

Report of a Working Group on Cucurbits

Ad hoc Meeting, 23-24 October 2008, Warsaw, Poland

M.J. Díez and W. van Dooyeweert, *compilers*

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SUMMARY OF THE MEETING

Introduction

Opening of the meeting

M.J. Díez opened the meeting by thanking all the present for their participation. She reminded the group that Phase VII of ECPGR was reaching its end this year. The Vegetables Network Coordinating Committee 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 in that meeting were explained later by the Vice-Chair.

Recently the ECPGR Steering Committee met in Sarajevo, Bosnia and Herzegovina (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 will be crucial for the implementation of AEGIS during Phase VIII. This Cucurbits *ad hoc* meeting had been organized in order to inform the group and start the selection of the Most Appropriate Accessions (MAA) among the collections in the member countries of the Working Group on Cucurbits. The concrete objectives of the meeting were: i) to inform all members of the WG about the Vegetables Network's plans for Phase VIII; ii) to continue with the discussions about the mode of operation of the WG in several practical aspects; and iii) to start with the implementation of the AEGIS activities at the WG.

M.J. Díez thanked the Leafy Vegetables Working Group members for their positive response to the request to transfer their funds, if needed, for the organization of this meeting.

Introductory welcome

K. Niemirowicz-Szczytt introduced two of her colleagues, Prof. M. Rakoczy-Trojanowska, head of the Department, and Dr A. Korzeniewska, who are working with cucurbits. After this introduction she explained that the Warsaw University of Life Sciences-SGGW (WULS-SGGW) is among the first Polish institutions of higher education. It educates experts for the needs of the biosphere in a broad-sense. It offers wide-ranging programmes of study – from biological and technical, through medical, economics and humanities.

The University is well known and respected, both domestically and internationally. Every year, the number of applicants taking their entry exams exceeds many times the number of available student positions. The current enrolment stands at about 25 000 students, including all 27 majors and 62 areas of specialization. Owing to the University's research and educational potential, the level of its research, modernity and openness to the outside world, more and more research centres from around the world collaborate with it or declare their interest in establishing collaboration. The number of foreign students is also growing. Among other factors, this is possible because the University recognizes the European Credit Transfer System and because it offers a range of 80 professional courses in English.

She extended her heartfelt welcome to all the participants visiting the Warsaw University of Life Sciences and encouraged them to get personally acquainted with its potential in education, research, consulting, as well as its contribution to national culture.

After the introductory welcome by K. Niemirowicz-Szczytt, all participants were invited to briefly introduce themselves.

The agenda was then approved without modifications.

Briefing on ECPGR Phase VIII

W. van Dooijeweert presented the structure and plans for Phase VIII (2009–2013). These plans were discussed and approved by the Steering Committee during their eleventh meeting in Sarajevo, Bosnia and Herzegovina, 2-5 September 2008.

After the tenth meeting, the Steering Committee indicated they wanted the Networks to prioritize Working Groups in Phase VIII again. Only higher priority Working Groups could receive up to 25% additional funds to carry out activities like evaluation, collecting etc. During the second Vegetable Network meeting on 26-28 June 2007 in Olomouc, Czech Republic, it was decided that the Network did not wish to prioritize Working Groups. A letter was written to the Steering Committee with the justification that the Network preferred the Working Groups to work as colleagues and not as competitors. One of the main reasons was that the prioritization in Phase VII did not prove that higher priority Working Groups were achieving more results, compared to the lower priority Working Groups. The Network argued that it is preferable to be on the same level in Phase VIII to benefit from each other by implementing AEGIS, which will be the main topic.

The Network also requested to extend the Network Coordinating Group (NCG) to all Chairs and vice-Chairs of the Working Groups. The Steering Committee approved these requests. The budgets for the Network and the Cucurbits Working Group were presented. The country quota system will be maintained during Phase VIII and reports will only be available in electronic form through the ECPGR Web site. The Secretariat will only assist in editing the discussion and recommendations. Country reports can be included as separate files, but they will not be edited anymore.

A Vegetable Network meeting is planned in 2009 or 2010. During this meeting AEGIS topics will be discussed. The SC allocated budget for special projects in relation with AEGIS. This budget line offers additional funds as a competitive grant scheme, to carry out activities that are related to AEGIS. The procedures to access these funds are still to be defined. The budget size is at the level of € 103 000 for the five years.

Considering the small size of some Working Groups, the SC invited the NCG to verify whether some WGs could be merged as a feasible and cost effective option. The Priority topics of Phase VII will remain in Phase VIII, with emphasis on task sharing:

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

The four Network goals for Phase VIII will be:

- Improve level of safety-duplication
- Develop mechanisms for determining MAAs
- Agree on quality standards for maintaining MAAs
- Adapt CCDB for indicating MAAs

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

After this briefing of Phase VIII, W. van Dooijeweert asked if anyone had questions. It was stressed again that all the work conducted in the next phase will be in accordance with AEGIS. Some discussion developed about the financing of all the work to be done by the Working Group members. It was made clear that in the spirit of ECPGR, it is expected that we do this as input in kind. Only small budgets will be available for specific tasks to

implement AEGIS. W. van Dooijeweert thinks that in the long run it will be beneficial to all collection holders if they only have to focus on a set of accessions in their collection.

Report and outline of Cucurbit WG activities

M.J. Díez presented the activities conducted by the Working Group from the First Meeting held in Plovdiv, Bulgaria in September 2005. In that Meeting a workplan was agreed by the attending members (see Report of the meeting on the Web page http://www.ecpgr.cgiar.org/Workgroups/Cucurbits/CucurbitsMeeting1_Plovdiv05.pdf).

Later, six members of the Group participated in the parallel meeting of the Cucurbits Working Group conducted during the Vegetables Network Second Meeting held in Olomouc, Czech Republic, in June 2007. In this meeting the workplan for the second half of Phase VII was discussed and agreed, 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 ECPGR Vegetables Network prepared a budget proposal for Phase VIII. The total budget for Phase VIII is 188 156 euro, 75% for meetings and 25% for project activities. In this proposal each Working Group will receive the same quantity of money: 21 360 euro, from which 75% corresponds for meetings and 25% for projects or activities. The following activities were proposed by the Cucurbits Working Group: i) Implementation of safety-duplication, ii) Development and implementation of specific algorithms to facilitate the identification of duplicates, iii) To strengthen collaborations with the *In situ* and On-farm Network, and iv) the organization of a Regular Working Group Meeting. Annex III includes the Project proposal for Phase VIII of the Cucurbits Working Group.

K. Karlová informed the group that changes had occurred in Slovakia regarding the representation in the Vegetable Working Groups and these will be confirmed through the ECGR Secretariat.

Reports on the status of national collections

Reports from countries not covered by Adana (2002), Plovdiv (2005) and Olomouc (2007)

Georgia

Presented by A. 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 in their collection so far. A small overview of the collected accessions is given below:

Tax_name	ORIGCTY	INSTCODE	SAMPSTAT	Number of accessions
<i>Cucurbita maxima</i>	GEO	GEO001	Cultivar	1
<i>Cucurbita moschata</i>	GEO	GEO001	Landrace	10
<i>Cucurbita pepo</i>	GEO	GEO001	Cultivar	2
<i>Cucurbita pepo</i>	GEO	GEO001	Landrace	15
<i>Cucurbita</i> spp.	GEO	GEO001	Landrace	1

Germany

Presented by B. Schmidt

B. Schmidt gave an overview of all the accessions in the German collections. Since 2007 IPK is certified under ISO9001. 20 000 accessions were already sent to Svalbard, of which 300 were of cucurbits. IPK uses the minimum descriptors developed by the WG beside their own.

Ukraine

Presented by O. Shabetya

O. Shabetya introduced the institute of Vegetables and Melons in Ukraine and their working mode. They were yearly collecting material since 1991. Long term storage facilities were developed. This means storage at -18 °C. The institute has financial problems so it is not possible to regenerate material to be stored under long term conditions. For example, no funds are available to buy fuel for heating and fertilizers.

There is another institution conserving material of cucurbits in the Ukraine.

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 group agreed to use the Latin nomenclature in future to prevent confusion.

Short update on other National collections

Bulgaria

Presented by L. Krasteva

In cooperation with China, Korea and Slovakia, Bulgaria carried out collection expeditions in 2007/2008. The collected material is not available to other institutes for research but the diversity of the material collected was shown to the group.

Czech Republic

Presented by K. Karlová

K. Karlová informed the group that the genebank will be reconstructed during the coming year. Owing to this decision, the regeneration capacity in isolation cages will be reduced to half. The National Coordinator decided that all regenerations were complete, but this is not the case for many vegetables. With half of the capacity it will take more time to regenerate material and during this time many accessions will have died. Until now, 22% of *Cucurbita* spp. and 65% of cucumber were regenerated. The institute organizes yearly exhibitions to inform the public about genetic resources.

Hungary

Presented by A. Simon

The genebank in Hungary has been undergoing large reorganizations but it still maintains its former responsibilities. Different institutes in Hungary hold collections. Tápiószéle holds 2861 accessions of cucurbits. 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 the passport data currently present in EURISCO will be updated in November 2008.

Israel

Updated by Y. 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 holds a total of nearly 2000 accessions. One thousand of these accessions belong to *Cucumis melo*, 340 to *Cucurbita pepo*, 100 to *C. maxima*, 50 accessions to *C. moschata* and 500 accessions to *Citrullus lanatus*. The collection is stored as an active collection and maintained at 4°C and 5-6% RH. Most passport data are computerized in Excel format in the Neve Yaar computer system. Most part of the *Cucurbita* spp. collection has been regenerated and most of it is characterized. The melon collection is partially characterized (~60%) while the watermelon collection is significantly less characterized (~20%). All the collections are maintained as breeder collections and not as a genebank. Most accessions are introductions and collections from outside Israel. However some unique melon and watermelon accessions that have been collected in Israel are included. There are no duplicated accessions in the *Cucurbita* collections but both melon and watermelon collections include duplicates due to several contributors of similar material.

Latvia

Presented by L. Lepse

Only *Cucumis sativus* and *Cucumis melo* originated in Latvia are preserved in the national collection. All together there are only a few accessions of those species.

The Netherlands

Presented by W. van Dooijeweert

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

For characterization, CGN uses only the minimum descriptor list developed by the WG. The complete cucumber collection has been evaluated for a certain disease and CGN is actively requesting evaluation data from users of the material. Automatic generated letters are sent to users asking them to provide data they obtained with CGN material. All relevant data are entered into the database and available through the Web site. Also more pictures are added to the accessions and shown on the Web site.

Poland

Presented by K. Niemirowicz-Szczytt

The Department of Plant Genetics, Breeding and Biotechnology is very dynamic. The total staff of the Department includes 35 people; of these, 14 are members of the academic staff, 11 are members of research and technical fellows, and 10 are postgraduate students.

Main fields of research in the Department are connected with cultivated species of Cucurbits (*Citrullus lanatus*, *Cucumis melo*, *Cucumis sativus*, *Cucurbita maxima* and *Cucurbita pepo*), Solanaceae (*Capsicum annuum*, *Lycopersicon esculentum* and *Physalis ixocarpa*) and *Secale cereale* in Poland. More than 1000 cucurbit accessions are stored in the genebank in Radzików. Teresa Kotlińska, as a representative of the genebank, is also responsible for this collection. Samples are collected by expeditions organized once a year in Poland, but also abroad. Sometimes material is obtained through donations.

Portugal

Presented by V. Carnide

There are two main institutes in Portugal dealing with genetic resources. These are the University of Vila Real and the genebank in Braga. In total, about 650 accessions of cucurbits are conserved. The collection contains 164 accessions of *C. melo* and 110 accessions of *Cucurbita* spp. All material is in the active and the base collection and is stored in the genebank in Braga. About 150 accessions of different species have been characterized with Bioversity descriptors. There are no duplications. All passport data are stored in Excel format and the genebank data are in Access. Passport data will be uploaded in EURISCO at the end of 2008. All material originates from Portugal.

Spain

Presented by M. J. Díez

Centro de Conservación y Mejora de la Agrodiversidad Valenciana (COMAV) holds a collection of cucurbits of 2926 accessions, including 261 accessions of *C. lanatus*, 1245 of *C. melo*, 182 of *C. sativus*, 31 of *Cucumis* spp., 82 of *C. ficifolia*, 311 of *C. maxima*, 285 of *C. moschata*, 357 of *C. pepo*, 35 of *Cucurbita* spp. and 54 of *Lagenaria siceraria*. Additionally, a collection of 83 accessions of wild *Cucumis* was donated from the Center for Genetic Resources (Alcalá de Henares, Madrid) and is maintained at COMAV, although it has not been regenerated yet. Most part of the collection comes from Spain, while 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. All the minimum descriptors developed by the Cucurbits Working Group for each species are included in the lists. Photos of plant, fruit and seed are taken for all the accessions characterized. The seeds are stored as an active collection, being conserved in a climatic chamber at 3-4°C of temperature and 5-6% of RH. Cold chamber for long-term conservation are being constructed at present. Passport and characterization data are computerized. Nearly 500 samples have been sent during the last five years to organic farmers and traditional growers, research centres and to several research programmes related with cucurbits that are carried out in our Institute.

Some of the research areas related to cucurbits conducted at the 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 with the objective of phenotyping and genotyping landraces collected in Castilla La Mancha Autonomous Community, in order to register them as different and unique high-quality varieties. Recently, a new project has been initiated aimed at increasing the availability of high-quality molecular markers for the study of *Cucurbita* genetic resources. For this purpose, sequencing is being undertaken of the transcriptome of *C. pepo* accessions belonging to the two subspecies of *C. pepo*. The aim is to identify new EST-SSRs and EST-SNPs polymorphic in the genus *Cucurbita* and suitable for diversity studies. A Recombinant Inbred Lines (RIL) population derived from different crosses useful for mapping interesting traits is also being developed.

Turkey

Presented by S. Mutlu

S. Mutlu gave an update of the genebank activities in Turkey. In total, about 1986 accessions of cucurbits are conserved *ex situ* at the National Seed Genebank of Turkey at AARI as active and base collections. The *C. melo* collection has been regenerated and characterized.

Pictures are made of leaf, plant and fruit types. The pictures can be used as descriptors. Characterization of *C. moschata* and *C. maxima* collections is going to be started next year.

Mode of operation: Discussion of the Workplan of the Cucurbits Working Group and its schedule

Introduction

M.J. Díez presented the Workplan for the second half of Phase VII agreed in Olomouc at by the Cucurbits WG participants. An analysis of the degree of completeness of the objectives was done. The plans for Phase VIII developed during the same meeting in Olomouc were also presented.

Current state of the European Central Cucurbits Database (ECCUDB)

Passport data from 39 European institutions and belonging to 22 genera and 90 species are included in the database. Currently, the database holds information on passport data of 24 899 accessions. 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 database also includes information about taxonomy of cucurbits, 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. This core collection includes 56 accessions, representing 14.3% of the total collection, which consists of 391 accessions. Characterization data of this core collection are available on the Web page including 2 plant descriptors, 12 for fruit and 5 for seed. Links to images of all the accessions have been also implemented.

Until present, characterization data belonging to COMAV's *C. lanatus* and *C. sativus* collections have been uploaded into the database and are available online for consultation.

A new field indicating if the accession has been selected as MAA has been added to the database.

The technical data of the database are the following:

Database structure: the database uses Microsoft Access because of its easy development and data introduction facilities. The characterization and evaluation data are stored using a relational database management system (RDBMS). Database queries: the database queries are being developed using Active Server Pages (ASP) as a programming language and is on line via ECCUDB Web site (<http://www.comav.upv.es/eccudb.html>). The query results are also downloadable in .csv format.

After her presentation, M.J. Díez asked all the partners to send characterization and evaluation data to improve the quality of the database. She explained that the more data are incorporated in the database, the easier it will be in future to select MAAs needed to implement AEGIS. K. Karlová was unsure about the opportunity to upload characterization data gathered just in one year without replication. There was some discussion about this question and the group agreed that this must be possible because in genebank management it can take a long time before an accession is grown again. Everybody agreed to send observations of one year to the ECCUDB. When these data are given, they should be supported with data about the year, the country, the locality and the methodology used for regeneration.

M.J. Díez showed parts of the database. A new section about *in situ* and on-farm conservation has been added at the Home page. Addresses of institutes, companies and NGOs working in this field are given by country. All partners were asked to provide

additional addresses. M.J. Díez indicated that the easiest way to find those addresses was by contacting the representative of the ECPGR *In situ* and On-farm Conservation Network.

The group agreed to modify the database 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”

AEGIS Programme. The role of Working Groups in the implementation of AEGIS

Background, Goal, Scope

Presented by W. van Dooijeweert

Since the second half of Phase VII the concept of AEGIS (*A European Genebank Integrated System*) becomes more and more clear. 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 are over 1.1 million accessions held in Europe but many are duplicates, which is a waste of time and money if these accessions are freely available.

The idea of AEGIS is to establish a virtual genebank containing unique and economically important accessions defined as the “Most Appropriate Accessions” (MAA). It 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 their own MAA in their own genebank (virtual genebank)
- MAA must be available under the “Standard Material Transfer Agreement” (SMTA) of the International Treaty (IT).

By implementing AEGIS several benefits are foreseen:

- Improved collaboration among European countries
- Cost-efficient conservation activities
- Reduced redundancy in European collections
- Improved quality standards of the conserved material across Europe
- Improved data quality and quantity for 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 is an official agreement among the countries which want to be members of AEGIS. A Memorandum of Understanding (MoU) was developed and has been approved during the eleventh meeting of the Steering Committee. The MoU must be signed by the member country’s representatives and an Associate Member Agreement has to 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 10 countries, and AEGIS will then be formally operational. A member of the SC hoped this could happen in 1-2 years time, while the Secretariat is expecting an earlier formal start of AEGIS.

In order to document which accessions are part of AEGIS and whether they are part of the Multi Lateral System (MLS), EURISCO and the Central Crop Databases must be adapted. Two new fields for “MLS status” and “AEGIS status” have already been implemented in EURISCO. In the Central Crop Databases, fields to indicate unique or duplicate accessions must be added.

Details of the AEGIS concept are spelled out in the Strategic Framework document available on the ECPGR-AEGIS Web page. An overview of the updated AEGIS concept was given and discussed point by point. The members of the WG discussed about the requirements of the MAA, safety-duplication, use of the CCDB, quality standards needed, the legal status and possible financing for work to be done. The AEGIS concept is still developing and therefore it is recommended to read information on the ECPGR-AEGIS Web page (http://www.ecpgr.cgiar.org/AEGIS/AEGIS_home.htm).

Specific tasks like defining MAAs, crop conservation guidelines and a quality management system for the Cucurbits WG were mentioned and were discussed in a later phase of the meeting.

During the discussion, some partners said to have heard about AEGIS but did not know about the recent developments. Others indicated that the whole concept was still confusing. There were many questions about the way collection holders could or should take part in the initiative. The group agreed they were willing to start moving in the direction of AEGIS, but were feeling restricted by insufficient funding. W. van Dooijeweert thought that, in the spirit of ECPGR, most of the work should be done as part of the normal genebank management. He thought that money could eventually be saved if collection holders did not need to care about accessions which were maintained by and available from partner institutions.

Everybody agreed that additional funding at the beginning will help in moving AEGIS forward and therefore the WG should find extra money through, for instance, EU projects. The topic was discussed in a later phase of the meeting.

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

Presented by M.J. Díez

The accessions to be included in AEGIS will be the “Most Appropriate Accessions”, to be selected on the basis of a list of binding “selection requirements”, and of a number of “selection criteria”, to be identified by the WG.

The “selection requirements” are the following:

- 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 (i.e. genetically distinct accessions; assessment 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. European origin or introduced germplasm that is of actual or potential importance to Europe (for breeding, research, education or for historical and cultural reasons).

The “selection criteria” that will be used when deciding which specific accession to accept among two or more duplicates or groups of very similar accessions, will be agreed by the respective ECPGR Crop Working Groups. These criteria will include aspects such as the comprehensiveness of existing passport data, the number of regeneration cycles, the health status, the 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 on the selection of the MAA

Presented by M.J. Díez

M.J. Díez explained the role of the ECPGR Crop Working Groups. For this purpose, the definitions given in the Memorandum of Understanding were read and discussed.

In Article 5, "Relationship of AEGIS with ECPGR", point d) of the Memorandum of Understanding for the establishment of AEGIS, the role of the ECPGR Crop Working Groups on the implementation of AEGIS is defined 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 genepool specific basis for adoption by the ECPGR Steering Committee.

Case study (I): the example of Brassica WG

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 the selection of MAAs. *Brassica* is a cross pollinator and therefore this crop is comparable with 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 presented in short the different types of selection criteria¹:

1. Selection requirement – must be approved by the SC
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 model crop for a case study to identify problems when appointing MAAs. Two people performed this exercise separately. In this way it could be checked if the same results were obtained when using the same selection criteria. In the *Brassica* report of the meeting held in Radzików, this working method is explained. The report was also handed out to the members of the Cucurbits WG. The working method was presented and the recommendations were discussed. The most important outcome was that databases need to be updated and contain as many data as possible. One of the constraints identified was the lack of data which made it impossible to select MAAs. Another problem was the different sets of MAAs selected by the two persons who used the same criteria. This outcome was due to the subjectivity of the selection criteria.

It was discussed if the working method used by the *Brassica* WG could be applied to the Cucurbits WG or if another approach was needed. It was stated that parallel and independently to the selection of MAAs, the work on identification of unique and possible duplicates in the European Central Cucurbits Database (ECCUDB) could be started.

¹ After July 2008, the concept of selection criteria has been simplified with only two categories: "selection requirements" and "selection criteria", as explained above.

Case study (II): Selection of the MAA in the *Cucurbita pepo* COMAV's collection

Presented by M.J. Díez

With the objective of illustrating the selection of MAAs in a collection of cucurbits, M.J. Díez explained a case study conducted with the *Cucurbita pepo* collection held at COMAV, UPV. Prior to the selection of the MAA, a study of the general characteristics of the collection has to be done. The 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 the MAAs). A core collection has been constructed. Accessions have been collected in 37 provinces and 194 localities. No more than 7 accessions have been collected in the same locality, being only 2 or 3 the most usual number of accessions coming from the same locality. The completeness in the COMAV's database has been checked for the following fields and was presented as the starting information: ACCNAME, ORIGCTY, SAMSTAT, COLLSITE, COLLNMB, OTHERNUMB, DONORNUMB, DONORCODE .

Subsequently, the following steps were followed for the selection of MAAs:

- Eliminate non-Spanish accessions: 391-94 = 297
- Sort the accessions by province and locality
- Check the field "ACCNAME" and also the characterization data. In this collection the common name included in the field ACCNAME is "calabaza", a generic Spanish term that means "pumpkin". Therefore, **the field ACCNAME is not very informative and useful for the selection of the MAA**. Instead, characterization data and other information included in "Notes" are useful
- Try to exclude the duplicated accessions based on the above information
- Consider the following, in view of excluding accessions:
 - Completeness of passport data
 - Number of regenerations
 - Health of seeds and other criteria

After this first selection, the accessions coming from other countries can be considered (i.e. accessions collected by the holder in other countries).

At this point the selection process conducted by the holding institute finishes. A Committee of experts composed by some selected members of the Cucurbits Working Group, including the database manager has to be created. The list containing the MAA selected by the holding institute is then sent to the CWG-Committee who checks the list by looking for duplicates in the ECCUDB. The revised list is sent to the holding institute and finally approved.

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

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

Discussion on AEGIS: problems, sharing of responsibilities

After the presentation of the concept of selection of MAAs and the case studies, partners indicated that the idea of AEGIS was still confusing. Everybody was willing to implement the concept, but there was agreement on the need to start with a small pilot project. It was agreed that *C. melo* will be a good case study, since almost all partners hold accessions of this

species. Each collection holder will start with 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 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 encountered using the flowchart and it was agreed they will send the results back to M. J. Díez before the end of March 2009.

It was decided that a small group (maximum 4 persons) of experts will be formed per each crop. V. Carnide thought that experts should come 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.

Establishment of minimum descriptor lists for each crop

M.J. Díez handed out the draft minimum descriptor list for *Cucurbita* developed by her and E. Kristkova from Czech Republic. Each descriptor was discussed and a decision was made whether to include it or not in the minimum list. The experts in the group recognized that all descriptors were needed and could be kept in one list. The list was even extended to 29 descriptors. This is a large number but it was considered necessary and it was agreed by all the participants.

For *Lagenaria* a list was presented by B. Schmidt. This was the descriptor list used at IPK for *Cucurbita* and *Lagenaria*. A hardcopy was distributed to all members. Experts in *Lagenaria* will comment on this list and send their remarks to M.J. Díez before mid December 2008. It was stressed again that it should be a minimum list with 10-15 descriptors if possible. 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 like insulin production or resistance traits, such as production of fungicides in the leaves. Research on these traits and evaluation on resistance against *Fusarium*, *Alternaria* and Powdery Mildew had started in Israel. Y. Tadmor will contact Y. Burger in order to produce a first draft of a minimum descriptors list for *Momordica*. This draft will be sent to M. J. Díez before mid November 2008.

The three lists of minimum descriptors will be placed on the Web site as drafts as soon as possible.

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 enough and healthy seeds. Some collection holders have no problems in regenerating seeds, but for others it is almost impossible to regenerate material due to different reasons. The aim of this discussion item was to make an inventory of each member's situation and to discuss possible solutions for problems.

Bulgaria

The genebank has problems with regeneration of the material. 50% of the collection should be regenerated to have enough seeds with good germination percentage. There is the intention to start using isolation cages.

Czech Republic

40% of the Cucurbit collection has been regenerated and the activity is ongoing. Due to new policy decisions, the capacity of isolation cages decreased to 50%. Consequently, only 20-30

accessions can be regenerated each year. In the meantime, many accessions will be at risk. Considering *Cucurbita* spp., already 30 accessions did not germinate anymore. The genebank is not considering the possibility to receive help from other institutions, however. K. Karlová will raise this issue for discussion again internally. Fortunately, the accessions of Czech origin have been regenerated already.

Georgia

The genebank in Georgia is new. Only 28 accessions have been collected until now and they are in good condition.

Germany

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

Hungary

The status of Cucurbits in Hungary is acceptable. Only 96 accessions need urgent regeneration. This can be done by the institute, so there is no problem.

Israel

The genebank in Israel only focuses on endemic species. Other collections like the Cucurbits must be maintained by the holder. There is no money for regeneration but the Ministry does not allow receiving help from private companies. This is a big problem for the *C. melo* and *C. lanatus* collection. Y. Tadmor is looking for solutions to save the collections.

Latvia

The Latvian genebank is relatively new. It contains only a few accessions from Latvian origin, which were entered in the genebank in 1980. There is national support and no problems.

Poland

Poland has no problems in regenerating accessions. Since 13 years, funds are available for regeneration of the collection. Regeneration is considered as a continuous project financed by the government. The collection is in good shape.

Portugal

The cucurbit collection in Vila Real is in good condition, the samples are small, no regeneration is needed right now. Some project funds are available for collecting but the institute has no money to maintain genetic resources. Project funds must be found to do this. 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 in regenerating material.

The Netherlands

CGN has no problems in regenerating material. 99% of the collection is available thanks to help of Dutch companies. They also help to regenerate material if it does not meet the

requirement of CGN anymore. Some companies indicated they are also interested in regenerating material for other genebanks, as input in kind.

Turkey

Regeneration of the *Cucurbita* collection is needed. Only *C. melo* collection was regenerated. The regeneration of other Cucurbits is planned.

Ukraine

The institute holds 6000 accessions but only 100 are in long term storage. The material is now in good condition. There is no financial support from the government except the salaries. The institute has a good level of facilities but there is no money for fertilizers, fuel, pesticides etc. The only way to safeguard the collection is to produce many varieties which will give income to the institute.

W. van Dooijeweert commented on the inventory. It seems that funds were the problem in most cases. He asked everybody to keep in mind the offer made by some private companies to regenerate material. He also indicated that it may be possible to regenerate material at a partner's genebank. If a genebank offers the quality needed it is sometimes cheaper to do it there. This can be profitable for both parties. One can do more regenerations for the same amount of money and the other will get some income to do (extra) regenerations.

Y. Tadmor referred that he heard of the help offered by some wealthy people for regeneration. He mentioned the case of Amy Goldman from USA in the case of melon (*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 is one of the high priorities of ECPGR and of the Cucurbits WG. To safeguard the loss of valuable germplasm due to lack of storage facilities, disasters, etc. it is necessary that germplasm is 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 the cereal collection. The table on the status of safety-duplication, included at page 9 of the report of the first meeting (Plovdiv, Bulgaria, September 2005²) was reviewed. All partners were asked the same three questions about the level of safety-duplication, long-term conservation facilities and availability to host "black boxes". The results of this survey are included in Table 1.

² 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. (http://www.ecpgr.cgiar.org/Workgroups/Cucurbits/CucurbitsMeeting1_Plovdiv05.pdf).

Table 1 . Current level of safety-duplication of Cucurbit collections in Europe

Holding	Safety-duplication	Long-term conservation facilities	Availability to host black boxes
Institute for Plant Genetic Resources "K. Malkov" (IPGR), Bulgaria	100% safety-duplication only within the institute	Yes	To be discussed
Crop Research Institute (CRI), Czech Republic	30% in Prague (but 100% of the regenerated material)	Yes	Yes, under bilateral agreement, but only in limited amounts, depending on the sample size
Institut of Farming, Mtskheta Tserovani, Georgia	0%	No	No
Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben, Germany	100%	Yes	Yes, depending on available space
Institute for Agrobotany (ABI), Hungary	66% duplicated only within the same institution	Yes	No
Experimental Institute Monsampolo del Tronto, Italy	No- can consider sending duplicates	No	No
Newe Yaar Research Center, ARO, Israel	0%	Yes	No
Pure Horticultural Research Station, Tukuma Raj, Latvia			
Centre for Genetic Resources, Wageningen, The Netherlands (CGN)	100%	Yes	Yes
National Plant Genetic Resources Centre, Plant Breeding and Acclimatization Institute (IHAR), Radzików, Poland	Currently not duplicated	Yes	Yes
Banco Português de Germoplasma Vegetal (BPGV), Braga, Portugal	50% duplicated in the same genebank	Yes	Yes
N.I.Vavilov Research Institute of Plant Industry (VIR), St. Petersburg, Russian Federation	80%	Yes	No
Centro de Conservación y Mejora de la Agrodiversidad Valenciana (COMAV), Universidad Politécnica de Valencia, Spain	100%	Yes	Yes
Experimental Station "La Mayora", Consejo Superior de Investigaciones Científicas (CSIC). Málaga, Spain	75%	No	No
Aegean Agricultural Research Institute (AARI), Izmir, Turkey	100%	Yes	No
Çukurova University, Adana, Turkey	Planned	No	No
Institute of Vegetables and Melons, Kharkiv region, Ukraine	30% in other institutions	Yes	Partially

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

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

Results of the survey on conservation, management and regeneration procedures of Cucurbits spp. genetic resources

During the VEGNET meeting held in June 2007 in Olomouc, Czech Republic, it was agreed that all Working Groups would work towards implementation of AEGIS. To implement

AEGIS successfully, a Quality Management System (QMS) is needed, to be adopted by all collection holders with accessions entered into the system. The *Brassica* WG, one of the model crop Working Groups, developed a survey to make an inventory of all the procedures used by the members of the WG. The Chair and Vice-Chair of the Cucurbits WG could make use of the survey of the *Brassica* WG. The questionnaire was sent to all WG members. Only 3 members replied. The reason for this low number was discussed including the opinions about the QMS.

It was agreed to resend the questionnaire to all partners before the end of 2008. The deadline to send it back to W. van Dooijeweert was set before the end of March 2009. A first overview will be made but decisions on common procedures will be postponed until the next meeting.

Establishment of a regeneration and storage protocol for cucurbits

The Cucurbits WG already developed minimum guidelines for regeneration (Appendix II of the report of the First Meeting). A list provided at the AEGIS Web site including all the procedures for regeneration and storage was distributed to all partners in printed form. The results of the survey from the previous topic will be discussed in the next meeting. Only then the first steps can be made to establish extended regeneration and storage protocols.

The way ahead

Opportunities for funding the group activities

Y. Tadmor introduced a project about molecular markers and phenotypic description. One of the partners is J. García Mas from Spain. Y. Tadmor indicated that the project has 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 do steps forward. Melon was chosen as the crop under study. The draft will be sent to the Chair and Vice-Chair.

Y. Tadmor is also involved in another project about high throughput facilities for measuring metabolism products. This project has already been running for some time but now the developed facilities must be used. For this, one of the WG collections could be used. In a half year time there will be another project meeting and he will mention this opportunity to the other project partners. All the participants said to be interested but some of them will have to contact their superiors for approval.

Conclusions

In the closing remarks M. J. Díez said it was a good meeting. Not all the topics could be discussed but several agreements were reached. Some partners were aware of AEGIS and some heard for the first time about it. Discussing this topic gave everybody the opportunity to get more acquainted with its principles .

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

A. Zubiashvili indicated he will be happy to organize the next meeting in Georgia. After this, the meeting was closed.

APPENDICES

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Appendix I. Agenda

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

Wednesday 22 October 2008

Arrival of participants

Thursday 23 October 2008

8:30 – 9:30

Introduction

Opening remarks (*M. J. Díez*) – 5 min

Introductory welcome from Warsaw Agricultural University (*Katerzyna Niemirowicz-Szczytt*) – 5 min

Self-introduction of the participants – 1 min per person (10 min)

Presentation of the agenda and adjustments – 5 min

Briefing on ECPGR Phase VIII (*Vice-Chair*) - 20 min

Report and outline of Cucurbit WG activities (*M.J. Díez*) – 15 min

9:30-10:15

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 Germany, Georgia, Latvia,, Ukraine*) – 45 min

10:15–10:45

Coffee break

11:00-12:15

Reports on status of National Collections

Short update on National Collections – conservation, collecting, evaluation or characterization (*5 min. presentations from the other countries*) – 75 min

12:15–12:30

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

- Introduction (*M. J. Díez*) 5 min

- Current state of the European Central Cucurbits Database (ECCUDB) (*Introduced by M.J.Díez*) - 10 min

12:30–14:00

Lunch

14:00–15:45

Mode of operation (continuation)

- AEGIS Programme. The role of Working Groups on the implementation of AEGIS (Chair and Vice-Chair) (1ST PART)– 45 min:

. Background, Goal, Scope – 15 min

. Germplasm to be included in AEGIS: the concept of the Most Appropriate Accessions (MAA) – 15 min

. The role of the Crop Working Groups on the selection of the MAA – 5 min

. Case study (I): the example of *Brassica* WG – 10 min

. Case study (II): Selection of the MAA in the *Cucurbita pepo* COMAV's collection - 20 min

- Discussion on AEGIS: problems, sharing of responsibilities... (I)– 45 min

15:30–16:15 *Coffee break*

16:15–17:45 - Discussion on AEGIS: problems, sharing of responsibilities..(II) – 45 min - -
Establishment of minimum descriptor lists for each crop (45 min)
- *Cucurbita* spp. - 15 min

Friday 24 October 2008

8:30–12:30 **Report drafting / Excursion**
A visit to the genebank of Radzikow was organized

12:30–14:00 *Lunch and back to The University of Warsaw*

16:00–18:00 **The way ahead**

- Establishment of minimum descriptor lists for each crop
 - *Lagenaria* spp. – 15 min
 - *Momordica* spp. – 15 min
- Status of needs for regeneration and possible solutions – 15 min
- Planning for safety-duplication of each collection under long-term conservation conditions (*Introduced by W. van Dooijeweert*) - 15 min
- Results of the survey on conservation, management and regeneration procedures of Cucurbits spp. genetic resources. – 15 min (*W. van Dooijeweert*)
- Establishment of regeneration protocol and storage for cucurbits (15 min)
 - Opportunities for funding the groups activities (EC programmes) (15 min)
 - Closing remarks (15 min)

Evening *Social dinner*

Saturday 25 October 2008

Departure of participants

Appendix II. List of participants

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

Liliya Ivanova Krasteva
Institute for Plant Genetic Resources
"K. Malkov" (IPGR)
Str Drujba 2
4122 Sadovo, Plovdiv district

Bulgaria

Tel: (359-32) 629026
Fax: (359-32) 629026
Email1: krasteva_ipgr@abv.bg
Email2: krasteva_l@abv.bg

Katerina Karlová
Department of vegetable and special crops
Crop Research International (CRI)
Slechtitelu 11
78371 Olomouc-Holice

Czech Republic

Tel: (420) 585209966
Fax: (420) 585209969
Email: karlova@genobanka.cz

Baerbel Schmidt
Genebank Department
Leibniz Institute of Plant Genetics and
Crop Plant Research (IPK)
Corrensstrasse 3
06466 Gatersleben

Germany

Tel: (49) 39482 5158
Fax: (49) 39482 5155
Email: schmidt@ipkgatersleben.de

Alexander Zubiashvili
Institute of Farming
Plant Genetic Resources Department
Mtskheta
Tserovani

Georgia

Tel:
Fax:
Email: sathburialbi@mail.ru

Attila Simon
(on behalf of Lajos Horváth)
Directorate of Plant Production and
Horticulture

Research Centre for Agrobotany

Külsömezö 15

2766 Tápiószele

Hungary

Tel: (36-53) 380070
Fax: (36-53)380072
Email1: jensen@rcat.hu
Email2: jensen@agrobot.rcat.hu

Yaakov Tadmor
ARO - Neve Yaar Research Center
POB 1021

30095 Ramat Yishai

Israel

Tel: (972) 4 9539548
Fax: (972) 4 9836936
Email: tadmory@agri.gov.il

Liga Lepse
Pure Horticultural Research Station
Abavas iela 2
3124 Pure, Tukuma raj..

Latvia

Tel: (371) 26185596
Fax: (371) 63181263
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

Tel: (31-317) 480917
Fax: (31-317) 423110
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
 Tel: (48-22) 5932169
 Fax: (48-22) 5931006
 Email: katarzyna_niemirowicz@sggw.pl

Valdemar Pedrosa Carnide
 Dept. Genetics and Biotechnology
 Universidade de Trás-os-Montes e Alto
 Douro (UTAD)
 Apartado 1013
 5001-801 Vila Real
Portugal
 Tel: (351) 259 350501
 Fax: (351) 259 350572 (direct) / 259 359480
 (general)
 Email: vcarnide@utad.pt

Maria José Díez Niclós
 Biotechnology Department
 Universidad Politécnica de Valencia (UPV)
 Camino de Vera S/N
 46022 Valencia
Spain
 Tel: (34) 963879421
 Fax: (34) 963879422
 Email: mdiezni@btc.upv.es

Sevgi Mutlu
 Aegean Agricultural Research Institute
 (AARI)
 PO Box 9
 35661 Izmir
Turkey
 Tel: (90-232) 8461331
 Fax: (90-232) 8461107
 Email: mutlusevgi@hotmail.com

Oksana Shabetya
 Institute of Vegetables and Melons of
 UAAS
 PO Selektiine
 62478 Kharkiv region
Ukraine
 Tel: (38-057) 7489191
 Fax: (38-057) 7489191
 Email1: ovoch@intercomplect.kharkov.ua
 Email2 : boguslavr@rambler.ru

Unable to attend

Sokrat Jani
 Agricultural Technology Transfer Centre
 of Lushnje
 Rr. "Zenel Baboçi", Pall. "Ferrari",
 Seksioni A, 7
 Tirana
Albania
 Tel: (355) 692253803
 Fax: (355) 3522498
 Email: sokratjani@yahoo.com

Shikar Aliyev
Contact details to be provided
Azerbaijan
 Tel: (994-22) 563252
Fax:
 Email: ramil_78@rambler.ru

Gerry Doherty
 Potato Centre
 Department of Agriculture and Food
 Tops Raphoe
 Raphoe, Co. Donegal
Ireland
 Tel: (353) 74 9145488
 Fax: (353) 74 9145262
 Email: gerry.doherty@agriculture.gov.ie

Nadia Ficcadenti
C.R.A. - Istituto Sperimentale per
l'Orticoltura
Sezione di Monsampolo del Tronto
Via Salaria 1
630 30 Ascoli Piceno

Italy

Tel: (39) 0735 701706
Fax: (39) 0735 703684
Email: nadiaf@insinet.it

Eugenijus Dambrauskas
Lithuanian Institute of Horticulture
Kauno 30
54333 Babtai, Kaunas distr.

Lithuania

Tel: (370) 37 555416
Fax: (370) 37 555176
Email1: institutas@lsdi.lt
Email2: rasa@lsdi.lt

Maria Dumitru
Institutul de Cercetare Dezvoltare
Pentru Legumicultura si Floricultura
Vidra
Localitatea Vidra
077185 Ilfov

Romania

Tel: (40-214) 680796
Fax: (40-214) 680794
Email: inclf@mediasat.ro

Janos Berenji
Plant Breeding and Genetics
Department for hop, sorghum and MAP
Institute of Field and Vegetable Crops
Maksima Gorkog 30
2100 Novi Sad

Serbia

Tel: (381-21) 780365
Fax: (381-21) 780198
Email1: berenji@Eunet.yu
Email2: berenji_janos@hotmail.com

Magdaléna Valšíková
Research Institute of Vegetables, Ltd.
Andovská 6
940 01 Nové Zámky

Slovakia

Tel: (421-35) 400 795
Fax: (421-35) 401 892
Email: valsikovam@vuznz.sk

Janko Verbic
Agricultural Institute of Slovenia
Hacquetova 17
1001 Ljubljana

Slovenia

Tel:
Fax:
Email: janko.verbic@kis.si

Appendix III. Project proposals Cucurbits WG for Phase VIII

1. Background and justification

The Steering Committee in its Meeting held in Riga (Latvia, 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 is stated that all activities have to be focused to the implementation of AEGIS. The Cucurbits Working Group pointed some activities for Phase VIII during the Second Meeting of the Vegetables Network held in Olomouc (Czech Republic, June 2007), in order to prepare the involvement of the CGW in the implementation of AEGIS. The activities agreed on each of the four priority areas were the following:

- Task sharing and capacity building. The group will focus on:
 - the implementation of safety-duplication,
 - the 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 in the ECCUDB.

- *In situ* and on-farm conservation and management
 - compile information about *in situ* and on-farm conservation of cucurbits in Europe,
 - to develop specific descriptors for testing the suitability of the accessions to the cultivation in organic conditions,
 - to include in the ECCUDB 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.

Taking into account the previous tasks already planned for Phase VIII, we will focus for the present proposal in three specific aspects.

2. Objectives of the project

The objectives proposed are:

1. The implementation of safety-duplication
2. The development and implementation of specific algorithms to facilitate the identification of safety-duplicates in the ECCUDB.
3. To strengthen collaborations with the *In situ* and On-farm Network

3. Workplan

Objective 1. The implementation of safety-duplication

The Cucurbit Working Group stated the level of safety-duplications in its previous meetings. Need for safety-duplicates were evident for the Institute for Plant Genetic Resources (Plovdiv, Bulgaria) and the Research Centre for Agrobotany (Tápiószele, Hungary). The situation was not clear in some other not attending members to the meeting. After this meeting it was also stated the need for the implementation of safety-duplicates of part of the collection of Israel. The need of implementation of safety-duplicates is one of the more important objectives of the Working Groups. It has to be undertaken in a continuous manner to avoid the possibility of loss of entire germplasm collections. Currently (end of Phase VII) the implementation of safety-duplicates is being carried out for part of the collection of Bulgaria and Israel. But, with the available funds it will be not possible to prepare the safety-duplicates of the complete collections.

The proposed actions in this proposal are:

Activities of the project participants:

- Chair and Vice-Chair check the status of individual collections for the level of safety-duplication
- Individual collections ask their respective National Coordinators or Agriculture Ministries for permission to arrange the black boxes for safety-duplicates.
- Agreements are arranged between the sending and recipient countries.
- Detailed information about the preparation of black boxes is facilitated to the respective interested countries by the Chair and Vice-Chair.
- An estimation of the cost is prepared for the implicated collections.
- Black boxes are prepared and sent to the holders institutions.

Expected outputs and milestones:

- More precise data about the level of safety-duplication in all the collections
- Increase of the level of safety-duplication of the collections holders of cucurbits germplasm

Timetable:

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

Budget:

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

Objective 2. The development and implementation of specific algorithm 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. The Working groups have to apply the Most Appropriated Accession 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. In this process the accessions proposed by each country as MAA has to be corroborated by the database managers, which 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.

The ECCUDB holds passport data of near 25 000 accessions of cucurbits crops. Currently the status of completeness of the database is being tested, and request for complementary data will be asked to the collection holders. However, it will be impossible a great improvement of the quality of the database, due to the lack of information in the original databases. So, a good management of the data stored in the ECCUDB is essential to detect the possible duplicates and select the MAA as accurately as possible. The *Avena* database manager C. Germeier of the Federal Centre for Breeding Research of Cultivated Plants, BAZ Genebank Quedlinburg in Germany has already 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: two days.
- Implementation of the algorithms in the ECCUDB
- Selection of possible duplicates

Expected outputs and milestones:

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

Timetable:

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

Budget:

- Two days visit one person: 825 €
- Implementation in the ECCUDB: input in kind of COMAV-UPV

Objective 3. To strengthen collaborations with the *In situ* and On-farm Network

The Cucurbits Working Group has not undertaken important activities on “*in situ* and on-farm conservation” activities until now. However, cucurbits are organically cultivated in some European countries. The *In situ* Network has offered the possibility of organizing a meeting to collaborate more closely with the different Crop Networks in order to know their needs and how to help them. The CWG 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* Network
- These plans are communicated to the CWG members by email and in the meeting of the Working Group
- Activities programmed are developed

Expected outputs and milestones:

- Workplan for on-farm cultivation of cucurbits crops developed
- Reinforcement of on-farm activities in CWG

Timetable:

- First year Phase VIII: attendance to the meeting and elaboration of the workplan
- Second year Phase VIII: communication to the CWG members and implementation of the activities

Budget:

- Two person two days meeting..... 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 to the members when needed and decisions will be communicated to the members by the coordinators.

Appendix IV. Action List

During the meeting the workplan of the Cucurbits WG was presented. This workplan will also be valid during the first part of Phase VIII and is kept as it was presented in the Report of Olomouc. An action list is added in this paragraph to indicate the actions and deadlines discussed during this meeting.

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