

Report of a Working Group on Cucurbits

Ad hoc Meeting, 23-24 October 2008, Warsaw, Poland
M.J. Díez, W. van Dooijeweert and E. Lipman





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Variability of *Cucurbita pepo* (photograph taken at the General Exhibition during the 28th International Horticultural Congress, Lisbon, Portugal, August 2011). Courtesy of © M.J. Díez, COMAV, Valencia, Spain.

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Bioversity International
Via dei Tre Denari, 472/a
00057 Maccarese
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Related papers can be downloaded from
http://www.ecpgr.cgiar.org/networks/vegetables/cucurbits/warsaw_meeting_country_reports.html

SUMMARY OF THE MEETING

Introduction

Opening of the meeting

María José Díez, Chair of the Working Group (WG) on Cucurbits of the European Cooperative Programme for Plant Genetic Resources (ECPGR) opened the meeting by thanking all those present for their participation. She reminded the Group that Phase VII of ECPGR was reaching its end this year (2008). The Vegetables Network Coordinating Group had met in Wageningen, The Netherlands, in June 2008, with the objective of making coordinated plans for the new Phase VIII (2009-2013). Some of the decisions taken at that meeting were explained later by the Vice-Chair.

The ECPGR Steering Committee had met in Sarajevo, Bosnia and Herzegovina, in September 2008. One of the aspects discussed during that meeting was the implementation of "A European Genebank Integrated System" (AEGIS). The role of the Working Groups (WGs) would be crucial for the implementation of AEGIS during Phase VIII. This ad hoc meeting of the Cucurbits WG had been organized with the aim of updating the members and starting the selection of the Most Appropriate Accessions (MAAs) from the collections in the member countries. The specific objectives of the meeting were: (1) to inform all WG members about the Vegetables Network's plans for Phase VIII, (2) to continue with the discussions about several practical aspects of the mode of operation of the WG, and (3) to start with the implementation of the AEGIS by the WG.

M.J. Díez thanked the Leafy Vegetables WG members for acceding to the request for utilization of their funds, if needed, for the organization of this meeting.

Introductory welcome

Katarzyna Niemirowicz-Szczytt introduced two of her colleagues, Prof. M. Rakoczy-Trojanowska, Head of the Department, and Dr A. Korzeniewska, who work on cucurbits. The host organization, Warsaw University of Life Sciences–SGGW (WULS–SGGW), is among the premier institutions of higher education in Poland. It offers wide-ranging programmes of study – from biological and technical, through medical, to economics and humanities – with a view to forming experts for the needs of the biosphere in a broad sense.

The University is held in high repute both within and outside Poland. As a result, the number of applicants taking the entrance test far exceeds the number of seats available. Enrolment in 2008 stood at about 25 000 students for all 27 majors and 62 areas of specialization. The University's research and education potential, its modernity and openness to the outside world attract interest in collaboration from more and more research centres from around the world. The number of foreign students is also growing because, among other factors, the University recognizes the European Credit Transfer System and offers a range of 80 professional courses in English.

K. Niemirowicz-Szczytt welcomed all the participants visiting the Warsaw University of Life Sciences and invited them to acquaint themselves with its potential in education, research, and consulting, and its contribution to national culture.

After the introductory welcome, all participants were invited to introduce themselves briefly.

The agenda was then approved without modifications.

Briefing on ECPGR Phase VIII

Willem van Dooijeweert presented the structure and plans for Phase VIII (2009–2013) of the ECPGR. These plans were discussed and approved by the Steering Committee at its Eleventh Meeting in Sarajevo, Bosnia and Herzegovina, 2-5 September 2008.

After its Tenth Meeting, the Steering Committee had indicated that it wanted the Networks to prioritize again the Working Groups (WGs) in Phase VIII. Only higher-priority WGs could receive up to 25% additional funds to carry out activities such as evaluation, collecting, etc. During the second meeting of the Vegetables Network (VEGNET) on 26-28 June 2007 in Olomouc, Czech Republic, it was decided that the Network would not prioritize its WGs. In its letter to the Steering Committee, it justified its decision by explaining that the Network preferred its WGs to work as colleagues and not as competitors. One of the main reasons was that the prioritization in Phase VII had not demonstrated that higher-priority WGs had achieved more results than the lower-priority WGs. The Network argued that WGs should be on the same level in Phase VIII to benefit from each other by implementing AEGIS, which was the main objective.

VEGNET had also requested that the Network Coordinating Group (NCG) include all Chairs and Vice-Chairs of the WGs. The Steering Committee approved these requests. The budgets for the Network and for the Cucurbits WG were presented. The country quota system would be maintained during Phase VIII and reports would be available only in electronic form through the ECPGR Web site. The ECPGR Secretariat would assist only in editing the discussions and recommendations. Country reports could be uploaded as separate files, but they would no longer be edited.

A VEGNET meeting was planned for 2009 or 2010, when AEGIS topics would be discussed. The Steering Committee had allocated a budget to special AEGIS-related projects; the budget included additional funds such as a Competitive Grant Scheme for these projects. The procedures to access these funds were still to be defined. The budget amounted to € 103 000 for the five years of Phase VIII (2009-2013).

Considering the small size of some WGs, the Steering Committee had requested the Network Coordinating Group to study the feasibility and cost-effectiveness of merging some of them.

The priority topics of Phase VII would be retained in Phase VIII, with emphasis on task sharing:

- Task sharing and capacity building (safety-duplication, identification of duplicates/unique accessions, regeneration, collection management strategies)
- Documentation
- Characterization and evaluation
- *In situ* and on-farm conservation.

The four Network goals for Phase VIII would be to:

- Improve the level of safety-duplication
- Develop mechanisms for determining MAAs
- Agree on quality standards for maintaining MAAs
- Adapt Central Crop Databases (CCDBs) for indicating MAAs.

The Network goals and working mode for Phase VIII would be followed by the Cucurbits WG.

Responding to questions after the briefing on Phase VIII, W. van Dooijeweert stressed again that all the work conducted in Phase VIII would be in accordance with AEGIS. In the discussion on the financing of the work to be done by the WG members, it was clarified that in the spirit of ECPGR, it was expected that the work would be done as input in kind. Only

small budgets would be available for specific tasks to implement AEGIS. W. van Dooijeweert thought that in the long run collection holders would benefit if they had to focus on only a set of accessions in their collection.

Report on the Cucurbits Working Group's activities

M.J. Díez presented the work carried out by the WG since its first meeting held in Plovdiv, Bulgaria, in September 2005,¹ during which attending members had agreed on a workplan.

In June 2007, during the second meeting of the Vegetables Network held in Olomouc, Czech Republic,² six members of the Cucurbits WG attended the parallel meeting. In this meeting, the workplan for the second half of Phase VII was discussed and agreed upon, taking into account the four priority areas of ECPGR for this Phase (Task sharing and capacity building, Documentation, Characterization and evaluation, and *In situ* and on-farm conservation), and including the first steps for the implementation of AEGIS. The workplan for Phase VIII was also defined and agreed.

Following the indications of the Steering Committee, the Vegetables Network had prepared a budget proposal for Phase VIII. The total budget for Phase VIII was € 188 156, of which 75% was allotted for meetings and 25% for project activities. In this proposal, each WG would receive the same amount of money, € 21 360, to be used according to the 75/25 ratio above.

The following activities were proposed by the Cucurbits WG: (1) Implementation of safety-duplication, (2) Development and implementation of specific algorithms to facilitate the identification of duplicates, (3) Strengthening of collaborations with the *In situ* and On-farm Conservation Network, and (4) Organization of a regular WG Meeting. The Project proposal of the Cucurbits WG for Phase VIII is presented in Appendix I (pp. 19-22).

K. Karlová informed the Group that changes had occurred regarding Slovak membership in the Vegetables WGs, which would be confirmed through the ECPGR Secretariat.

Reports on the status of national collections

Reports from countries not represented in the previous meetings (Adana 2002, Plovdiv 2005 and Olomouc 2007)

Georgia

Presented by Alexander Zubiashvili

Information is being gathered on all cucurbits in Georgia. The Plant Genetic Resources Department just started collecting material and only have 28 cucurbit accessions of Georgian origin in its collection so far: *Cucurbita maxima* (1 landrace), *C. moschata* (10 landraces) and *C. pepo* (2 cultivars and 15 landraces).

¹ 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.

² Astley D, Bas N, Branca F, Daunay MC, Díez MJ, Keller J, van Dooijeweert W, van Treuren R, Maggioni L, Lipman E, compilers. 2009. Report of a Vegetables Network. Second Meeting, 26-28 June 2007, Olomouc, Czech Republic. Bioversity International, Rome, Italy.

Germany

Presented by Bärbel Schmidt

B. Schmidt gave an overview of all the accessions in the German collections. The Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) was ISO 9001 certified in 2007. A total of 20 000 accessions have already been sent to Svalbard Global Seed Vault, including 300 cucurbit accessions. IPK uses the minimum descriptors developed by the WG in addition to its own.

Ukraine

Presented by Oksana Shabetya

O. Shabetya introduced the Institute of Vegetables and Melons in Ukraine and its mode of work. Collecting missions have been conducted yearly since 1991. Long-term storage facilities (-18°C) were developed. The institute has financial problems so it cannot regenerate material for long-term storage. For example, no funds are available to buy fuel for heating and fertilizers.

It was clarified by K. Niemirowicz-Szczytt that in Ukraine "melon" means "all cucurbits": *Cucurbita maxima*, *Citrullus lanatus* and *Cucumis melo*. Other cucurbits are called "vegetables" (cucumber, squash, bush patty pan, bottle gourd, luffa and balsam pear (*Momordica*). The WG agreed to use the Latin nomenclature in future to avoid confusion.

Short updates on other national collections

Bulgaria

Presented by Liliya Krasteva

Bulgaria carried out collecting expeditions in 2007-08 in cooperation with China, Korea and Slovakia. The collected material is not made available to other institutes for research; the WG was, however, shown the diversity of the collected material.

Czech Republic

Presented by Katerina Karlová

K. Karlová informed the Group that since the genebank is to be reconstructed during the coming year (2009), the regeneration capacity in isolation cages will be reduced to half. Although according to the National Coordinator all regenerations were complete, this is not the case for many vegetables. Regeneration of material will take much longer as capacity will be halved; as a result, many accessions will die. As of October 2008, 22% of *Cucurbita* spp. and 65% of cucumber have been regenerated. The institute organizes annual exhibitions to inform the public about genetic resources.

Hungary

Presented by Attila Simon

The genebank in Hungary has been undergoing extensive reorganization but it still maintains its former responsibilities. Collections are held by various institutes in Hungary; 2861 cucurbit accessions. are held in Tápiószele. Half of the collection originates from Hungary. The base collection is held in long-term storage but is not safety-duplicated. A quality management system for regeneration and storage has been adopted by the genebank. All passport data present in the European Plant Genetic Resources Catalogue (or European Internet Search Catalogue, EURISCO) will be updated in November 2008.

Israel

Updated by Yaakov Tadmor

The Cucurbit section of the Agricultural Research Organization (ARO) is located in Neve Yaar Research Center, the northern branch of the Volcani Center.

The cucurbits collection at the Neve Yaar Research Center comprises nearly 2000 accessions: 1000 *Cucumis melo*, 500 *Citrullus lanatus*, 340 *Cucurbita pepo*, 100 *C. maxima*, 50 *C. moschata*. They are stored as an active collection and maintained at 4°C and 5-6% RH. Most of the *Cucurbita* spp. collection has been regenerated and characterized. The melon collection is partially characterized (~60%) while the watermelon collection is significantly less characterized (~20%).

All collections are maintained as breeders' collections and not as a genebank. Most accessions are introductions and material collected from outside Israel, except some unique melon and watermelon accessions collected in Israel. There are no duplicated accessions in the *Cucurbita* collections but both melon and watermelon collections include duplicates because several contributors had supplied similar material. Most passport data are recorded in Excel format in the Neve Yaar computer system.

Latvia

Presented by Liga Lepse

Only *Cucumis sativus* and *Cucumis melo* originated in Latvia are preserved in the national collection. There are only a few accessions of these species.

The Netherlands

Presented by Willem van Dooijeweert

The Centre for Genetic Resources (CGN) holds two Cucurbit collections. The *Cucumis sativus* collection includes 922 available accessions. In 2007 and 2008, duplicates were removed on the basis of passport data. The second collection consisting of 100 *Cucumis melo* accessions of old Dutch varieties, material from the former Institute for Horticultural Plant Breeding (Instituut voor de Veredeling van Tuinbouwgewassen, IVT) not found in other *ex situ* collections, and original material acquired during collecting missions in Pakistan and Egypt. The material is being regenerated with the help of breeding companies. The second collection is not yet available.

For characterization, CGN uses only the minimum descriptor list developed by the WG. The complete cucumber collection has been evaluated for certain diseases. CGN is actively requesting evaluation data from users of the material, sending automatically generated letters. All relevant data are entered into the database and made available through the Web site. More photographs of the accessions were added and shown on the Web site.

Poland

Presented by Katarzyna Niemirowicz-Szczytt

The Department of Plant Genetics, Breeding and Biotechnology has a total staff of 35 people (14 academic staff, 11 research and technical fellows, 10 postgraduate students).

The main fields of research concern cultivated species of cucurbits (*Citrullus lanatus*, *Cucumis melo*, *Cucumis sativus*, *Cucurbita maxima* and *Cucurbita pepo*), as well as Solanaceae (*Capsicum annuum*, *Lycopersicon esculentum* and *Physalis ixocarpa*) and *Secale cereale* in Poland.

More than 1000 cucurbit accessions are stored in the genebank of the Plant Breeding and Acclimatization Institute, Radzików. Teresa Kotlińska, the representative of the genebank, is also responsible for this collection. Samples are collected through expeditions organized once a year within and outside Poland. Sometimes material is obtained through donations.

Portugal

Presented by Valdemar Carnide

There are two main institutes in Portugal dealing with genetic resources: University of Vila Real (Universidade de Trás-os-Montes e Alto Douro, UTAD) and the Portuguese Genebank in Braga (Banco Português de Germoplasma Vegetal, BPGV). In total, about 650 accessions of cucurbits are conserved including 164 *C. melo* accessions and 110 *Cucurbita* spp. accessions. All material originates from Portugal.

The material is conserved in the active and the base collections stored in the Genebank in Braga. About 150 accessions of different species were characterized using IBPGR descriptors.³ There are no duplicates. All passport data are stored in Excel format; the genebank data are in Access. Passport data will be uploaded in EURISCO at the end of 2008.

Spain

Presented by María José Díez

The Instituto de Conservación y Mejora de la Agrodiversidad Valenciana (COMAV) holds a collection of 2926 cucurbit accessions, including 1245 accessions of *C. melo*, 357 of *C. pepo*, 311 of *C. maxima*, 285 of *C. moschata*, 261 of *C. lanatus*, 182 of *C. sativus*, 82 of *C. ficifolia*, 54 of *Lagenaria siceraria*, 35 of *Cucurbita* spp. and 31 of *Cucumis* spp. Additionally, a collection of 83 accessions of wild *Cucumis* donated by the Center for Genetic Resources (Alcalá de Henares, Madrid) is maintained at COMAV, although it has not been regenerated yet. Most of the collection comes from Spain, only 20% originates from other countries.

Approximately 79% of the collection has been regenerated and characterized. The descriptors used are based on those developed by IPGRI (now Bioversity International). All the minimum descriptors developed by the Cucurbits WG for each species are included in the lists. Photographs of plant, fruit and seed were taken for all the accessions characterized.

The seeds are stored as an active collection, conserved in a climatic chamber at 3-4° C and 5-6% RH. Cold chambers for long-term conservation are under construction. Passport and characterization data are computerized. During the past 5 years, nearly 500 samples have been sent to organic farmers and traditional growers, research centres and to several research programmes on cucurbits carried out at the Institute.

Among the subjects of cucurbits research conducted at COMAV are: "Construction of core collection of *C. pepo*, *C. moschata* and *C. maxima*" and "EcoTilling for identifying allelic diversity on disease resistance and fruit quality genes in a core collection of melon from all over the world". COMAV is also involved in a project for phenotyping and genotyping landraces collected in the Castilla-La Mancha Autonomous Community; the aim is to register them as different and unique high-quality varieties. A new project was initiated for increasing the availability of high-quality molecular markers for the study of *Cucurbita* genetic resources. For this purpose, the transcriptome of accessions belonging to the two *C. pepo* subspecies is being sequenced. The aim is to identify new EST-SSRs and EST-SNPs which are polymorphic in the genus *Cucurbita* and suitable for diversity studies. A population of Recombinant Inbred Lines (RIL) derived from different crosses useful for mapping desirable traits is also being developed.

Turkey

Presented by Sevgi Mutlu

Cucurbits accessions are conserved *ex situ* at the National Seed Genebank of Turkey at the Aegean Agricultural Research Institute (AARI) as active and base collections. There are

³ Esquinas-Alcazar JT, Gulick PJ. 1983. Genetic resources of Cucurbitaceae: a global report. IBPGR Secretariat, Rome, Italy.

about 1986 accessions. The *C. melo* collection has been regenerated and characterized. Photographs of leaf, plant and fruit types are taken and can be used as descriptors. Characterization of *C. moschata* and *C. maxima* collections will start in 2009.

Mode of operation: discussion of the workplan of the Cucurbits Working Group and its schedule

Introduction

M.J. Díez presented the workplan agreed in Olomouc (2007) for the second half of Phase VII by the Cucurbits WG participants. An analysis of the degree of completeness of the objectives and the plans for Phase VIII developed during the same meeting were presented.

Current status of the European Central Cucurbits Database

As of October 2008, the European Central Cucurbits Database (ECCUDB) includes passport data from 39 European institutions for 24 899 accessions belonging to 22 genera and 90 species. The number of accessions belonging to the main cultivated species are: *Cucumis melo*: 3449, *Cucumis sativus*: 6398, *Citrullus lanatus*: 5794, *Cucurbita maxima*: 1904, *C. moschata*: 884, *C. pepo*: 3731, *C. argyrosperma*: 21 and *C. ficifolia*: 106.

The ECCUDB also includes information about cucurbits taxonomy, links related to cucurbits information, information about on-farm activities conducted in Spain with cucurbits crops and the core collection of *C. pepo* constructed with the COMAV collection. As of 2008, the core collection included 56 accessions, representing 14.3% of the total collection of 391 accessions. Characterization data of this core collection are available on the Web page (<http://www.comav.upv.es/eccudb.html>); they include 2 plant descriptors, 12 for fruit and 5 for seed as well as links to images of all the accessions.

Characterization data belonging to COMAV's *C. lanatus* and *C. sativus* collections were uploaded to the ECCUDB and are available online.

A new field indicating if the accession had been selected as an MAA was added to the Database.

The ECCUDB uses Microsoft Access because it provides for easy development and data entry. The characterization and evaluation data are stored using a relational database management system (RDBMS). Active Server Pages (ASP) scripting is used for online database queries. The query results can be downloaded in .csv format.

After the presentation, M.J. Díez asked all the partners to send characterization and evaluation data to improve the quality of the ECCUDB and to facilitate the selection of MAAs needed to implement AEGIS in future. K. Karlová was unsure whether it was appropriate to upload characterization data gathered in just one year without replication. There was some discussion about this question, and the Group agreed that this is acceptable because in genebank management it can take a long time before an accession is grown again. Participants agreed to send observations of one year to the ECCUDB and that these data should be supported with others on the year, country, locality and methodology used for regeneration.

M.J. Díez showed parts of the Database. A new section on *in situ* and on-farm conservation has been added to the homepage. Addresses of institutes, companies and non-governmental organizations (NGOs) working in this field are given by country. All partners were asked to provide additional addresses. M.J. Díez suggested that the addresses could be easily obtained from the representative of the ECPGR *In situ* and On-farm Conservation Network.

The Group agreed to modify the ECCUDB in order to indicate the “status” of each accession. The Database Manager will add new fields for “unique accession”, “duplicate accession”, “duplication group”, “MAA” and “AEGIS”.

A European Genebank Integrated System and the role of Working Groups in its implementation

Background, goal, scope

Presented by W. van Dooijeweert

During the second half of Phase VII the concept of “A European Genebank Integrated System” (AEGIS) had progressed significantly. W. van Dooijeweert presented the background and the goal of AEGIS to the WG members.

In Europe many collections of crops are maintained by genebanks, universities, research stations, breeding companies and NGOs. It takes a lot of effort to maintain all these collections. W. van Dooijeweert explained that there were more than 1.1 million accessions held in Europe but many were duplicates, entailing a waste of time and money when these accessions are made available free of cost.

The idea of AEGIS is to establish a virtual genebank containing unique and economically important accessions defined as the “Most Appropriate Accessions” (MAAs). The concept is described as follows:

- Conserving safely and in the long term the genetically unique and important accessions for Europe, at the same time ensuring their genetic integrity, viability and availability for breeding, research and education;
- Each collection holder conserves its own MAAs in its own genebank (virtual genebank);
- MAAs must be made available under the “Standard Material Transfer Agreement” (SMTA) of the International Treaty (IT).

The benefits of implementing AEGIS are:

- Improved collaboration among European countries
- Cost-efficient conservation activities
- Reduced redundancy in European collections
- Improved quality standards of the conserved material across Europe
- Improved quality and quantity of data on the European collections
- More effective regeneration
- Improved security of germplasm through safety-duplication
- Improved characterization and evaluation
- Facilitated access to germplasm
- Improved linkages between genebanks.

The first step to be taken will be an official agreement among the countries that want to be members of AEGIS. A Memorandum of Understanding (MoU) was developed and it was approved during the Eleventh Meeting of the Steering Committee. The MoU should be signed by the member country’s representatives. An Associate Member Agreement should be signed between individual genebanks wishing to participate in AEGIS and the concerned National Coordinator. The MoU will enter into force after it has been signed by ten countries, after which AEGIS will be formally operational. A member of the Steering Committee expected this could take 1-2 years; the Secretariat expects an earlier formal start of AEGIS.

EURISCO and the CCDBs must be adapted to document which accessions are part of AEGIS and of the Multilateral System (MLS). Two new fields for “MLS status” and “AEGIS

status” have already been integrated in EURISCO. Fields to indicate unique or duplicate accessions must be added in the CCDBs.

Details of the AEGIS concept are spelled out in the “Strategic Framework” document available on the AEGIS Web page. An overview of the updated AEGIS concept was given and discussed point by point. The members of the WG discussed the requirements for the MAAs, safety-duplication, use of the CCDBs, quality standards, legal status and possible financing for the work to be done. As the AEGIS concept is still being refined, participants are encouraged to read the information posted on the AEGIS Web page (<http://www.aegis.cgiar.org/>).

Specific tasks such as defining MAAs, crop conservation guidelines and a quality management system for the Cucurbits WG were mentioned; they were discussed in a later session of the meeting.

During the discussion, some partners stated they had heard about AEGIS but were not informed about recent developments. Others found the whole concept to be still confusing. There were many questions about the way collection holders could or should take part in the initiative. There was general consensus about moving in the direction of AEGIS, but participants felt they were hampered by insufficient funding. W. van Doonjeweert stated that in the spirit of ECPGR most of the work should be done as part of routine genebank management. He explained that collection holders could eventually save funds if they did not have to manage accessions that were maintained by and available from partner institutions.

All agreed that additional funding at the beginning would help in moving AEGIS forward. The WG should therefore find additional funds through, for instance, EU projects. The topic was discussed in a later session of the meeting.

Germplasm to be included in AEGIS: the concept of the Most Appropriate Accessions

Presented by M.J. Díez

AEGIS will comprise the “Most Appropriate Accessions (MAAs)”, selected on the basis of a list of binding “selection requirements” and a number of “selection criteria” that would be determined by the WG.

The “selection requirements” are:

- a. *Material under the management and control of the member countries and their associate members, in the public domain and offered by the associate members for inclusion into AEGIS*
- b. *Genetically unique within AEGIS, to the best available knowledge (assessment of genetically distinct accessions to be based on available data and/or on the recorded history of the accession)*
- c. *Plant genetic resources for food and agriculture as defined in the International Treaty, as well as medicinal and ornamental species*
- d. *Germplasm of European origin or that is introduced, which is of actual or potential importance to Europe (for breeding, research, education or for historical and cultural reasons).*

The different ECPGR Crop Working Groups will determine the “selection criteria” that will be used when deciding which accession should be accepted among two or more duplicates or groups of very similar accessions. These criteria will include aspects such as the comprehensiveness of existing passport data, number of regeneration cycles, health status, existence of characterization and evaluation data, whether the accession is maintained in the country where it was collected or originated, and others.

The role of the Crop Working Groups in the selection of the MAAs

Presented by M.J. Díez

M.J. Díez explained the role of the ECPGR Crop Working Groups. The definitions given in the Memorandum of Understanding (MoU) were read and discussed.

Point (d) of Article 5 (“Relationship of AEGIS with ECPGR”) of the MoU for the establishment of AEGIS, defines the role of the ECPGR Crop Working Groups as follows:

The ECPGR Working Groups will provide technical support for the implementation of AEGIS, including:

- *adopting **crop-specific criteria** that are consistent with the general requirements adopted by the ECPGR Steering Committee for the selection of the accessions to be proposed for registration as European Accessions;*
- *helping to **identify and making recommendations** to the participating countries regarding the accessions proposed for **registration as European Accessions**;*
- *preparing and coordinating the implementation of **Crop Conservation Work Plans**;*
- *proposing **minimum agreed standards** for the management of the European Collection on a crop gene pool specific basis for adoption by the ECPGR Steering Committee.*

Case study I. The example of the *Brassica* Working Group

Presented by W. van Dooijeweert

Since *Brassica* is one of the four model crops for the implementation of AEGIS, the WG on *Brassica* developed a draft method for selecting MAAs. *Brassica* is a cross-pollinated crop and is therefore comparable to Cucurbits. W. van Dooijeweert handed out the updated *Draft Selection Criteria* compiled at the AEGIS model crop curators’ meeting of 1-3 July 2008 in Radzików, Poland. He briefly presented the different types of selection criteria:⁴

1. Selection requirement: must be approved by the Steering Committee
2. Priority selection criteria: to be decided and used by countries for nomination of MAAs
3. Selection criteria: to be decided and used by the WG for nomination of MAAs.

The *Brassica* WG chose *B. rapa* as the model crop for a case study to highlight problems in the identification of MAAs. Two members performed this exercise separately to check if the same results were obtained when using the same selection criteria. The *Brassica* report of the Radzików meeting⁵, in which the working method is explained, was distributed among the members of the Cucurbits WG. The participants discussed the recommendations and concurred that the databases should be updated to contain as many data as possible because it was currently impossible to select MAAs due to insufficient data. In the *Brassica* case, the subjectivity of the selection criteria posed another problem; it resulted in different sets of MAAs selected by the two members, although they used the same criteria.

The participants discussed whether the methodology used by the *Brassica* WG could be applied by the Cucurbits WG or whether another approach was needed. They concluded that parallel and independently to the selection of MAAs, the work on identification of unique and possible duplicates in the ECCUDB could be started.

⁴ After July 2008, the concept of selection criteria was simplified, leaving only two categories: “selection requirements” and “selection criteria”, as explained above.

⁵ Available from http://aegis.cgiar.org/documents/crop_specific_documents.html

Case study II. Selection of MAAs in the COMAV's *Cucurbita pepo* collection

Presented by M.J. Díez

To illustrate the selection of MAAs in a collection of cucurbits, M.J. Díez explained a case study conducted with the *C. pepo* collection held at COMAV, Universidad Politécnica de Valencia (UPV). Prior to the selection of MAAs, a study of the general characteristics of the collection has to be carried out. COMAV's *C. pepo* collection consists of a total of 391 accessions, for the most part of Spanish origin. The entire collection is fully documented with passport and characterization data (molecular characterization only partially conducted but not necessary for the selection of MAAs). A core collection was built. Accessions were collected in 37 provinces and 194 localities. No more than seven accessions were collected in the same locality (most often only two or three). Completeness in COMAV's database was checked for the following fields and presented as initial information: ACCENAME, ORIGCTY, SAMPSTAT, COLLSITE, COLLNUMB, OTHERNUMB, DONORNUMB and DONORCODE.

Subsequently, the following steps were taken for selecting MAAs:

- Elimination of non-Spanish accessions: 391-94 = 297.
- Sorting of the accessions by province and locality.
- Checking the field "ACCENAME" and also the characterization data. In this collection the common name included in the field ACCENAME is "calabaza", a generic Spanish term for "pumpkin". Therefore, **the field ACCENAME is not very informative and useful for selecting MAAs**. Instead, characterization data and other information included in "Notes" are useful.
- Exclusion of the duplicated accessions based on the above information.
- Taking the following into account for excluding accessions:
 - Completeness of passport data
 - Number of regenerations
 - Health of seeds and other criteria.

The accessions originating from other countries (accessions collected by the holder in other countries) can be reviewed after this first selection.

This completes the selection process conducted by the holding institute. A Committee of experts composed of some selected members of the Cucurbits WG, including the Database Manager, has to be created. The list of MAAs selected by the holding institute is then sent to the Cucurbits WG Committee, which checks the list for duplicates in the ECCUDB. The revised list is sent to the holding institute and finally approved.

After the explanation of this example, the pros and cons of this methodology were discussed, also considering as examples collections with different characteristics. M.J. Díez stressed the importance of the first selection of MAAs, which should be conducted by the curators of holding institutes, given their deeper knowledge of their own materials.

M.J. Díez, together with W. van Dooijeweert, will examine more case studies, taking into account the different characteristics of the cucurbit collections of the WG members. After consulting J. Engels and L. Maggioni at the ECPGR Secretariat about these case studies, they will forward them to the WG members to help them in the selection of MAAs in their collections.

Discussion on AEGIS: problems, sharing of responsibilities

The idea of AEGIS was still confusing to the partners even after the presentation of the concept of MAA selection and the case studies. All partners were willing to implement the concept, but stressed the need to start with a small pilot project. They agreed that *Cucumis melo* would be a good case study, since almost all partners hold accessions of this species.

Collection holders will start by identifying MAAs in their own collection. To facilitate this exercise the Chair and Vice-Chair will adapt the flow chart developed by the *Brassica* WG by incorporating the “**Selection Requirements**” approved by the Steering Committee and the “**Selection Criteria**” to be agreed by the WG. The flowchart will be sent to partners tentatively before December 2008. Partners will indicate which problems they had encountered while using the flowchart. The results would be sent to M.J. Díez by the end of March 2009.

It was decided that a small group of experts (maximum four persons) would be formed for each crop. V. Carnide thought that experts should be drawn from different regions. The nomination of experts was postponed until the results of the pilot project were made available. The formation of expert groups will be done through email.

The way ahead

Establishment of minimum descriptor lists for each crop

M.J. Díez distributed the draft minimum descriptor list for *Cucurbita* that she had developed in collaboration with E. Křístková, from Czech Republic. The participants discussed each descriptor and decided whether or not to include it in the minimum list. According to the WG experts, all descriptors were needed and could be kept in one list. The list was even extended to 29 descriptors. Although this is a large number, the descriptors were considered necessary and approved by all the participants.

B. Schmidt presented the list for *Lagenaria*, which was used at IPK for *Cucurbita* and *Lagenaria*. A hardcopy was distributed to all members. Experts on *Lagenaria* will send their comments on it to M.J. Díez before mid-December 2008. It was stressed again that it should, if possible, be a minimum list with 10-15 descriptors. The first draft will be developed by M.J. Díez on the basis of the comments received.

Y. Tadmor presented a few slides showing the morphological variation in *Momordica* spp. It is known that this crop holds many health-beneficial traits such as insulin production and resistance traits such as the antifungal activities of leaf extracts. Research on these traits and evaluation of resistance to *Fusarium*, *Alternaria* and powdery mildew is under way in Israel. Y. Tadmor will work with Y. Burger to produce the first draft of a minimum descriptor list for *Momordica*, which will be sent to M.J. Díez by mid-November 2008.

The three draft lists of minimum descriptors will be posted on the Web site.

Status of the needs for regeneration and possible solutions

W. van Dooijeweert introduced the topic. It is widely known that regeneration is needed to enlarge collections and to produce healthy seeds in sufficient quantity. Some collection holders have no problems in regenerating seeds, but for others it is almost impossible due to different reasons. Each member's situation was discussed and possible solutions for problems were suggested.

Bulgaria

The Institute for Plant Genetic Resources “K. Malkov” (IPGR) has problems with regeneration of its material. Half of the collection should be regenerated to have enough seeds with good germination percentage. IPGR intends to start using isolation cages.

Czech Republic

Regeneration of the Cucurbit collection is under way; 40% has been completed. Due to new policy decisions, the capacity of isolation cages has decreased to 50%. Consequently, only

20-30 accessions can be regenerated each year, placing many accessions at risk. Thirty *Cucurbita* spp. accessions did not germinate anymore. The genebank does not envisage seeking assistance from other institutions; however, K. Karlová plans to raise this issue once again for internal discussion. Fortunately, the accessions of Czech origin have already been regenerated.

Georgia

The genebank in Georgia is new. Only 28 accessions have been collected to date and are in good condition.

Germany

IPK has enough capacity to regenerate all its material. The *Momordica* collection is however a problem, since it has to be regenerated every 4 years due to rapid loss of germinability. B. Schmidt is seeking protocols to store the material for a longer period.

Hungary

The status of Cucurbits in Hungary is acceptable. Only 96 accessions need urgent regeneration, which can be handled by the institute.

Israel

The genebank in Israel focuses only on endemic species. Other collections such as the Cucurbits have to be maintained by the holder. Although there are no funds for regeneration, the Ministry does not allow assistance from private companies. This is a big problem for the *C. melo* and *C. lanatus* collections. Y. Tadmor is seeking solutions for saving the collections.

Latvia

The Latvian genebank is relatively new. It contains only a few accessions of Latvian origin, which were included in the genebank in 1980. Although there is no national support, the genebank does not face any problems.

The Netherlands

CGN has no problems in regenerating material; 99% of the collection is available thanks to the support from Dutch companies. They also help in regenerating material if it does not meet the seed quality requirement of CGN anymore. Some companies indicated they were also interested in regenerating material for other genebanks, as input in kind.

Poland

Poland has no problems in regenerating accessions. Since 13 years, funds have been provided by the government for regenerating the collection, which is considered a continuing exercise. The collection is in good shape.

Portugal

The cucurbit collection in Vila Real is in good condition. As the samples are small, no regeneration is needed at the time. Some project funds are available for collecting, but the institute has no funds for maintaining genetic resources and will have to seek project funds for regeneration. The genebank in Braga has no means for regeneration either.

Spain

For the collections of COMAV there are no problems. The genebank works together with 13 institutes for regenerating material.

Turkey

Regeneration of the *Cucurbita* collection is needed. The *C. melo* collection is the only one that has been regenerated. Regeneration of the other Cucurbits is planned.

Ukraine

The institute holds 6000 accessions but only 100 are in long-term storage. The material is in good condition. The only financial support from the government is in the form of salaries. The institute has good facilities, but no funds for fertilizers, fuel, pesticides, etc. The only way to safeguard the collection is to produce many varieties, which could generate income for the institute.

W. van Dooijeweert commented on these reports from the different countries. Funding was apparently the most common problem. He reminded participants of the offer made by some private companies for regeneration. Material could also be regenerated at a partner's genebank. This solution is sometimes cheaper, provided the genebank ensures the required quality. It could be profitable for both parties: one genebank could get more regenerations for the same amount of money and the other could earn income to do (extra) regenerations.

Y. Tadmor mentioned that some wealthy individuals also offered support for regeneration, as in the case of Amy Goldman from USA for *C. melo*.

Planning for safety-duplication of each collection under long-term conservation conditions

Presented by W. van Dooijeweert

Safety-duplication and the availability of hosting "black boxes" are high priorities of ECPGR and the Cucurbits WG. To avoid the loss of valuable germplasm due to lack of storage facilities, disasters, etc., germplasm must be stored in a second place, preferably outside the country, under long-term storage conditions. This practice was stressed again in relation with the AEGIS principle. There are two possibilities for storing safety-duplicates: in the Svalbard Global Seed Vault and under black box arrangements in a partner's genebank. Bulgaria, Germany (20 000 accessions, of which 300 Cucurbits) and The Netherlands (20 000 accessions, of which 950 Cucurbits) have sent safety-duplicates to Svalbard. Czech Republic is planning to send its cereal collection. The table on the status of safety-duplication (p. 9, report of the first meeting in Plovdiv, Bulgaria, September 2005) was reviewed. All partners were asked the same three questions about the level of safety-duplication, long-term conservation facilities and availability for hosting black boxes. The results of the survey are presented in Table 1.

The WG's efforts to improve safety-duplication have to date resulted in the signing of a Memorandum of Understanding between CGN, The Netherlands, and IPGR, Bulgaria. WG members were encouraged to review their own level of safety-duplication and urged to make arrangements with partners' genebanks when necessary.

The representatives of Georgia and The Netherlands agreed to investigate the possibility of sending safety-duplicates of the small collection in Georgia to the Netherlands.

Table 1. Level of safety-duplication of Cucurbit collections in Europe (as in October 2008)

Country	Holding institute	Safety-duplication	Long-term conservation facilities	Availability for hosting black boxes
Bulgaria	Institute for Plant Genetic Resources "K. Malkov" (IPGR), Sadovo	100%, only within the institute	Yes	To be discussed
Czech Republic	Crop Research Institute (CRI), Prague	30%, in Prague (but 100% of the regenerated material)	Yes	Yes, under bilateral agreement, but only in limited amounts, 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	100%	Yes	Yes, depending on available space
Hungary	Institute for Agrobotany, Tápíószele	66%, only within the Institute	Yes	No
Israel	Newe Yaar Research Center, ARO, Ramat Yishai	0%	Yes	No
Italy	Experimental Institute Monsampolo del Tronto	No; can consider sending duplicates	No	No
Latvia	Pure Horticultural Research Station, Tukuma Raj			
The Netherlands	Centre for Genetic Resources, Wageningen, The Netherlands (CGN)	100%	Yes	Yes
Poland	National Plant Genetic Resources Centre, Plant Breeding and Acclimatization Institute (IHAR), Radzików	Currently not duplicated	Yes	Yes
Portugal	Banco Português de Germoplasma Vegetal (BPGV), Braga	50%, in the Genebank	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	100%	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 Vegetables and Melons, Kharkov region	30%, in other institutions	Yes	Partially

Results of the survey on conservation, management and regeneration procedures of cucurbit genetic resources

During the VEGNET meeting held in June 2007 in Olomouc, Czech Republic, it was agreed that all WGs would work towards the implementation of AEGIS. Successful implementation required the adoption of a Quality Management System (QMS) by all collection holders having accessions recorded into the system. The *Brassica* WG, one of the AEGIS “model crop” groups, developed a survey, with the help of which all the procedures used by the WG members could be inventoried. Using the survey of the *Brassica* WG as a model, the Chair and Vice-Chair of the Cucurbits WG sent a questionnaire to all WG members; only three members replied. The reason for this low response was discussed, as well as the participants’ opinions of the QMS.

It was agreed that the questionnaire should be resent to all partners before the end of 2008; it had to be returned to W. van Dooijeweert by the end of March 2009. A preliminary overview would be prepared, but decisions on common procedures would be postponed until the next meeting.

Establishment of a regeneration and storage protocol for cucurbits

The Cucurbits WG has already developed minimum guidelines for regeneration (Appendix II of the report of the first meeting in Plovdiv, 2005). A printout of the list posted on the AEGIS Web site, including all the procedures for regeneration and storage, was distributed to all partners. The results of the above-mentioned survey will be discussed at the next meeting. Only then can the first steps be taken for establishing extended regeneration and storage protocols.

Opportunities for funding the Working Group’s activities

Y. Tadmor introduced a project on molecular markers and phenotypic description. One of the partners is J. García Mas from Spain. Y. Tadmor indicated that the project had already been written but it could still be possible to incorporate a minor budget for regeneration and rationalization of collections. This could help the WG to move forward. Melon was chosen as the crop under study. The draft would be sent to the Chair and Vice-Chair.

Y. Tadmor is also involved in another project on high-throughput facilities for measuring metabolism products. This project has already been running for some time, and the facilities should be used, possibly for one of the WG’s collections. He will mention this opportunity to the other project partners at the next project meeting in half a year’s time. All the participants expressed interest, although some would need the approval of their organizations.

Conclusions

In the closing remarks, M.J. Díez expressed satisfaction with the discussions at the meeting. Not all the topics could be discussed but several agreements had been reached. Some partners were aware of AEGIS; some had learned about it for the first time. Discussion on this topic familiarized all participants with the AEGIS principles.

The meeting was very well arranged by the local organizer K. Niemirowicz-Szczytt, and the visit to the Plant Breeding and Acclimatization Institute in Radzików gave the Group a good overview of the management of genetic resources in Poland. K. Niemirowicz-Szczytt was thanked with a bouquet of flowers on behalf of the whole Group.

A. Zubiashvili indicated that the Georgian Institute of Farming would be happy to organize the next meeting. The meeting was then closed.

APPENDICES

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Appendix I. Project proposal of the Cucurbits Working Group for Phase VIII

1. Background and justification

The Steering Committee, at its Tenth Meeting held in Riga, Latvia (September 2006), defined the four priority areas for Phase VIII: "Task sharing and capacity building", "Characterization and evaluation", "*In situ* and on-farm conservation and management" and "Documentation and information". Additionally, it stated that all activities would have to focus on the implementation of AEGIS. The Cucurbits Working Group suggested some activities for Phase VIII at the second meeting of the Vegetables Network held in Olomouc, Czech Republic (June 2007), to prepare the involvement of the WG in the implementation of AEGIS. The activities agreed on each of the four priority areas were:

- **Task sharing and capacity building**
 - implementation of safety-duplication
 - promotion of the participation of seed companies in regeneration and characterization activities
 - selection of a group of members to help in the selection of accessions to be included in the AEGIS project.

- **Characterization and evaluation**
 - characterization of accessions in each genebank
 - identification of taxonomical experts to help in the classification of unclassified accessions
 - uploading of characterization data to the European Central Cucurbits Database (ECCUDB).

- ***In situ* and on-farm conservation and management**
 - compiling of information on *in situ* and on-farm conservation of cucurbits in Europe
 - elaboration of specific descriptors for testing the suitability of the accessions to cultivation in organic conditions
 - integration in the ECCUDB of characterization data of accessions cultivated in organic conditions.

- **Documentation and information**
 - uploading of the ECCUDB with passport and characterization data
 - identification of possible duplicates
 - selection of the Most Appropriated Accessions (MAAs) in each genebank.

Given the tasks already planned for Phase VIII, the proposal will focus on three specific aspects.

2. Objectives of the project

The objectives proposed are:

1. To implement safety-duplication
2. To develop and implement specific algorithms to facilitate the identification of safety-duplicates in the ECCUDB
3. To strengthen collaboration with the *In situ* and On-farm Conservation Network.

3. Workplan

Objective 1. Implementation of safety-duplication

The Cucurbits WG reported on the status of safety-duplications at its previous meetings. The need for safety-duplicates was evident for the Institute for Plant Genetic Resources (Plovdiv, Bulgaria) and the Research Centre for Agrobotany (Tápiószele, Hungary). The situation was not clear for some countries not represented at the meetings. After the meeting, Israel informed about the need for safety-duplication for part of its collection. One of the most important objectives of the Working Group is the implementation of safety-duplication. It has to be a continuing exercise to avoid the risk of losing entire germplasm collections. Currently, i.e. at the end of Phase VII, this is being carried out for part of the collections of Bulgaria and Israel, but available funds will not allow preparing the safety-duplicates of the complete collections.

The proposed actions are:

Activities of the project participants

- The Chair and Vice-Chair check the level of safety-duplication of individual collections.
- Holders of individual collections request their respective National Coordinators or Agriculture Ministries for permission to arrange black boxes for safety-duplicates.
- Agreements are formalized between the sending and recipient countries.
- Detailed information about the preparation of black boxes is made available by the Chair and Vice-Chair to the interested countries.
- A cost estimate is prepared for the collections involved.
- Black boxes are prepared and sent to the holding institutions.

Expected outputs and milestones

- More precise data about the level of safety-duplication in all the collections
- Increased level of safety-duplication of the European cucurbit germplasm collections.

Timetable

- Year 1 of Phase VIII: sending to all WG members a survey questionnaire requesting details about the level of safety-duplication
- Year 2: implementation of safety-duplication.

Budget

- personnel and consumables (package material, dispatch cost): € 5365.

Objective 2. Development and implementation of specific algorithms to facilitate the identification of duplicates

The involvement of the Working Groups in the implementation of AEGIS has been defined in the current AEGIS *Discussion paper* (2008). The WGs have to apply the MAA concept and identify the list of tentative accessions to be accepted and registered as European Accessions. This has to be done in collaboration with the respective holders. The accessions proposed by each country as MAAs have to be corroborated by the Database Managers, who have to check them for possible duplicates. A semi-automatic management of the data would facilitate the process, making it less complicated and time-consuming.

As in 2008, the ECCUDB holds passport data of nearly 25 000 accessions of cucurbits crops. Currently the completeness of the Database is being verified; complementary data will then be requested from the collection holders. However, the quality of the Database cannot be improved substantially due to the lack of information in the original databases. The data stored in the ECCUDB has to be managed well to detect possible duplicates and select the MAAs as accurately as possible. The *Avena* Database Manager, C. Germeier (Federal Centre for Breeding Research of Cultivated Plants, BAZ Genebank, Quedlinburg, Germany), has developed several algorithms to identify probable duplicates. We propose a visit of the ECCUDB manager to Germany to learn and transfer these algorithms to the ECCUDB.

Activities of the project participants

- Visit of the ECCUDB manager to the BAZ Genebank. Duration: 2 days
- Implementation of the algorithms in the ECCUDB
- Selection of possible duplicates.

Expected outputs and milestones

- Training of the ECCUDB manager
- Improvement of the quality of the ECCUDB.

Timetable

- Year 1 of Phase VIII: 2-day visit of the ECCUDB Manager to the BAZ genebank
- Year 2: development and implementation of tools for the identification of possible duplicates

Budget

- 2-day visit, one person: € 825
- Implementation in the ECCUDB: input in kind by COMAV-UPV.

Objective 3. Strengthening collaboration with the *In situ* and On-farm Conservation Network

The Cucurbits WG has not undertaken any important on *in situ* and on-farm conservation activities until now. However, cucurbits are cultivated organically in some European countries. With a view to collaborate more closely with the different Crop Networks, the *In situ* and On-farm Conservation Network has offered to organize a meeting that will allow it to know the Networks' needs and to find solutions. The Cucurbits WG is interested in attending this meeting.

Activities of the project participants

- Chair and Vice-Chair attend the meeting
- A workplan is developed in collaboration with the *In situ* and On-farm Conservation Network

- These plans are communicated to the Cucurbits WG members by email and at the WG meeting
- Planned activities are implemented.

Expected outputs and milestones

- Workplan for on-farm cultivation of cucurbit crops
- Reinforcement of on-farm activities in the Cucurbits WG.

Timetable

- Year 1 of Phase VIII: participation in the meeting and elaboration of the workplan
- Year 2 of Phase VIII: communication to the Cucurbits WG members and implementation of the activities.

Budget

- 2-day meeting, two persons: € 1650.

4. Project coordination and administrative structure

Project coordination

The activities proposed in the project will be coordinated by the Chair and Vice-Chair. Information will be requested from the members when needed, and decisions will be communicated to the members by the coordinators.

Appendix II. Action list

The workplan of the Cucurbits WG was presented at the meeting. It is also valid for the first part of Phase VIII and is presented as in the report of the second meeting of the Vegetables Network in Olomouc. The list below indicates the actions and deadlines discussed during the present meeting.

Action	Carried out by	Date by when the action should be completed
Send (updated) passport data to ECCUDB Manager	All partners	End of 2008
	A. Simon	End of November 2008
Send characterization and evaluation data per trial to improve the quality of ECCUDB	All WG members	First batch sent: end of 2008
Provide addresses of institutions working with <i>in situ</i> and on-farm conservation per country to ECCUDB	All WG members	Ongoing
Case studies for determining MAAs in Cucurbit collections	Chair and Vice-Chair	By end of 2008
Adapt flow chart developed by <i>Brassica</i> WG to identify MAAs in <i>C. melo</i>	Chair and Vice-Chair	By December 2008
Identify MAAs in <i>C. melo</i>	All members with melon collections	By March 2009
Comments on minimum descriptor list of <i>Lagenaria</i> sent to M.J. Díez	<i>Lagenaria</i> experts	By mid-December 2008
Produce a first draft minimum descriptor list for <i>Momordica</i> spp.	Y. Tadmor	By mid-November 2008
Arrange safety-duplication	All partners	Ongoing
	L. Krasteva	By end of 2008
	A. Zubiashvili / W. van Dooijeweert	Ongoing
Resend survey questionnaire on conservation, management and regeneration procedures	Vice-Chair	By end of 2008
Return filled survey questionnaire to Vice-Chair	All partners	By end March 2009
Compile survey overview	Vice-Chair	June 2009
Decide on common procedures	All partners	Next Cucurbits WG meeting
Establish extended regeneration and storage protocols	All partners	Next Cucurbits WG meeting

Appendix III. Acronyms and abbreviations

ARO	Agricultural Research Organization, Israel
BPGV	Banco Português de Germoplasma Vegetal, Braga, Portugal
CCDB	Central Crop Database
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
EST-SNP	Expressed sequence tag–single nucleotide polymorphisms
EST-SSR	Expressed sequence tag–simple sequence repeats
EU	European Union
EURISCO	European Internet Search Catalogue
FAO	Food and Agriculture Organization of the United Nations, Rome, Italy
IBPGR	International Board for Plant Genetic Resources, Rome, Italy (<i>now Bioversity International</i>)
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
MAA	Most Appropriate Accession
MoU	Memorandum of Understanding
NCG	Network Coordinating Group (<i>of ECPGR</i>)
NGO	Non-governmental organization
PGR	Plant genetic resources
SC	Steering Committee
SGGW	Szkoła Główna Gospodarstwa Wiejskiego w Warszawie (Warsaw University of Life Sciences), Warsaw, Poland
SMTA	Standard Material Transfer Agreement
UAAS	Ukrainian Academy of Agrarian Sciences
UPV	Universidad Politécnica de Valencia (Polytechnic University of Valencia), Spain
UTAD	Universidade de Trás-os-Montes e Alto Douro (University of Trás-os-Montes and Alto Douro), Vila Real, Portugal
VEGNET	Vegetables Network
VIR	N.I. Vavilov Research Institute of Plant Industry, St. Petersburg, Russian Federation
WG	Working Group

Appendix IV. Agenda

Ad hoc meeting of the ECPGR Working Group on Cucurbits 23-24 October 2008, Warsaw, Poland

Wednesday, 22 October 2008

Arrival of participants

Thursday, 23 October 2008

08:30 – 09:30 Introduction

- Opening remarks (*M.J. Díez*)
- Welcome from Warsaw Agricultural University (*Katerzyna Niemirowicz-Szczytt*)
- Self-introduction of the participants
- Presentation of the agenda and modifications
- Briefing on ECPGR Phase VIII (*Vice-Chair*)
- Report and outline of the Cucurbits WG activities (*M.J. Díez*)

09:30 – 10:15 Reports on status of National Collections

- Reports from countries not covered by the Adana and Plovdiv reports (2002, 2005): collecting, conservation, safety-duplication, characterization or evaluation, regeneration, availability of material, institutional responsibilities, etc. (*10 min. presentations from Georgia, Germany, Latvia, Ukraine*)

10:15 – 11:00 *Coffee break*

11:00 – 12:15 Reports on status of National Collections (continued)

- Short update on National Collections: conservation, collecting, evaluation or characterization (*5 min. presentations from the other countries*)

12:15 – 12:30 Mode of operation: discussion of the workplan of the Cucurbits Working Group and its schedule

- Introduction (*M.J. Díez*)
- Current status of the European Central Cucurbits Database (ECCUDB) (*introduced by M.J. Díez*)

12:30 – 14:00 *Lunch*

14:00 – 15:45 Mode of operation (continued)

- AEGIS and the role of Working Groups in its implementation (*Chair and Vice-Chair*)
 - Background, goal, scope
 - Germplasm to be included in AEGIS: concept of the Most Appropriate Accessions (MAAs)

- The role of the Crop Working Groups in the selection of MAAs
- Case study I. The example of the *Brassica* WG
- Case study II. Selection of MAAs in COMAV's *Cucurbita pepo* collection
- Discussion on AEGIS: problems, sharing of responsibilities

15:45 – 16:15 *Coffee break*

16:15 – 17:45 • Discussion on AEGIS: problems, sharing of responsibilities (continued)

The way ahead

- Establishment of minimum descriptor lists for each crop
 - *Cucurbita* spp.

Friday, 24 October 2008

08:30 – 12:30 **Report drafting / Visit to the Genebank in Radzików**

12:30 – 14:00 *Lunch and return to the University of Warsaw*

16:00 – 18:00 **The way ahead (cont.)**

- Establishment of minimum descriptor lists for each crop (continued)
 - *Lagenaria* spp.
 - *Momordica* spp.
- Status of needs for regeneration and possible solutions
- Planning for safety-duplication of each collection under long-term conservation conditions (*introduced by W. van Dooijeweert*)
- Results of the survey on conservation, management and regeneration procedures for cucurbit genetic resources (*W. van Dooijeweert*)
- Establishment of regeneration protocol and storage for cucurbits
- Opportunities for funding the Working Group's activities (EC programmes)

Closing remarks

Evening *Social dinner*

Saturday, 25 October 2008

Departure of participants

Appendix V. List of participants

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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>).

Liliya Ivanova Krasteva
Institute for Plant Genetic Resources
"K. Malkov" (IPGR)
Str Drujba 2
4122 Sadovo, Plovdiv district
Bulgaria
Email1: krasteva_ipgr@abv.bg
Email2: krasteva_l@abv.bg

Katerina Smekalová (*ex-Karlová*)
Department of Vegetables and Special
Crops Olomouc
Crop Research International (CRI)
Šlechtitelů 11
78371 Olomouc-Holice
Czech Republic
Email: smekalova@genobanka.cz

Alexander Zubiashvili
Institute of Farming
Plant Genetic Resources Department
Mtskheta
Tserovani
Georgia
Email: sathburialbi@mail.ru

Bärbel Schmidt
Genebank Department
Leibniz Institute of Plant Genetics and
Crop Plant Research (IPK)
Corrensstrasse 3
06466 Gatersleben
Germany
Email: schmidt@ipk-gatersleben.de

Attila Simon
(*on behalf of Lajos Horváth*)
Research Centre of Agrobiodiversity
Külsömezö 15
2766 Tápiószele
Hungary
Email: jensen@agrobot.rcat.hu

Yaakov Tadmor
Newe Yaar Research Center
Agricultural Research Organization
POB 1021
30095 Ramat Yishai
Israel
Email1: tadmory@volcani.agri.gov.il
Email2: tadmory@agri.gov.il

Līga Lepse
Pure Horticultural Research Station
Abavas iela 2
3124 Pure, Tukuma raj.
Latvia
Email: liga.lepse@puresdis.lv

Willem van Dooijeweert
Centre for Genetic Resources, the
Netherlands (CGN)
Wageningen University and Research
Centre
PO Box 16
6700 AA Wageningen
The Netherlands
Email: willem.vandooijeweert@wur.nl

Katarzyna Niemirowicz-Szczytt
Department of Plant Genetics, Breeding
and Biotechnology
Warsaw University of Life Sciences
Ul. Nowoursynowska 159
02 776 Warszawa
Poland
Email: katarzyna_niemirowicz@sggw.pl

Valdemar Pedrosa Carnide
Department of Genetics and
Biotechnology
Universidade de Trás-os-Montes e Alto
Douro (UTAD)
Apartado 1013
5001-801 Vila Real
Portugal
Email: vcarnide@utad.pt

María José Díez Niclós
Instituto de Conservación y Mejora de la
Agrodiversidad Valenciana (COMAV),
Universidad Politécnica de Valencia,
Edificio 8, Access J
Camino de Vera s/n
46022 Valencia
Spain
Email: mdiezni@btc.upv.es

Sevgi Mutlu
Aegean Agricultural Research Institute
(AARI)
PO Box 9
35661 Izmir
Turkey
Email: mutlusevgi@hotmail.com

Oksana Shabetya
Institute of Vegetables and Melon
Growing of the Ukrainian Academy of
Agrarian Sciences (UAAS)
Selektionnoye
62478 Merefa, Kharkov region
Ukraine
Email1: shabetya14@rambler.ru
Email2: boguslavr@rambler.ru

