

6. WG members should send information on NGOs involved in on-farm conservation to the ECCUDB Database Manager.
7. The ECCUDB Database Manager should check the "On Farm / In Garden Contact Database" of Perugia University (<http://www.sharinginformation.eu/>) and consider whether it is appropriate to add a link to it on the ECCUDB Web site.

Publicizing the work of the Cucurbits WG

W. van Dooijeweert suggested that the Working Group publicize its work and create public awareness, thus conferring a more legitimate reason for its continued existence. He cited the example of the presentation by M.C. Daunay about VEGNET at the 28th International Horticultural Congress of the International Society for Horticultural Science (ISHS) in Lisbon, Portugal, in August 2010. The paper was sent to the EU representative for Genetic Resources affairs (GENRES), Mr Olivier Diana, who reacted positively by expressing strong interest in the work of VEGNET. The European Union could be an important donor for ECPGR.

Recommendation 8

WG members are urged to publicize the activities of the WG through presentations at international meetings and publications.

Conclusion

The report was presented; the recommendations and Workplan (summarized in Appendix II, p.16) were adopted.

Nomination of Chair and Vice-Chair

The Group commended the Chair and Vice-Chair for their work and asked them to continue to chair the Group. M. José Díez was thus confirmed as Chair and W. van Dooijeweert as Vice-Chair.

APPENDICES

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Appendix I. Current level of safety-duplication of Cucurbit collections in Europe

(last updated on 31/05/2011)

| Country | Holding institute | Safety-duplication | Long-term conservation facilities | Availability to host black boxes |
|--------------------|---|---|-----------------------------------|---|
| Belarus | Institute of Vegetable Production, Minsk | 0% | Yes | To be discussed |
| Bulgaria | Institute for Plant Genetic Resources "K. Malkov" (IPGR), Sadovo | 90% black boxes at CGN | Yes | Available |
| Czech Republic | Crop Research Institute (CRI), Prague | 45% in Prague (but 100% of the regenerated material) | Yes | Yes, under bilateral agreement, but only in limited quantities, depending on the sample size |
| Georgia | Institute of Farming, Mtskheta Tserovani | 0% | No | No |
| Germany | Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben | 50% at Svalbard | Yes | Yes, depending on available space |
| Greece | Department of Vegetables, Agricultural Research Centre of Northern Greece (NAGREF), Themi-Thessaloniki | 0% | Yes | Yes |
| Hungary | Research Centre of Agrobiodiversity, Tápiószéle | 66% duplicated, only at the Centre | Yes | No |
| Italy | Istituto di Genetica Vegetale (IGV), Bari | 0% | Yes | Yes |
| Latvia | Pure Horticultural Research Station | 0% | Yes | To be discussed with curators of the Latvian Gene Bank of cultivated plants (Pure Horticultural Station holds only the active collection) |
| Montenegro | Biotechnical Faculty, Podgorica | 0% | Yes | To be discussed |
| The Netherlands | Centre for Genetic Resources, Wageningen, The Netherlands (CGN) | 100% at Wellesbourne and Svalbard | Yes | Yes |
| Poland | National Plant Genetic Resources Centre, Plant Breeding and Acclimatization Institute (IHAR), Radzików | Currently 0% | Yes | Yes |
| Portugal | Banco Português de Germoplasma Vegetal (BPGV), Braga | 0% | Yes | Yes |
| Russian Federation | N.I. Vavilov Research Institute of Plant Industry (VIR), St. Petersburg | 80% | Yes | No |
| Spain | Instituto de Conservación y Mejora de la Agrodiversidad Valenciana (COMAV), Universidad Politécnica de Valencia, Valencia | 80% in Zaragoza and Madrid | Yes | Yes |
| Spain | Experimental Station "La Mayora", Consejo Superior de Investigaciones Científicas (CSIC), Málaga | 75% | No | No |
| Turkey | Aegean Agricultural Research Institute (AARI), Izmir | 100% | Yes | No |
| Turkey | Çukurova University, Adana | Planned | No | No |
| Ukraine | Institute of Vegetable and Melon Growing of UAAS, Kharkov region | 30% of the collection is duplicated in other institutions | Yes | Partially |

Appendix II. Workplan for the second part of Phase VIII (2011-2013)

Task Sharing for AEGIS

| Action | Carried out by | By when |
|--|--|---|
| Prepare a separate document extracted from the report of the First Meeting of the WG (Plovdiv, 2005), with the regeneration guidelines agreed at the time and upload to the Web site | ECPGR Secretariat | End of November 2010 |
| Prepare guidelines (first draft) for regeneration of cucumber, melon, watermelon and <i>Cucurbita</i> , based on the existing guidelines (including aspects related to collecting, seed quality and viability monitoring, distribution and characterization) | K. Niemirowicz-Szczytt | End of November 2010 |
| Supplement the draft with specific information on the regeneration of watermelon and <i>C. moschata</i> and circulate the draft | M. José Díez | 15 December 2010 |
| Send comments on guidelines | All the WG members | End of January 2011 |
| Address comments from the WG, produce a final version of the guidelines and send to the Secretariat for uploading | M. José Díez | End of April 2011 |
| Upload final guidelines to the Web site of the ECPGR Cucurbits WG | ECPGR Secretariat | 15 May 2011 |
| Upload updated table on status of safety-duplication | ECPGR Secretariat | 15 May 2011 |
| Alert the crop groups volunteers that they can start screening the ECCUDB for MAA identification. An outline of the expected mode of operation and time-frame will be provided to the crop group volunteers | Database Managers | Beginning of April 2011 |
| Analyse the ECCUDB crop by crop to identify MAAs | <ol style="list-style-type: none"> 1. <i>Cucumis sativus</i> and wild relatives (W. van Dooijeweert) 2. <i>Cucumis melo</i> and wild relatives (M. José Díez) 3. <i>Citrullus lanatus</i> and wild relatives (A. Myshkevich) 4. <i>Cucurbita</i> species and wild relatives (M. Ercolano) 5. Other genera (B. Schmidt) | Start after alert sent by the DB Manager (expected beginning of April 2011); time frame to be defined |
| Complete the table describing the status of safety-duplication with information from all WG members | Chair | January 2011 |

Documentation and information

| Action | Carried out by | By when |
|--|-------------------------------------|-------------------------|
| Improve the quality of the Database through further interactions with the WG members | Database Manager and all WG members | Beginning of April 2011 |

In situ and on-farm conservation

| Action | Carried out by | By when |
|--|----------------|-------------|
| Send information on NGOs working on on-farm conservation to the Database Manager | All WG members | End of 2010 |

Appendix III. Acronyms and abbreviations

| | |
|---------|---|
| AARI | Aegean Agricultural Research Institute, Izmir, Turkey |
| AEGIS | A European Genebank Integrated System |
| BPGV | Banco Português de Germoplasma Vegetal, Braga, Portugal |
| CGN | Centre for Genetic Resources, Wageningen, The Netherlands |
| COMAV | Instituto de Conservación y Mejora de la Agrodiversidad Valenciana (Institute for Conservation and Improvement of Valencian Agrodiversity), Polytechnic University of Valencia, Spain |
| CRI | Crop Research Institute, Prague-Ruzyne, Czech Republic |
| CSIC | Consejo Superior de Investigaciones Científicas, Spain |
| EC | European Commission |
| ECCUDB | European Central Cucurbits Database |
| ECPGR | European Cooperative Programme for Plant Genetic Resources |
| EU | European Union |
| EURISCO | European Internet Search Catalogue |
| FAO | Food and Agriculture Organization of the United Nations, Rome, Italy |
| IPGR | Institute for Plant Genetic Resources, Sadovo, Bulgaria |
| IPGRI | International Plant Genetic Resources Institute, Rome, Italy (<i>now Bioversity International</i>) |
| IPK | Leibniz-Institut für Pflanzengenetik und Kulturpflanzenforschung (Leibniz Institute of Plant Genetics and Crop Plant Research), Gatersleben, Germany |
| MCPD | Multi-crop Passport Descriptors (<i>FAO/IPGRI</i>) |
| NCG | Network Coordinating Group (<i>of ECPGR</i>) |
| PGR | Plant genetic resources |
| UAAS | Ukrainian Academy of Agrarian Sciences |
| UPOV | Union internationale pour la Protection des Obtentions Végétales (International Union for the Protection of New Varieties of Plants), Geneva, Switzerland |
| UPV | Universidad Politécnica de Valencia (Polytechnic University of Valencia), Spain |
| USDA | United States Department of Agriculture |
| UTAD | Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal |
| VIR | N.I. Vavilov Research Institute of Plant Industry, St. Petersburg, Russian Federation |

Appendix IV. Agenda

Second Meeting of the ECPGR Working Group on Cucurbits 8-10 November 2010, Tbilisi, Georgia

Monday, 8 November 2010

Arrival of participants
Excursion in the afternoon

Tuesday, 9 November 2010

- 8:30–10:30 Introduction**
- Introductory welcome from Y.N. Lomouri Institute of Farming (*A. Zubiashvili*) – 5 min
 - Opening remarks (*L. Maggioni and M.J. Díez*) – 10 min
 - Self-introductions by the participants – 1 min per person (10 min)
 - Presentation of the agenda and adjustments (*M.J. Díez*) – 5 min
 - ECPGR update (*L. Maggioni*) – 15 min
 - Report and outline of Cucurbits WG activities (*M.J. Díez*) – 15 min
 - AEGIS – general introduction (*L. Maggioni*) – 20 min
 - AEGIS – Most Appropriate Accessions (*L. Maggioni or M.J. Díez*) – 20 min
 - AEGIS – Quality System (AQUAS) – discussion of crop-specific minimum standards (*L. Maggioni or W. van Dooijeweert*) – 20 min
- 10:30–11:00 *Coffee break*
- 11:00–12:30 Implementation of AEGIS by the Cucurbits Working Group (I)**
- Discussion about quality of passport data and selecting probable duplicates in the ECCUDB per country – Transfer of ECCUDB data to EURISCO (*M.J. Díez and W. van Dooijeweert*) – 45 min
 - General discussion about Most Appropriate Accessions and duplicates and mode of operation for its implementation by the CWG (*M.J. Díez and W. van Dooijeweert*) – 15 min
 - Development of list with crop-specific selection criteria – 30 min
- 12:30–14:00 *Lunch*
- 14:00–15:00 Implementation of AEGIS in the Cucurbits Working Group (II)**
- Discussion (continued) – example exercise MAA melon (*M.J. Díez and W. van Dooijeweert*) – 60 min
- 15:00–15:30 Reports on status of National Collections**
- Reports from countries not covered by the Adana (2002) and Plovdiv (2005) meetings' reports: collecting, conservation, safety-duplication, characterization or evaluation, regeneration, availability of material, institutional responsibilities, etc. (*10 min. presentations*) – 90 min
- 15:30–16:00 *Coffee break*

- 16:00–16:45 **Reports on status of National Collections (continued)**
- Reports from countries (continued) and short update on National Collections – conservation, collecting, evaluation or characterization, etc. – from countries covered by Adana and Plovdiv meetings' reports (*5 min presentations*) – 45 min
- 16:45–17:30 **Mode of operation: Discussion of the workplan of the Cucurbits Working Group and its schedule**
- Introduction (*M.J. Díez*) – 5 min
 - Current status of the European Central Cucurbits Database (ECCUDB) (*introduced by M.J. Díez*) – 20 min
 - Planning for safety-duplication of each collection under long-term conservation conditions (*introduced by W. van Dooijeweert*) – 20 min

Wednesday, 10 November 2010

- 9:00–10:30 **Mode of operation: Discussion of the workplan of the Cucurbits Working Group and its schedule (continued)**
- Use of minimum descriptors by the partners – 30 min
 - Establishment of minimum descriptor lists for minor cucurbits – 30 min
 - *Lagenaria siceraria*
 - *Momordica spp*
 - NGO activities on Cucurbits in Europe (*W. van Dooijeweert*) – 30 min
- 10:30–11:00 *Coffee break*
- 11:30–12:30 **Perspectives for the future of the Working Group on Cucurbits**
- Cooperation between members in improving knowledge about collections (disease screening, molecular characterization, collecting) (*M.J. Díez*) – 45 min
 - Opportunities for publication (*W. van Dooijeweert*) – 15 min
- 12:30–14:00 *Lunch*
- 14:00–15:30 **Extra time in case certain agenda points need more time**
Report drafting
- 15:30–16:00 *Coffee break*
- 16:00–18:00 **Conclusion**
- Presentation of the draft report and adoption of recommendations
 - Election of Chair and Vice-Chair
 - Closing remarks
- Evening* **Social dinner**

Thursday, 11 November 2010

Departure of participants

Appendix V. List of participants

Second meeting of the ECPGR Working Group on Cucurbits 8-10 November 2010, Tbilisi, Georgia

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 Cucurbits Working Group's Web page (<http://www.ecpgr.cgiar.org/networks/vegetables/cucurbits.html>).

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