

Report of a Working Group on Umbellifer Crops

**First Meeting, jointly held with the Second Workshop of the
AEGIS-funded project on Umbellifer Crops
30 March-1 April 2011, Quedlinburg, Germany
L. Maggioni, E. Geoffriau, C. Allender and E. Lipman**





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Diversity in carrot (*Daucus carota* L.). Courtesy of © W. Palme, HBLFA Schönbrunn, Austria.

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Related presentations and papers can be downloaded from
http://www.ecpgr.cgiar.org/networks/vegetables/umbellifer_crops/presentationsumb_2011.html

SUMMARY OF THE MEETING

Introduction

Dr Gunter Schumann, Head of the Institute for Breeding Research on Horticultural and Fruit Crops, part of the Julius Kühn-Institut (JKI), welcomed the Working Group on Umbellifer Crops of the European Cooperative Programme on Plant Genetic Resources (ECPGR) to Quedlinburg. The area is a traditional centre of plant breeding, being located on the northern side of the Harz Mountains, where climatic conditions are ideal for the activity (400 mm of precipitation p.a., long and relatively dry spells in autumn). The long tradition is now continued by the JKI. Its core activity is to advise the Federal Ministry of Food, Agriculture and Consumer Protection on crop-related issues, such as genetic engineering, plant protection, chemical use and others.

The first meeting of the Umbellifer Crops Working Group (WG) was jointly held with the second workshop¹ of the project on "Assessment of unique material in the European collections of umbellifer crops" funded by A European Genebank Integrated System (AEGIS).

Emmanuel Geoffriau, Chair of the Working Group, opened the meeting, after a minute of silence dedicated to the memory of the father of Thomas Nothnagel.

Objectives of the meeting

E. Geoffriau presented the objectives of the first meeting of the Umbellifer Crops Working Group (WG). The objectives are to:

- Achieve concrete and practical results;
- Validate the analysis of carrot accessions and to extend it to other Apiaceae (AEGIS-related);
- Define the actions on other Apiaceae;
- Define actions for progress in improvement of genebank practices;
- Coordinate WG activities and information sharing;
- Renew commitment to carry out actions planned for the second part of Phase VIII of the ECPGR (2011-2013).

The existing workplan was then revisited, indicating the activities that still need to be completed: identification of minor crop leaders, documenting existing regeneration standards, verification and improvement of the status of safety-duplication, update of national activities, development of minimum descriptors for minor crops, development of a common format for evaluation data and definition of recommendations on quality practices for germplasm conservation.

Update on ECPGR and AEGIS

Lorenzo Maggioni, ECPGR Coordinator, presented an update on the ECPGR, informing the Group about the status of membership (43 countries), the structure of Networks and the budget and management decisions taken by the Steering Committee at the start of Phase VIII (2009-2013). The history of the Umbellifer Crops WG was briefly summarized, going back to the first ad hoc meeting organized in 1997 (Krakow, Poland), followed by the endorsement by the Steering Committee of a formal Working Group on Umbellifer Crops in 1998. The

¹ The first workshop of the AEGIS-funded project was held 13-14 October 2010 at the University of Warwick, UK.

Group subsequently met informally on various occasions, jointly with a GEN RES EC-funded project on carrot characterization (Edinburgh, UK, 2001) and as part of the Vegetables Network meetings (Skierniewice, Poland, 2003; Olomouc, Czech Republic, 2007; and Catania, Italy, 2009). The present meeting, which coincides with the second and final workshop of the AEGIS-funded project on “Assessment of unique material in the European collections of umbellifer crops”, is the first official meeting of the Working Group.

L. Maggioni gave an account of the results of the Independent External Review of the ECPGR that took place in July 2010. Three Panel members of the Review recommended that the ECPGR take more responsibility for the conservation and use of plant genetic resources for food and agriculture (PGRFA), by establishing more accountability among its membership, exploring the option of obtaining a legal persona and establishing an Executive Committee. The extraordinary meeting of the Steering Committee, held in Bratislava, Slovakia in December 2010, did not immediately accept the proposals made by the Panel as they would have required a stronger investment in the Programme, but nonetheless decided to nominate an Executive Committee (ExCo) with a Chair and four other members. The Steering Committee also decided to revise the objectives of ECPGR and tasked the ExCo to prepare an “options paper” that elaborates on the ECPGR objectives and analyses its legal status, its operating structure, hosting arrangements and the overall cost implications.

An update on AEGIS followed. According to the World Information and Early Warning System (WIEWS) on PGRFA (March 2011), there are an estimated 9300 *Daucus* accessions in the world and 6500 in Europe (held by 45 genebanks in 25 countries). The objectives, perceived benefits and key components of AEGIS were presented. Twenty-six countries are now members of AEGIS; several countries have established Associate Memberships between the National Coordinator and collection-holding institutions. The concept of the European Collection was outlined, stressing the need to accelerate the definition of lists of accessions to be proposed by the Working Groups to the respective countries as candidates for designation as European Accessions according to the AEGIS principles. The AEGIS Quality System (AQUAS) was also presented, specifically: 1) the “Operational genebank manual” that all AEGIS Associate Members should compile, based on a genebank template (finalized and available on the AEGIS Web site²; 2) the “Generic operational standards”, that were drafted by the FAO and submitted to the various agencies, including the ECPGR, for comments (to be sent in by the end of February 2011, this document is expected to be endorsed in June 2011 by the FAO Commission on Genetic Resources and also adopted subsequently for AEGIS); 3) the agreed minimum crop-specific technical standards that each WG should prepare in order to complement the generic standards, a task that the WG has to initiate and complete expeditiously; and 4) the quality management system procedures, including record keeping, reporting and monitoring mechanisms (still to be proposed).

Discussion

The Group appreciated the update and agreed to work on the technical elements of the tasks assigned to the WG (i.e. proposing a list of candidate accessions for AEGIS and defining crop-specific standards).

The Group then split into two for parallel sessions, one on issues related to the AEGIS-funded project, involving its seven partners (Ana Gulbani, Attila Simon, Charlotte Allender, Emmanuel Geoffriau, Pavel Kopecki, Sokrat Jani and Svein Solberg), and the other on the approval of minimum descriptors for the “other” Apiaceae.

² <http://aegis.cgiar.org/index.php?id=4042>

AEGIS session: final work on the *Daucus* Most Appropriate Accessions and selection criteria

Charlotte Allender presented the aims of the Umbellifers AEGIS project, which runs from May 2010 to May 2011³: to identify potential Most Appropriate Accessions (MAAs) in the cultivated carrot collections, specifically to devise processes and screen the carrot dataset, identify problems and establish a protocol that can be applied to all umbellifer collections.

The project team decided to use the most up-to-date data available, i.e. the *Daucus* dataset from the European Plant Genetic Resources Catalogue (or European Internet Search Catalogue, EURISCO), which had 4671 accessions. The team also added the 422 accessions from the Warwick Genetic Resources Unit (GRU) and 83 accessions from the French collection. Initially, only the “advanced cultivars” were considered; landraces and wild species were not included for the time being since most of them were expected to be unique. The list was split for analysis among the six partners of the AEGIS project. Selection criteria were not defined in detail in advance, but would be derived from the experience of the first screening. In all, 1415 accessions (43% of total) were selected as candidate MAAs. Some accessions would need to be examined by curators to establish their suitability. The number of accessions proposed for the European Collection varies across holding institutions and this choice will have a different impact on the conservation effort proposed to each institution. Differences in the intensity of selection of MAAs were also noted between project members.

The project partners reported their experience of the analysis process and the difficulties encountered. The main problem was that information was inadequate to take objective decisions. Several doubts were raised:

- For cultivated varieties with the same name having a different country of origin (possibly not the actual country of origin, but the country from which the genebank acquired the accession), should only the accession from the true country of origin (as recorded in the catalogue of registered varieties) be retained or both accessions?
- When a number of accessions (below 10) have the same name, should only one be selected, or perhaps two if other information indicates differences between the two?
- For varieties from other regions, should the same selection criteria be applied or more stringent ones (i.e. select fewer accessions)?
- There was concern about the risk of selecting material that had possibly been regenerated too many times or material with not enough seed available for distribution.
- Should curators be involved before or after proposing the draft lists to minimize the risk of interference in the selection process by the Group?

The Group agreed on the following considerations and decisions:

- The process cannot be entirely objective. Some elements of subjectivity based on experience are needed in the decision-making process.
- Political concerns, such as acceptance of long lists of accessions for AEGIS candidacy just to satisfy a country, should not interfere with the technical work of selecting accessions.
- In the case of two accessions having the same name, but a different country of origin, it was decided that only the accession with “country of origin” corresponding to the country of admission (country that registered the variety) would be selected. If this information is not available, both accessions should be selected.

³ Project proposal posted on the AEGIS Web site
http://aegis.cgiar.org/documents/aegis_grant_scheme/first_call.html

- When several accessions (<10) have the same name, 2-3 should be kept for security if there are indications of possible differences.
- When there are more than 10 accessions with the same name, 20% should be kept in order to maximize potential diversity without introducing potential redundancy.
- All the material that is important for Europe should be kept, but material that is known to be represented elsewhere should be subjected to more stringent criteria. Thus, only one sample should be kept, even if many accessions are conserved in several places.
- Regarding breeding material, curators would be asked to give their opinion on whether or not it should be included in AEGIS.
- Among the main criteria for selecting MAAs, "country of origin" should have priority, followed by "acquisition date" (older material having priority over more recent material). Personal knowledge and expertise of umbellifer material could, however, be the overruling factors in the decision-making process.
- Three lists should be prepared: 1) Priority list: accessions recommended for AEGIS; 2) Secondary list: accessions of potential interest such as breeding material (based on the opinion of curators on the importance of these accessions); 3) Pending list: accessions that need more information (such as sample status) from curators before taking a clear decision.

Workplan

- Each portion of the list will be cross-checked by a second partner, the aim being to assign all the material to one of the three above-mentioned lists. Data sets will be swapped for cross-checking as follows:
 - Pavel Kopecki / Svein Solberg
 - Charlotte Allender / Sokrat Jani
 - Attila Simon/ Emmanuel GeoffriauThe results of the second round of accession assignments will be sent to C. Allender for compilation.
- The lists of wild and landrace accessions will be split into three parts by C. Allender, and these will be checked by A. Gulbani, S. Jani and C. Allender.
- The "pending list" will then be updated by E. Geoffriau.
- The list of proposed MAAs will be finalized by C. Allender and E. Geoffriau.
- The task of analysing the list of other Apiaceae (5721 accessions of 8 other crop types) was also split among the partners. C. Allender will send portions of the list to them according to their preferences:
 - Hervé De Clercq: celery and parsley
 - Teresa Kotlińska: dill
 - Ana Gulbani: dill
 - Ulrike Lohwasser: parsnip
 - Pavel Kopecki: parsley, parsnip, celery
 - Svein Solberg: caraway
 - Charlotte Allender: fennel and parsnip.

The task regarding the two remaining species (chervil and coriander) will have to be defined.

Wild umbellifer relatives project

The Umbellifer Crops WG had applied for funds for a project on wild relatives; it was endorsed by the Steering Committee for Phase VIII, and a budget of €7840 was allotted.

The project was proposed due to the importance of wild relatives, knowledge on which is generally lacking. The objective is to clarify the status of *ex situ* accessions and *in situ* populations, and to make progress in the difficult task of taxonomy identification.

The main interest and expertise would be in the characterization of wild relatives of carrot and celery. The project would first establish what is available in the genebanks and then characterize and identify "*Daucus* sp. accessions" in the database, and obtain taxonomic confirmation and characterization of those wild *Daucus* accessions that have already an assigned specific name. In the case of *Apium* relatives, characterization would be particularly useful for identifying potential sources of male sterility and disease resistance.

The Group proposed to use part of the project funds for actual activities and part to complement other sources of funds (ECPGR country quota and Chair's quota) for organizing a second meeting of the WG.

Workplan

- Characterization of accessions of wild relatives of carrot and celery will be carried out **in 2011-2013** on accessions collected in different parts of Europe and on the basis of the following preferences and offers:
 - celery : H. De Clercq and T. Nothnagel (12 accessions)
 - diversity of *D. carota carota* in Europe (20-30 accessions): T. Nothnagel
 - other accessions (numbers to be confirmed): C. Allender, E. Geoffriau, P. Kopecki, T. Kotlińska, S. Solberg, (A. Simon to check)
- Evaluation activities: T. Nothnagel (resistance to *Alternaria* and *Botrytis*, volatile compounds)
- Taxonomy identification: E. Geoffriau and U. Lohwasser
- All participants will send additional information on preferred crops that they could characterize to C. Allender **by the end of May 2011**, after which a final list will be prepared, based on EURISCO.
- E. Geoffriau will propose a detailed budget breakdown for that part of the funds allotted for organizing the next meeting (2/3 for the meeting, 1/3 for complementary funding for wild accessions characterization).

Presentation by all participants of the status of collections and knowledge

Frank Marthe presented an experiment conducted in 2007 on 220 parsley accessions that were characterized for root shape, leaf type, growth habit, resistance traits, aromatic components, etc. A molecular marker dendrogram of parsley when overlaid with infra-taxonomical groups revealed variability for resistance to *Plasmopara* and *Septoria*. It was found to a large extent in accessions grouped in a specific cluster of volatile components.

Male sterility was not found in parsley, but it was found in fennel. Essential oil content was also studied for caraway.

H. De Clercq presented a project on "Genetic diversity in horticulture in action" for promoting the growth of local varieties propagated from seeds produced on-farm (chicory witloof, cauliflower, leek and celery). The schedule of demonstrations on seed production, cleaning and storage was posted on the Web site that was developed for the project (<http://www.zelfzadentelen.be/>). It also offers information about regional and EU legislation, marketing opportunities and options for financial support.

Another project focused on breeding of celery and parsley for resistance to *Sclerotinia sclerotiorum*. Different cultivars were compared for their resistance against *Sclerotinia*, using a bio-test to infect celery and parsley. Differences in resistance between cultivars were observed, indicating that population selection in existing cultivars can still improve the resistance.

S. Jani presented the status of umbellifer collections in Albania. The national genebank of Tirana (built in 1998) holds only Albanian material. Other genebanks, such as Lushnja, also have material from neighbouring countries. The umbellifer collection includes only 13 accessions (5 *Anethum*, 2 *Apium*, 2 *Daucus*, 4 *Petroselinum*). Breeding activities had slowed down following the merger of agricultural research institutes and the cut in funding.

As in other Mediterranean countries, many wild relatives and landraces in Albania do not figure in any collection and are therefore exposed to genetic erosion. Taxonomic identification of wild relatives is poor, especially in the *Daucus* genus. Ecogeographic surveys and collecting missions of wild relatives are therefore needed in Albania.

Discussion

The possibility of funding a collecting mission for *Daucus* wild relatives and accessions in Albania was considered. S. Jani was asked to assess the required budget and send the information to E. Geoffriau for consideration.

T. Kotlińska presented the status of umbellifer crops in Poland. In total, 1338 accessions representing 9 umbellifer crops are conserved.

Each year, parsley is characterized for 30 traits, celery for 32, dill for 25 and carrot for 50. Variability of a few traits was shown. Collecting missions carried out in various parts of Poland since 2007, have retrieved 53 accessions from 6 umbellifer crops.

E. Geoffriau showed images of a collecting mission in France for wild carrots.

Working Group members were encouraged to send their presentations for uploading to the ECPGR Web site.

Descriptors

A sub-group discussed the need for minimum characterization descriptors and concluded that celeriac, celery, dill and parsley would be the most useful for this exercise.

Based on the descriptors of the International Union for the Protection of New Varieties of Plants (UPOV), a minimum set of descriptors was suggested: 13 for celeriac, 12 for celery, 7 for dill and 15 for parsley. The selected descriptors were considered to be feasible and robust, leaving little room for subjective interpretation. It was also suggested that observations should be made on at least 5-10 plants.

A document will be prepared by H. De Clercq **by the end of July 2011**, including scales, illustrations and heterogeneity options, and distributed to all WG members for comments, with the aim of reaching agreement **by the end of September 2011**. He will also coordinate the compilation of data into an Excel file, which will be uploaded to the Umbellifer WG Web site, pending its upload to EURISCO.

The minimum descriptors to be used for carrot were discussed and the following IPGRI descriptors⁴ for wild and cultivated carrots were agreed upon (Box 1):

⁴ IPGRI. 1998. Descriptors for wild and cultivated Carrots (*Daucus* L.). International Plant Genetic Resources Institute, Rome, Italy.

Box 1. Minimum descriptors to be used for carrot

7.1.12	Leaf growth habit (attitude)
7.1.14	Leaf type
7.1.16	Leaf colour
7.2.1	Bolting tendency
7.4.2	Root position in soil
7.4.11	Root surface
7.4.12	Root branching
7.4.14	Root shape
7.4.16	Root shoulder shape
Combined 7.14.17 and 7.14.18	Colour of skin on shoulder (0: same as root colour; 3: green; 7: violet)
7.4.21	Root tip/end shape
7.4.22	Root skin pigmentation colour
7.5.5	Outer core pigmentation/colour
7.5.7	Inner core pigmentation/colour
7.7.1	Accession longevity (lifespan)

ECPGR Umbellifers Database

The Group debated on the value of maintaining a Central Crop Database (CCDB), given the existence of EURISCO.

The reasons in favour of the continued use of the European Umbellifers Database (EUDB) were that it allows:

- adding of minimum characterization descriptors that can be inserted in Excel files linked to the accessions,
- adding of passport data that cannot reach EURISCO for various reasons (absent or non-functional National Inventory Focal Point),
- easy and flexible searches on specific crops in the downloaded files.

The Group agreed that the EUDB should be continued. However, passport data should be sent to EURISCO to minimize discrepancies between the EUDB and EURISCO. C. Allender offered to continue the maintenance of the EUDB at GRU Warwick and to provide a new structure by July 2011.

Other items

All agreed that ongoing activities on genetic resources in each programme should be reported by all WG members to E. Geoffriau.

The Group received a request for assistance from T. Khmelinskaya of the N.I. Vavilov Research Institute for Plant Industry (VIR), Russian Federation, for regeneration of carrot accessions conserved by VIR. The Group recalled that a number of accessions had been regenerated for VIR by ECPGR members during an emergency rescue operation 10 years ago. It therefore requested more details on the list of accessions that still need regeneration. Certain Group members agreed, in principle, to regenerate a few accessions for VIR: Albania, if funds are available; Belgium, 5 accessions, depending on availability of funds; Czech Republic, 2 accessions without funds, more if additional funds are available; France,

5 accessions; Georgia and Hungary will check⁵; Germany: JKI, none, but E. Geoffriau will check with the Leibniz Institute of Plant Genetics and Crop Plant Research (IPK); Poland, 5-10 accessions; UK, 5, this year for emergency, but not on a regular basis.

L. Maggioni offered to check if the Global Crop Diversity Trust would be interested in supporting this type of action, given that carrot is an Annex I crop and the material is considered by the Group potentially valuable and unique.

E. Geoffriau will verify with T. Khmelinskaya the list of accessions proposed for regeneration and will communicate a proposal for action to WG members.

Genebank practices: crop-specific quality standards

E. Geoffriau proposed elements that could be considered for the definition of crop-specific quality standards by the WG. These should be adequate and useable as steps for all members for achieving optimum standards. The standards proposed were:

- Regeneration
 - Minimum of 40-50 plants in isolation cages
 - If regeneration is not successful from an adequate number of plants and there are enough original seeds, the regeneration should be repeated.
 - Minimum germination rate should be 80%.
 - Regeneration frequency should be limited, not more than once every 15 years.

- Conservation
 - For long-term conservation, temperature not above +4°C, RH of 30-40%; or better in a freezer.
 - Each accession should be safety-duplicated with a black box arrangement. Members from Belgium, France, Germany (IPK) and UK said that they could accommodate safety-duplication boxes. There is no capacity in Czech Republic, Georgia, Hungary and Poland. The Svalbard Seed Vault is also available for safety-duplication.

It remained to further discuss whether the harvest of all plants from each accessions should be bulked or balanced between plants.

Workplan

E. Geoffriau will distribute the above proposal to all WG members for comments in order to reach an agreement on Umbellifer crop-specific standards **by September 2011**.

Conclusion

Election of Chair

The Group expressed satisfaction with the leadership of the Group and re-elected Emmanuel Geoffriau as Chair and Charlotte Allender as Vice-Chair.

⁵ On 7 April 2011 A. Simon indicated that Hungary could not participate for the moment due to lack of staff resources and equipment. But the Institute plans to acquire new high-pressure isolator tents so this might be reconsidered in future.

Next meeting

It was proposed that the next meeting be held at the end of June 2013 in St. Petersburg, Russian Federation. L. Maggioni will sound the Russian National Coordinator about interest in hosting the meeting. Ukraine was proposed as an alternative host.

Acknowledgements

The Group warmly thanked T. Nothnagel for the excellent organization of the meeting, despite the difficult personal time. Thanks were also extended to the staff from JKI and IPK who arranged the visits to the institutes.

APPENDICES

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Appendix I. Workplan 2011

Agreed at the First Meeting of the Working Group on Umbellifer Crops, 30 March-1 April 2011, Quedlinburg, Germany.

(Part of the Phase VIII Workplan adopted at the Umbellifer Crops WG session held during the Third Meeting of the Vegetables Network, 10-12 November 2009, Catania, Italy)

Action	Carried out by	By when
AEGIS project		
Draft lists of proposed AEGIS accessions to be cross-checked, assigning material to the priority, secondary or pending list	<ul style="list-style-type: none"> - P. Kopecki / S. Solberg - C. Allender / S. Jani - A. Simon / E. Geoffriau 	
Send results to C. Allender		25 May 2011
Split the lists of wild and landrace accessions into three parts and assign these for analysis to A. Gulbani, S. Jani and C. Allender	C. Allender	
Analyse the wild and landrace accession lists and send results to C. Allender	A. Gulbani, S. Jani and C. Allender	
Finalize the list of proposed AEGIS accessions	C. Allender and E. Geoffriau	End May 2011
Send portions of the list of other Apiaceae to partners for analysis	C. Allender	
Analyse lists of other Apiaceae	<ul style="list-style-type: none"> - H. De Clercq: celery and parsley - T. Kotlińska: dill - A. Gulbani: dill - U. Lohwasser: parsnip - P. Kopecki : parsley, parsnip, celery - S. Solberg: caraway - C. Allender: fennel and parsnip 	June 2011

Action	Carried out by	By when
Wild relatives project		
Send to C. Allender specific preferences of wild <i>D. carota carota</i> or wild celery accessions to be characterized	Volunteering WG members	End of May 2011
Prepare a final list of accessions to be characterized based on EURISCO accessions, and assign to volunteers	C. Allender	End 2011
Realise trials for characterization or taxonomy	Volunteering WG members	2011
Since the WG has agreed to use part of the funds for the next meeting, propose a budget breakdown (2/3 for the meeting, 1/3 for complementary funding for wild accessions characterization)	E. Geoffriau	End 2011
Characterization of other Apiaceae		
Compile a document with minimum descriptors for celeriac (13), celery (12), dill (7) and parsley (15), including scales, illustrations and heterogeneity options, and distribute to all WG members for comments	H. De Clercq	End of July 2011
Reach WG agreement on the above document	H. De Clercq	End of September 2011
Coordinate the collection of minor Apiaceae characterization data and compile them in an Excel file to be uploaded to the Umbellifer WG Web site	H. De Clercq	End 2011
ECPGR Umbellifers Database		
Provide an update and a new structure for the Umbellifers Database	C. Allender	July 2011

Action	Carried out by	By when
Information sharing		
Send to E. Geoffriau summary information (bullet points) on ongoing activities that are carried out on genetic resources in each national programme	All WG members	End of May 2011
Compile above information and send to the ECPGR Coordinator for uploading to the Web site	E. Geoffriau	End of May 2011
Emergency regeneration of carrot accessions		
Verify with T. Khmelinskaya what is on the detailed list of accessions requiring urgent regeneration	E. Geoffriau	June 2011
Verify interest of Global Crop Diversity Trust to support carrot regeneration at VIR	L. Maggioni	June 2011
Crop-specific standards		
Circulate a proposal on Umbellifer crop-specific standards for comments, in order to reach an agreement	E. Geoffriau	Agreement to be reached by September 2011
Confirm availability of Russia to host the second WG meeting in June 2013	L. Maggioni	June 2011

Appendix II. Acronyms and abbreviations

AEGIS	A European Genebank Integrated System
AQUAS	AEGIS Quality System
CCDB	Central Crop Database
CRI	Crop Research Institute, Czech Republic
ECPGR	European Cooperative Programme on Plant Genetic Resources
EUDB	European Umbellifers Database
EURISCO	European Internet Search Catalogue
ExCo	Executive Committee
FAO	Food and Agriculture Organization of the United Nations, Rome, Italy
ILVO	Instituut voor Landbouw and Visserij Onderzoek (Institute for Agricultural and Fisheries Research), Melle, Belgium
INPH	Institut National d'Horticulture et de Paysage, Angers, France
IPGRI	International Plant Genetic Resources Institute (<i>now Bioversity International</i>)
IPK	Leibniz Institute of Plant Genetics and Crop Plant Research, Gatersleben, Germany
JKI	Julius Kühn-Institut, Quedlinburg, Germany
MAA	Most Appropriate Accession (<i>for AEGIS</i>)
NordGen	Nordic Genetic Resource Center, Alnarp, Sweden
PGRFA	Plant genetic resources for food and agriculture
UPOV	Union internationale pour la protection des obtentions végétales (International Union for the Protection of New Varieties of Plants), Geneva, Switzerland
VIR	N.I. Vavilov Research Institute for Plant Industry, St. Petersburg, Russian Federation
WG	Working Group

Appendix III. Agenda

First meeting of the ECPGR Working Group on Umbellifer Crops 30 March-1 April 2011, Quedlinburg, Germany

Tuesday, 29 March

Arrival of participants

Wednesday, 30 March

- 8:30** **Welcome**, reminder of the Umbellifer WG workplan, presentation of the meeting programme
- 9:00-9:30** **Update on ECPGR and AEGIS** (*L. Maggioni*)
- 9:30-12:00** **Parallel sessions**
- AEGIS session: final work on the *Daucus* MAAs and criteria (*7 participants in the AEGIS project*)
 - Work on "minor" umbellifer crops: descriptors, leaders, action assessment (*other participants*)
- 12:00** *Lunch*
- 13:00-15:00** **AEGIS plenary session**
- Conclusions on AEGIS for *Daucus*: finalization of a list of potential MAAs and validation of the criteria and procedure, proposals for ways of implementation
 - Possibility of extension (criteria and procedure) to other umbellifer crops; proposals for actions
- 15:00-17:00** **Visit of the Julius Kühn Institute** (genetics/resistance/human sensory)
- 18:30-19:30** *Visit of the historical town of Quedlinburg (professional guide)*
- 19:30** *Dinner at the traditional restaurant "Luddebraü"*

Thursday, 31 March

- 8:00** *Bus transfer from the hotel to Gatersleben*
- 8:30-12:30** **Visit Genebank IPK Gatersleben**
- Introduction IPK/Genebank (*A. Börner*)
 - Visit Genebank facilities, genebank information system (*U. Lohwasser/M. Oppermann*)
 - *In vitro*/cryopreservation (*J. Keller*)
 - Herbarium, seed and spike collection (*K. Pistrick*)
 - Lemnatec (*P. Schreiber*)
 - Visit Greenhouse (*J. Marlow*)

- 12:30 *Bus transfer to Quedlinburg*
- 13:00 *Lunch (JKI)*
- 14:00-16:00 Wild umbellifer relatives project:**
- Presentation by all participants of the status of collections and knowledge
- Planning for the project (2011-2013)
- 16:00-18:00 Assessment of progress on “minor” crops** (report from the first session),
complementary work and organization on “minor” crops
- 18:00 -19:00 Discussion and validation of an adapted workplan (if necessary)**
- 20:00 *Dinner at the restaurant “Schlossberg”*

Friday, 1 April

- 8:30–10:00 Quality of conservation**
- First proposal about standard regeneration recommendation on Umbellifers
- Proposal for improving safety-duplication level and long-term storage
- 10:00-11:00 Organization of information sharing** for a better information and database management
- 11:00-11:30 Other Working Group topics (election of Chair/Vice-Chair, sharing regenerations..)**
- 11:30 Closing remarks**
- 12:00 *Lunch*

Appendix IV. List of participants

First meeting of the ECPGR Working Group on Umbellifer Crops 30 March-1 April 2011, Quedlinburg, Germany

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

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