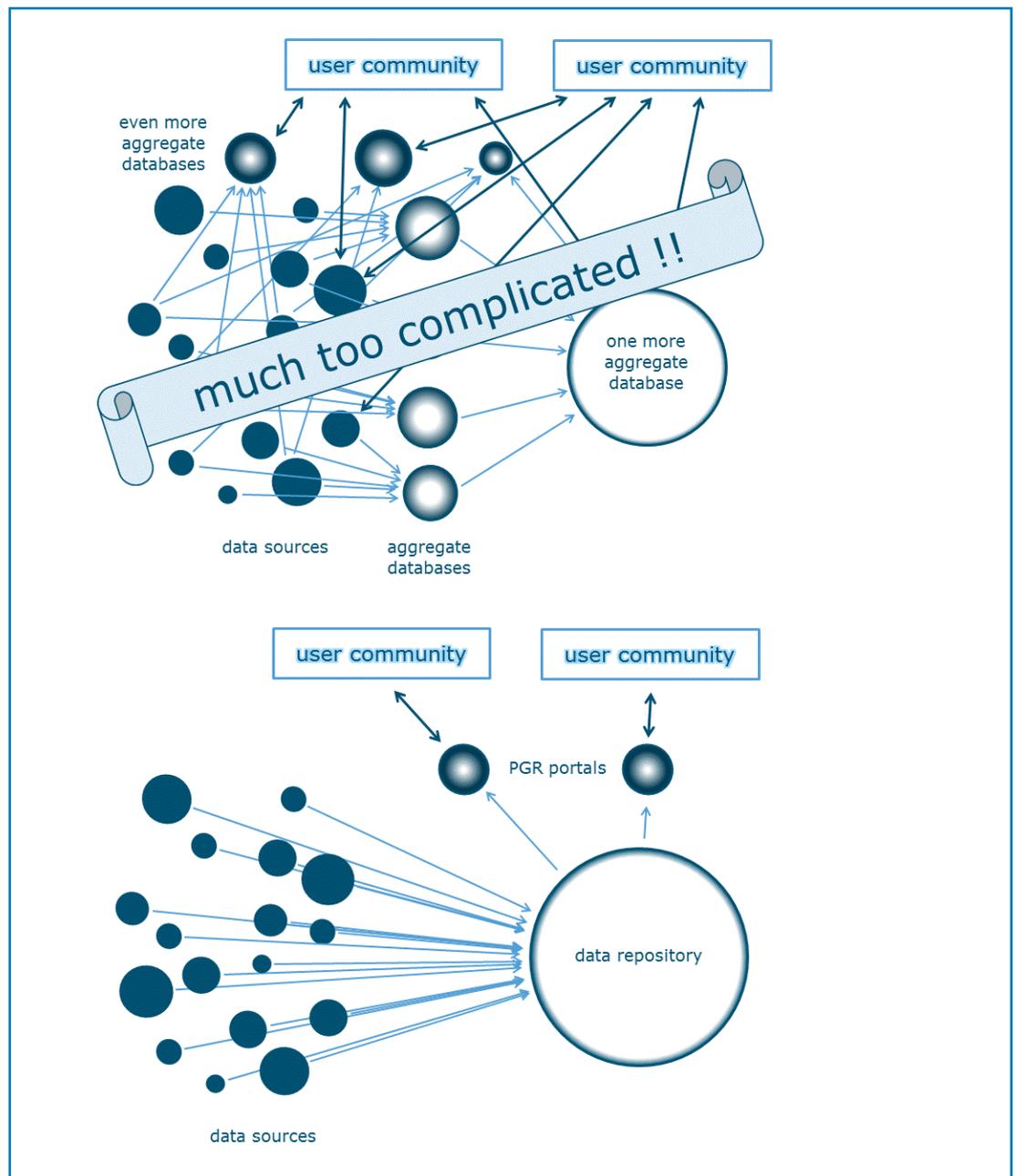


Tailoring the Documentation of Plant Genetic Resources in Europe to the Needs of the User

Workshop of the ECPGR Documentation and Information Working Group,
20-22 May 2014, Prague, Czech Republic
L. Maggioni, T. van Hintum and E. Lipman





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The European Cooperative Programme for Plant Genetic Resources (ECPGR) is a collaborative programme among most European countries aimed at contributing to national, sub-regional and regional programmes in Europe to rationally and effectively conserve *ex situ* and *in situ* Plant Genetic Resources for Food and Agriculture and increase their utilization (<http://www.ecpgr.cgiar.org/homepage.html>). The Programme, which is entirely financed by the member countries, is overseen by a Steering Committee composed of National Coordinators nominated by the participating countries and a number of relevant international bodies. The Coordinating Secretariat is hosted by Bioversity International. The Programme operates through Working Groups composed of pools of experts nominated by the National Coordinators. The ECPGR Working Groups deal with either crops or general themes related to plant genetic resources (documentation and information and *in situ* and on-farm conservation). Members of the working groups carry out an agreed workplan, based on specific ECPGR objectives, through ECPGR-funded activities and/or with their own resources.

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Diagrams of the current and the dreamed situation regarding PGR information flow in Europe.
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SUMMARY REPORT OF THE MEETING

Introduction

A workshop of the ECPGR Documentation and Information Working Group (Doc&Info WG), entitled *Tailoring the Documentation of Plant Genetic Resources in Europe to the Needs of the User*, was held 20-22 May 2014 in Prague-Ruzyně, Czech Republic. Its purpose was to discuss the European Plant Genetic Resources Catalogue (or European Internet Search Catalogue, EURISCO), the European Central Crop Databases (CCDBs) and related topics.

The workshop, organized in collaboration with the Crop Research Institute (CRI), Genebank Department, Prague-Ruzyně, brought together 49 participants including members of the (former) Doc&Info Network Coordinating Group (NCG), CCDB Managers, External Experts, National Coordinators (NCs), EURISCO National Focal Points (NFPs) and Chairs of ECPGR Working Groups (WGs) (see List of participants in Appendix VII).

Background

The reasons for organizing this meeting originate from the uneasiness expressed both by WGs and the Steering Committee (SC) regarding the relationship between EURISCO and CCDBs. The Steering Committee, during its 13th meeting in Vienna (December 2012), supported the suggestion to organize a Doc&Info meeting gathering NFPs and CCDB Managers, at which the ECPGR vision on information management could be discussed and general consensus built up. The aim was to influence the future direction of EURISCO, the European CCDBs and plant genetic resources (PGR) documentation in Europe in general. Funding was subsequently secured for this workshop, in agreement with the SC, using funds remaining from Phase VIII. In preparation for this meeting, in 2013 the Chair of the Doc&Info Network and the ECPGR Secretariat started a survey on the status of the CCDBs. The Chair also drafted and circulated two preparatory documents to the Network Coordinating Group (a discussion paper on PGR documentation and a report comparing data in EURISCO with those in the CCDBs).

Pre-meeting of the Documentation and Information Network Coordinating Group (Doc&Info NCG) on 19 May

A small group discussed the transition of the Doc&Info Network to a WG and the consequences for the Doc&Info NCG, as well as the preparations for this workshop. Participants included members of the former Doc&Info NCG (Theo van Hintum (Chair), Lorenzo Maggioni (ECPGR Secretary), Frank Begemann, Helmut Knüpfner, Jonas Nordling and Ian Thomas) and Stephan Weise, the newly appointed EURISCO Coordinator. Jan Engels, Coordinator of *A European Genebank Integrated System* (AEGIS), and Iva Faberová as host of the meeting, attended as observers.

Elements of a transition of ECPGR from Phase VIII to Phase IX were described by L. Maggioni. The conversion of the Doc&Info Network into Doc&Info WG meant that the NCG had ceased to formally exist, while the Network Coordinator had become WG Chair until the end of 2014. A process of re-nomination of all WG Chairs (with the possibility to reconfirm existing Chairs) was going on under the control of the SC, aiming at having selected the Phase IX Chairs at the start of 2015. The composition of the Doc&Info WG was temporarily considered to comprise all the National Focal Points (NFPs) and CCDB Managers. Formal nominations of WG members were ongoing by the NCs of the ECPGR member countries. The Doc&Info WG was eligible to submit proposals (through the Chair)

under the ECPGR Activity Grant Scheme, which was expected to be launched shortly by the Secretariat. Proposals in the range of € 15 000, involving a maximum of 12 ECPGR-funded WG members, were expected to fulfil the objectives of ECPGR, which include a specific outcome on EURISCO and documentation aspects.

Following a decision made by the SC in March 2013 to accept the offer from the Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) for hosting EURISCO in Gatersleben, Germany, a formal agreement was signed between Bioversity (on behalf of ECPGR) and IPK, defining the terms for the management and operation of EURISCO by IPK. IPK indicated that the role and functions of EURISCO Coordinator and Developer would be taken up during Phase IX by Stephan Weise, IPK. This choice was endorsed in 2013 by the Executive Committee (ExCo) Chair and by the Chair of the Doc&Info Network. The actual physical transfer of EURISCO from Bioversity to IPK was expected to be completed in August 2014. IPK is therefore responsible during Phase IX for both the development of EURISCO and the coordination of the NFPs.

The maintenance of a coordinating group (similar to the former NCG), with the role of offering advice on the future development of EURISCO, including the coordination of the NFPs, was considered important (see Recommendation 6 in Appendix III).

A report of the activities carried out within the framework of the Doc&Info Network during Phase VIII was presented by Theo van Hintum, as follows:

- **EURISCO**

- New National Inventories were added in 2009 (Belarus, Croatia and Montenegro), 2011 (Moldova) and 2012 (Belgium);
- The “staging area” was redeveloped;
- The interface was updated, with a better taxonomic search option;
- A new Data Sharing Agreement was agreed and circulated to the countries for signature;
- New Terms of Use were prepared;
- Reports were sent to the NFPs, outlining taxonomic imprecisions and geographical coordinates’ incongruence;
- Four local training seminars were held in eastern European countries;
- A training workshop for 30 NFPs was held in 2009 in Prague;
- EURISCO was represented in relevant meetings;
- e-Bulletins were prepared and circulated;
- A comparative analysis of EURISCO, European CCDBs and the World Information and Early Warning System (WIEWS) was carried out.

- **Other activities**

- The software “PGR DuplicateFinder” was developed as part of an AEGIS Grant Scheme Activity;
- An EPGRIS3 self-funded workshop was held in 2009, drafting the agenda for PGR Documentation in Europe;
- Plans were developed for the inclusion of characterization and evaluation (C&E) data in EURISCO;
- Initiatives were started, aiming to organize capacity building in the Near East and North Africa (NENA) region;
- A contribution was offered to the Joint ECPGR/PGR Secure workshop held in Palanga, Lithuania in 2011, specifically organizing a session on *in situ*/on-farm documentation

in Europe and offering feedback on the on-farm descriptor list prepared by PGR Secure;

- Two project proposals coordinated by ECPGR were offered to the EU Seventh Framework Programme: 'Plant Gene Access' and 'EUROGENEBANK';
- Representation of EURISCO was ensured in the Genesys oversight committee meeting in Mexico in 2011.

The contribution of Sónia Dias, Milko Skofic and Bioversity for the maintenance and development of EURISCO over the past years was acknowledged with thanks.

Theo van Hintum mentioned his intention to propose changing the name of the "Documentation and Information WG" to "Documentation and Bioinformatics WG". In order to become effective, this proposal would need to be developed with a justification and submitted to the SC, through the Secretariat.

Frank Begemann informed the group that the Secretariat of the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) was preparing a *Vision for a global information system* that will be submitted to the next meeting of the Governing Body in 2015. For this purpose, a consultation process is taking place, which foresees a meeting of stakeholders in San Diego, USA, in January 2015. The representatives for the Europe region in this meeting as designated by the EU are Frank Begemann and Roland Cottin (Cirad, France). Theo van Hintum will also be invited as a technical advisor.

Opening of the meeting

The meeting was opened by Iva Faberová.

Dr Jiban Kumar Kundu, Vice-Director of CRI, welcomed the participants and briefly described the structure and activities of CRI, a public research institute founded in 1951, dedicated to research in agriculture and environmental science to improve plant production in a sustainable way. The institute also runs the national programme on conservation and utilization of PGRFA.

Vlastimil Zedek also welcomed the participants on behalf of the Ministry of Agriculture, indicating that the Ministry supported the overall goal of the European programme and recently signed the participation of Czech Republic in Phase IX of ECPGR.

Lorenzo Maggioni and Theo van Hintum thanked the local hosts for their kind and efficient organization. The meeting would be structured in several plenary sessions and parallel discussion sessions, in which the involvement of participants was expected.

Plenary presentations

The following presentations were given and are available online (http://www.ecpgr.cgiar.org/working_groups/documentation_information/docinfo2014/presentations_and_additional_reports.html). The main points addressed in the presentations are listed below each title.

ECPGR and EURISCO Phase IX – a new location, background and consequences

by Lorenzo Maggioni

Elements of Phase IX of ECPGR, including the new objectives, operational structure, terms of reference and budget.
Background and status of the transfer of EURISCO from Bioversity to IPK and the specific obligations of IPK against payments made by Bioversity on behalf of ECPGR.

Theo van Hintum introduced the new EURISCO Coordinator, Stephan Weise, and reiterated his acknowledgments to the previous coordinator and developer, respectively Sónia Dias and Milko Skofic.

EURISCO – present and future

by Stephan Weise

Current status of EURISCO, ongoing process of transfer from Bioversity to IPK and re-engineering. Future development, including challenges and ideas, related to data quality, import mechanism, web services, support to CCDBs, possible inclusion of *in situ* and on-farm data, of C&E data and of genetic information, support to AEGIS.
Short-, medium- and long-term list of priorities.

Points of discussion and clarification

- It was clarified that for the time being data should continue to be sent to Bioversity and that by the middle of 2014 IPK would send information with new instructions in order to receive the data directly.
- A number of the items listed among the possible priorities for the future can be carried out with the currently available resources; others will need new project funds in order to be implemented.
- Whenever possibilities are created to directly upload C&E data from individual institutions, mechanisms should also be provided to ensure the integrity of the link to the National Inventory data.

The Process for the Development of the Vision Paper on the Global Information System

by Francisco Lopez

Current process to develop a Global Information System (Article 17).
Global Consultation including experts from the European Region.
Elements of the vision on article 17.
A draft vision: *The Global Information System will provide a platform of interoperable data and information services on plant genetic resources for food and agriculture. The System will be open, innovative, dynamic, decentralized, collaborative, user-centric, and quality-focused.*
Possible areas of work. Inputs that can be provided. Reporting on SMTAs. Recent reporting in Europe.

Points of discussion and clarification

- The possibility to report to the Treaty via web services is being tested. The system will allow aggregated data statistics about data flow at the global level.
- What is currently available in terms of PGRFA information systems is very difficult to understand, since there are many new initiatives, databases and standards. It will be important to map the existing elements and find out what can and should be developed in the future. There is also a need for the various regions to work together.
- The final vision will be important for donors to decide where future investments should be made.

Genesys PGR portal

By Matija Obreza

The Genesys Portal, steps in the development of Genesys, current and future activities and challenges.

Points of discussion and clarification

- It was questioned whether EURISCO and Genesys were duplicating efforts. EURISCO was acknowledged to be essential for aggregating data, but doubts remained about the usefulness of having two different interfaces for the users.
- Genesys is also obtaining European data from outside EURISCO, such as in the case of Kew Gardens, which is providing directly to Genesys (and not to the UK National Inventory) data about collected crop wild relatives (CWRs) maintained *ex situ*.
- Genesys currently holds 12 million C&E data points, currently without performance problems. However, it is not clear whether the solution of Genesys for C&E data will be valid for Europe.
- The source code of Genesys is directly available from the website. There is no community engaged in the development of the software.
- The relationship between GRIN-Global¹ and Genesys is that the former will provide data directly to Genesys.
- Genesys is not focusing on Annex I crops only, although data on other crops are presented in a different way.

EURISCO as a support tool for AEGIS

By Jan Engels

Update on AEGIS including AQUAS elements.
AEGIS-related topics that need support from EURISCO.

Points of discussion and clarification

- It is clear that EURISCO is adding a perspective that is important for AEGIS.
- Regarding the monitoring of the distribution of accessions, there is a required element of confidentiality.

¹ GRIN-Global is “a software suite that enables genebanks to store and manage information associated with plant genetic resources (or germplasm) and deliver that information globally” developed by the US Germplasm Resources Information Network (GRIN) (see <http://www.ars-grin.gov/>).

Data exchange: the Darwin Core and other approaches*By Dag Terje Filip Endresen*

Reasons for a Darwin core extension for PGR data. Potential of the GBIF ² technology. Data integration and interoperability. Multiple data export services for each genebank. Multiple-purpose data export services. Possible Upgraded PGR Network Model. Data publishing toolkits. Darwin core - a vocabulary of terms. Persistent identifiers (PID) and resolver services.

Points of discussion and clarification

- Regarding the limitations of the adoption of the unique identifier, it was considered to be mainly a cultural problem and a problem of the choice of technology. Identifiers can be resolved on the Internet, being sent automatically to different resolvers.
- The first reason to adopt this technique (the use of controlled vocabularies) is to streamline the data flow through web services.

C&E data: the EURISCO standard*By Jonas Nordling*

Background. Nature of C&E data. Cornerstones. Repository of C&E data. Upload and validation. Search and download. Data model. Data set fields. Experiment fields. Trait fields, Genotype fields. Score fields.
--

Points of discussion and clarification

- Considering that “genotype” is the genetic makeup of an accession, the term should not be confused with “accession”, which is usually a group of genotypes. Therefore the “genotype fields” need to have a different name.
- There is a risk of losing information by dealing with C&E data in EURISCO in an oversimplified manner. However, complexity will reduce the willingness of data sources to upload their data.
- The proposed system intends to facilitate publication of some data, while the original data would not be lost, but remain at the original source.
- Development of a dictionary for standard names of traits (ontologies) is a useful task, although it would not be required for the proposed C&E data aggregating system.
- Further standardization of descriptors would be welcome (such as the International Union for the Protection of New Varieties of Plants (UPOV) vs. Bioversity). However, a non-standardized system would allow attracting existing data from different areas (breeders or PhD Thesis, etc.).

² GBIF = Global Biodiversity Information Facility (<http://www.gbif.org/>)

GRIN-Global, the solution for PGR documentation

By Iva Faberová

GRIN-Documentation.
 GRIN-Global project.
 GRIN-Global description.
 EVIGEZ³ system.
 Comparison GRIN-Global vs. EVIGEZ.

I. Faberová explained the reasons for CRI to adopt this PGR information system.

Central Crop Databases: status at the beginning of ECPGR Phase IX. Synthesis of a survey conducted among Database Managers

By Elinor Lipman

The survey: background, results obtained and methodology for the analysis.
 Presentation of the databases.
 Synthesis of the survey.

EURISCO and CCDBs: coverage and overlap

Theo van Hintum

Objective of the study and approach.
 Results: number of accessions in existing data sources, age of records, number of accessions in Europe and gaps in EURISCO.

Points of discussion and clarification

- Differences between CCDBs and EURISCO may be due to several factors (lack of resources, presence of non-available accessions, etc.)
- The idea that CCDBs contain more data is not sustained by the analysis, and only true for some crops. In total EURISCO contains more accessions for the crops covered by the CCDBs than the CCDBs themselves.
- It may not be necessary to stress the frequency of update. There is no need to update historical data. It is also important to know which old accession numbers were used, it conveys many things about the accession. A problem in EURISCO is that uploading new data sets deletes all the previous data.
- A descriptor on “availability” would be useful, but this question was discussed earlier on by the Doc&Info Network and it was decided not to include it, because it is difficult to get this information and keep it updated. It is now possible to know if an accession belongs to the multi-lateral system (MLS) or AEGIS, which is a proxy for availability.
- It is worrying that the users’ stakeholder analysis of PGR Secure revealed that very many breeders neither know nor use EURISCO or CCDBs.
- The majority of genetic resources are used for research rather than for breeding, in many countries. Therefore, it would be wrong to justify the existence of collections and databases only based on access by the breeders.

³ EVIGEZ = Czech Information System on Plant Genetic Resources
http://genbank.vurv.cz/genetic/resources/asp2/default_a.htm

The ECPGR Cucurbits Database

By María José Díez

Number of accessions in the database. Characterization data. Pictures.
Searching formats. Constraints for improvement. Current uses.
Selection of AEGIS European Accessions.

Example and challenges of managing the Pyrus ECPGR Database

By Marc Lateur

Conditions for starting the development of an ECPGR DB as an input in kind.
Role played by the Pyrus database within the WG.
Durability of the database.
Database activities.
Merging and sharing competences.
Building collaboration protocols between Prunus and Pyrus databases.
The new Prunus/Pyrus database structure.
INTERREG collaborative project and agreement between North France and Wallonia.
Reflections for discussion.

PGR portals ‘give the user what the user needs’

By Frank Menting and Theo van Hintum

Value of PGR depends on available information.
History of genebank documentation.
Objective of PGR information.
PGR Portals for specific target groups.
PGR Portals prototypes: lettuce and potato.

Points of discussion and clarification

- More than one PGR Portal on the same crop might be created, depending on the specific interest of the different user groups. This specificity needs to be balanced with the complexity of having to ask from which portal to start. A solution could be to have a single entry point for one crop and then subdivide for different users.
- The creation of several portals for different users may bring the risk of an unmanageable development. It is difficult to create a system with several people working on the same target. To successfully aggregate information, a community needs to be well coordinated.
- Volunteers who aggregate information can use EURISCO and they can do that if they are crop experts. In the event that the Crop Portals become a service of ECPGR, as an honest broker, transparency and a quality logo might be required.

Linking ex situ, on-farm and in situ documentation in EURISCO – a case from Germany

By Frank Begemann

Vision for EURISCO.
 EURISCO content, pre-requisites and descriptors.
 International descriptors for *in situ* and on-farm.
 German National Inventory: scope, reporting obligations.
Ex situ and *in situ* documentation of PGR in Germany.
 Network of genetic reserves in Germany.
 Linking *ex situ* and *in situ* conservation activities via documentation.
 On-farm documentation of PGR in Germany.
 Linking on-farm and *ex situ* information.
 Linking *ex situ* and *in situ* documentation.
 Linking *ex situ* and on-farm documentation.
 Arguments for *in situ* and on-farm data in EURISCO.
 Conclusion: *in situ* role for EURISCO.

European genebanks in the genomics era

By Theo van Hintum

The world faces 'global grand challenges'.
 Plant breeding is changing / has changed.
 Moore's law.
 Genebanks will change.
 Potential impact of genomics.
 Challenges.
 Issues to be addressed.
 Access to germplasm.
 Data generation.
 Data sharing and use.
 DivSeek initiative.
 Example of an approach from the genebank environment.
 Illustration of semantic annotation.
 Conclusions.

Points of discussion and clarification

- AEGIS might be an entry point when selecting material for genomic analysis, but AEGIS still needs enormous steps before entering this field.
- Implications for EURISCO of the developments in genomics are not immediate.
- Verification of the authenticity of accessions in AEGIS may be based on crop experts' knowledge, on pedigree, or on diversity analysis.

Group discussions and formulation of consensus

On the second and third days of the meeting, sessions were dedicated to parallel discussion groups addressing the following topics:

- **Second day**
 Group 1: EURISCO
 Group 2: CCDBs and Crop Portals
 Groups 3 and 4: both items

The main considerations and recommendations of the four groups are summarized in Appendix I.

- **Third day**

Group 1: long-term perspectives

Group 2: the needs of *in situ* PGR documentation

Group 3: elements of a roadmap towards the future of EURISCO

Group 4: formulation of aspects of a consensus

The main considerations and recommendations of the three first groups are summarized in Appendix II.

Recommendations from the fourth group, together with elements from the other groups, have been used directly to compile the workshop recommendations (see Appendix III).

Elements for a workplan to be implemented by the EURISCO Coordinator are included in Appendix IV.

Closing of the meeting

Theo van Hintum thanked the local hosts for their efficient organization of the meeting and the participants for their active contributions. He also extended thanks to the ECPGR Secretariat, including Lidwina Koop who was instrumental in the organization of the meeting.

Iva Faberová said it had been a pleasure and honour to host the workshop which had run smoothly, and she was glad that CRI had been able, once again, to host a successful Doc&Info meeting.



A view of the CRI Genebank, which the participants visited on Wednesday 21 May.

APPENDICES

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Appendix I. Summaries of discussion groups – Second day

Group 1. Discussion about EURISCO

Ian D. Thomas (Chair), Stephan Weise (Rapporteur), Dag Terje Filip Endresen, Anita Gaile, Belul Gixhari, Milena Savić Ivanov, Alexandra Keren, Maria Antonietta Palombi, Ludmila Papoušková, Marina Radun, Marius Dan Sandru, Nikolaya Velcheva

Quality of passport data

Several improvements should be made to the existing data, specifically to the geographical data of the collecting sites (using gazetteers and geocoding software), to the institution code data (consider embedding WIEWS data, making them searchable, identifying old and new codes of the same institute), and to the country codes (old and new codes need to be maintained; new codes at genebank level need to be assigned). Reporting mechanisms can be improved, better informing the data provider about problems in latitude/longitude, country codes, etc. It should be verified whether to directly report problems to genebanks or National Focal Points. Taxonomy data can also be improved, with the possibility of including links to GRIN, Catalogue of Life, Mansfeld, etc. Taxonomy checks during the data import can also be improved. Moreover, search possibilities for cultivar names can be provided, avoiding misspellings, typos, etc., or similarity ranking methods can be used. The same is true for crop names, thereby avoiding synonyms and duplicate names.

C&E data

Examples of raw data can be provided. Exchange formats can be decided upon. Inclusion of data should start with existing data and there is no need for standardization yet, but this could become a future task, after a critical mass of data is reached. Links to publications can be attached at accession level. Different download formats can be provided. The data would be downloadable by everybody. Workshops can be organized to encourage the provision of data.

Future role

Information about availability of accessions would be desirable, with indication such as yes, no, or restricted. Concerns remain about duplication of efforts in general.

Group 2. CCDBs and Crop Portals

Marc Lateur (Chair), Frank Menting (Rapporteur), José Miguel Blanca Postigo, Marine Blouin, María José Díez Niclos, Iva Faberová, Vahur Kukk, Martin Pavelek, Beate Schierscher-Viret, Marcin Zaczyński

Moving from CCDBs towards Crop Portals is considered a good idea. The approach based on serving a target group and developing a strategy to communicate with that group is agreed and recommended. Knowledge of the crop is at the base of the strategy. While good quality data should be stored in EURISCO, the portal should provide extra information, such as C&E data, pictures, etc.

Whenever portals are supported by a target community, the possibility of obtaining specific funds increases. In order to build portals and decide what tools to use, the Doc&Info WG should remain close to Crop WGs that can provide help on the technical level. Regarding the CCDBs, the recommendation is of “keeping them if you like them”, while procedures should be in place to safeguard the data in case the CCDBs are terminated.

Group 3. “Combined topics” (Discussion about EURISCO / CCDBs and Crop Portals)

Jonas Nordling (Chair), Sylvia Vogl (Rapporteur), Raimondas Baltrėnas, Frank Begemann, Petra Bratt Stamborg, Jan Engels, Helmut Knüpfper, Matija Obreza, Markus Oppermann, Willem van Dooijeweert

EURISCO road map

It is suggested that the priority for inclusion of *in situ* data should be increased. Addition of a field on the availability of the accessions needs to be discussed further.

Recommendations to WGs regarding CCDBs/Crop Portals

It is suggested that a group of experts selected among the WG members prepare the transition by verifying the interest of contributors to the CCDBs in evolving the databases into Crop Portals, under a new set of recommendations. Key elements to be used as guidance are flexibility and not too detailed prescriptions. It will be important to ensure that there is no data duplication with EURISCO, either by direct linking to or by downloading the EURISCO data. Keeping the Crop Portals under the umbrella of ECPGR would guarantee quality according to ECPGR-agreed standards, as well as a clear identity (e.g. logo). It is recommended to hold a meeting of experts soon to discuss the key principles. The meeting should not be too technical, in order to involve the crop experts.

Group 4. “Combined topics” (Discussion about EURISCO / CCDBs and Crop Portals)

Christoph Germeier (Chair), Charlotte Allender (Rapporteur), Zofia Bulińska-Radomska, Mirta Culek, Lucía De la Rosa, Afig Mammadov, Vladimir Meglič, Celina Rodrigues Matos, Stefan Schröder, Attila Simon

Use and role of EURISCO

EURISCO is mainly used by researchers and large (multinational) breeding companies, while farmers and smaller companies tend to use NI or direct contact with genebanks.

The specific role of EURISCO is the aggregation of collection data at a regional level and it is used as a means of identifying AEGIS accessions.

Should availability be indicated in EURISCO?

The group had mixed views. The AEGIS and MLS flags could be indicative enough of availability. A descriptor on availability would pose the question over the frequency of updates to ensure that up-to-date information is presented to users. Possibly direct upload of data by collection managers would allow prompt updates. Such a descriptor could indicate Yes/No or ‘please enquire’.

Access to data sources via GBIF-IPT?⁴

An issue over control of data was raised, but there is general support for a system which will allow users to have the data from the data sources directly available for download at all times. Existing regulations on open data were mentioned, e.g. INSPIRE for geographical data.⁵ The role of NIs if data flow directly was questioned.

How to manage data on non-existent accessions?

There were different views, but agreement that the data should be kept somewhere. Also C&E data of non-existent accessions might conserve a value, given the possibility of re-collecting. GRIN, which includes “historical accessions”, was cited as an example. However, the ideal repository for these data would probably not be EURISCO, but rather local systems.

Future of CCDBs

This should be dependent on several factors, for example whether they contain C&E data which cannot be transferred to EURISCO. The interest by the Working Group/crop community in maintaining existing databases would also be important. Lack of interest is expected in providing two regular updates (to CCDB and EURISCO). In order to avoid duplication of efforts, cooperation is essential.

How can ECPGR Doc&Info Working Group help?

Capacity building will be important, offering training, technical advice where possible, and maintaining a higher level of interaction. Potential funding sources include the EU Horizon 2020 projects and the ECPGR Activity Grant Scheme proposals.

Communication and awareness raising

EURISCO is not generally well known to breeders and researchers. It needs a higher profile to be successful. It is also important at the political level to demonstrate the scale of use and the national benefit for activities. Better communication of EURISCO can be ensured by web links on homepages, social media, newsletters and a communication strategy.

⁴ GBIF-IPT = Global Biodiversity Information Facility Integrated Publishing Toolkit (<http://www.gbif.org/resources/2573>)

⁵ INSPIRE = Infrastructure for Spatial Information in the European Community (<http://inspire.ec.europa.eu/>)

Appendix II. Summaries of discussion groups – Third day

Group 1. Long-term perspectives

Jonas Nordling (Chair), Markus Oppermann (Rapporteur), Charlotte Allender, Raimondas Baltrėnas, José Miguel Blanca Postigo, Marine Blouin, María José Díez Niclos, Iva Faberová, Vahur Kukk, Francisco Lopez, Matija Obreza, Martin Pavelek, Stefan Schröder

Visions for EURISCO

The long-term vision about C&E data foresees the adoption of a global standard for evaluation procedures, including common descriptors and an agreed exchange format. The output of the ontology communities should be used, enhancing the reciprocal interaction among these communities. Uploads of pure metadata (experiments without scores) should also be supported.

A global approach for unique identifiers is needed and the Treaty Secretariat should be asked to organize a meeting to recommend a standard solution that EURISCO will have to adopt.

Networking should be strengthened by providing a “social network” within the PGR community, establishing a Wiki as a helpdesk and discussion platform and providing supporting tools to assist data curation.

The FAO/Bioversity multi-crop passport descriptors (MCPDs) should be extended for flagging historical data of inactive accessions.

With regard to genomic data, development of DivSeek and similar initiatives should be studied as they develop.

Web services for machine-to-machine (M2M) should be adopted at NI and EURISCO levels, and the resources of GBIF should be used.

Group 2. The needs of in situ PGR documentation

Frank Begemann (Chair), Dag Terje Filip Endresen (Rapporteur), Zofia Bulińska-Radomska, Lucía De la Rosa, Christoph Germeier, Alexandra Keren, Lorenzo Maggioni, Maria Antonietta Palombi, Marina Radun, Celina Rodrigues Matos, Marius Dan Sandru, Theo van Hintum, Sylvia Vogl

What do we understand by ‘in situ’?

The group agreed to limit the *in situ* domain/scope to documentation of crop wild relatives conserved in a natural environment (i.e. living in nature, not dependent from agricultural systems).

Moreover, the focus for documentation in EURISCO should consider only populations that are designated as *in situ* PGR with an associated conservation activity, thereby excluding wild CWR populations not under designated conservation.

Within this framework (documentation to be provided to EURISCO), *in situ* material does not include on-farm material managed by a farmer. The existence of a border-line/grey area was noted regarding material growing wild in the farmland or in the close proximity of farmland and indirectly dependent on the management of a farmer.

What do we understand by ‘on-farm’?

According to the group, material under continuous management by the farmer falls within this category, although many definitions exist. After a thorough discussion, there was still a lack of consensus on a definition of the on-farm domain. The different types of material, i.e. perennials such as fruit trees or forages vs. annuals such as cereals, make it difficult to reach an agreement. A distinction is made between the “on-farm use” and the “conservation

activity” (which involves subsidy funding or monitoring as possible criteria for this distinction). It was questioned whether for a regional documentation all farms cultivating an old variety should be inventoried. The economic aspect of using PGR by farming is considered an element that makes it difficult to decide what kind of information to document in a database.

The availability criteria

The availability of germplasm was considered an important criterion justifying the inventorying of such material in EURISCO. It was considered important that designated CWR *in situ* populations should be open to collecting and contact details of the “owner” or distributor of the material would be important. Therefore, contact points for obtaining collecting permission would be ideally placed in EURISCO. Regarding the availability of on-farm PGR, it remained uncertain whether farmers maintaining old varieties on farm would distribute this material if contacted. It was also noted that the new EU seed regulations will have an impact in relation to old varieties.

Inclusion into EURISCO

The group agreed to suggest proceeding with the inclusion of designated CWR *in situ* populations into EURISCO, using the existing structure for data flow through NFPs and NIs. On the other hand, no consensus was reached on including on-farm material in EURISCO. An important element will be the decision of each country and the NFP. Further discussion on this element will be needed.

Next steps

It was suggested that a task group should be initiated for discussion on the extension of CWR descriptors to complement EURISCO descriptors. Material under focus should be designated *in situ* CWR under an active conservation and monitoring effort in a genetic reserve, and the information should not only be related to the occurrence of the respective species. Considering that the Global Crop Diversity Trust/Kew Millennium Seedbank have developed a classification of CWR species into primary, secondary and tertiary gene pools, this could be a starting point as a backbone for categorizing EURISCO CWR *in situ* PGR entries.

Group 3. Elements of a roadmap towards the future of EURISCO

Stephan Weise (Chair), Ian D. Thomas (Rapporteur), Petra Bratt Stamborg, Mirta Culek, Anita Gaile, Belul Gixhari, Marc Lateur, Frank Menting, Ludmila Papoušková, Milena Savić Ivanov, Beate Schierscher-Viret, Attila Simon, Nikolaya Velcheva

Coordination

Regarding the maintenance of the network, the Coordinator should start reactivating the network by addressing genebank managers directly, emphasizing the role of NFPs and establishing better connections between the NFPs, e.g. by setting up a Wiki.

Training will be critical for C&E data and it is always important anyway owing to frequent changes of the personnel. The newsletter should be targeted at the user community, genebanks, and NFPs. Other stakeholders should also be identified. New services should be developed, such as error checking and taxonomic validation. Advances should be made regarding standards, with clarification of existing descriptors, e.g. country of origin. New descriptors should be developed, e.g. availability and validation.

Database

It is suggested to update the frequency of uploads with a target of once a year. Incremental updates are also desirable (without the need to re-upload the entire national inventory each time). Regarding quality issues, anything that helps to identify errors would be useful. Improved filter and download mechanisms would be useful web applications. Web services are considered necessary, but not a high priority at the moment.

New features

In the short term, C&E data are considered a priority. Globally unique identifiers should be investigated. The proposed medium-term priorities are agreed (establish EURISCO as resource for CCDBs, open for genetic information and possible extension to *in situ*/on-farm data, as well as open for C&E data from EU-funded and other collaborative projects). It is also suggested that EURISCO acts as an archive for unused CCDBs. The development of global unique identifiers is a long-term priority item.

Group 4. Formulation of a consensus

Helmut Knüppfer (Chair), Willem van Dooijeweert (Rapporteur), Jan Engels, Pavol Hauptvogel, Afig Mammadov, Vladimir Meglič, Marcin Zaczyński

Recommendations from this group, together with elements from the other groups, have been used directly to compile the workshop recommendations (see Appendix III).

Appendix III. Workshop Recommendations

EURISCO

A number of recommendations related to the future management and development of EURISCO are listed below. More specific elements for a workplan to be implemented by the EURISCO Coordinator are listed in Appendix IV.

Data quantity and quality in EURISCO

1. The EURISCO Coordinator should promote and support more frequent updating of EURISCO by the National Focal Points, with a target minimum frequency of once a year.
2. The EURISCO Coordinator should take action to ensure that the coverage of *ex situ* accessions in Europe increases further.
3. The EURISCO Coordinator should take action to ensure that the data quality in EURISCO is improved.

Characterization and evaluation (C&E) data in EURISCO

4. The EURISCO Coordinator should implement the proposal to provide access to C&E data from EURISCO, as formulated by the ECPGR Doc&Info Network in 2009, as applicable.
5. The EURISCO Coordinator should explore the possibility of linking EURISCO accessions to available pictures.

Management of EURISCO

6. A EURISCO Advisory Group should be re-established, with the function to monitor the progress of EURISCO, and to give advice on its further development. The composition of this group will be proposed by the Doc&Info WG Chair, selecting among the pool of WG experts and also using similar criteria to those used during Phase VIII.⁶ The composition of the core Advisory Group will need to be approved by the SC, but it could occasionally be extended to other experts depending on subject matter.

CCDBs/Portals

7. It is recommended that the SC endorses the concept that WGs and CCDB managers develop new tools such as Portals under the umbrella of ECPGR. Consequently, the Secretariat should invite CCDB managers to consider developing the CCDBs into Portals, with the expectation that CCDB managers verify among the crop experts whether there would be support to create such Portals.
8. It is recommended that the Doc&Info WG organize a meeting of all individuals committed to develop Portals, to define the key elements and quality requirements of the ECPGR Portals, their scope and function, also keeping in mind the need for these requirements to remain flexible (funding for such meeting should be identified by the

⁶ During Phase VIII, the Documentation and Information Network Coordinating Group (NCG) had the function to monitor the progress of EURISCO, and to give advice on its further development. The NCG was composed of National Focal Points and European Central Crop Database Managers who were appointed to reflect a geographical balance and to combine diverse expertise (including representatives of the Nordic Genetic Resource Center, NordGen) and of the South East European Development Network on Plant Genetic Resources, SEEDNet) and four *ex officio* representatives (EURISCO Coordinator, IT host at Bioversity International, ECPGR Coordinator and *In situ* and On-farm Conservation Network representative).

Secretariat). Elements to be discussed: the recognition of what the ECPGR logo means and how this should guarantee the quality of the portal.

Link between EURISCO and Crop Portals

9. A downloading function enabling download of EURISCO data per crop should be made available from EURISCO. Preliminary work on the “crop name” concept should take place for standardizing crop names (in connection with taxonomy issues). The establishment of a Task Force (TF) is suggested to carry out this task and the WG Chair is expected to initiate the TF establishment.

Documentation of *in situ* and on-farm PGR

10. The ECPGR Doc&Info WG should support the *in situ* community where possible in the creation of an inventory and monitoring system for European CWR *in situ*.
11. EURISCO should be prepared to include information about designated CWR *in situ* populations, with a list of National Focal Points that could be contacted in case of the need for *in situ* collecting. The existing structure for data flow (NFP and NI) should be used for supplying EURISCO with these data.
12. Considering that no consensus was reached on including on-farm information in EURISCO, since there was no agreement on what type of information should be included and for what purpose, it is recommended to continue the discussions and the collaboration with the On-farm Conservation and Management WG.

Relation between the ECPGR Doc&Info WG and AEGIS, ITPGRFA and others

13. If AEGIS requests services from EURISCO, these should be considered positively by the EURISCO Management. If these services require substantial investments, EURISCO Management should raise the issue with the ECPGR Doc&Info WG.
14. The ECPGR Secretariat should encourage the ITPGRFA Secretariat to organize a meeting to agree on a global standard for the use of unique identifiers.
15. It is recommended that the Doc&Info WG maintains where possible a strong relationship with Genesys and GBIF.

Molecular markers and X-omics data

16. It is recommended that the ECPGR Doc&Info WG remains involved in the DivSeek initiative and where possible plays an active role in guiding the genebanks to establish the appropriate link with X-omics information.
17. The element of feedback of genomics data to genebanks should be generally encouraged within project proposals.

GRIN-Global

18. It is recommended that the ECPGR Doc&Info WG remains involved in the further development of GRIN-Global and where possible plays an active role.

Other issues

19. The ECPGR Doc&Info WG recognizes the need to develop a capacity building programme to support the ECPGR members to effectively use new tools and meet new requirements regarding PGR documentation, for consideration by the SC.
20. In addition to the above, the PGR documentation and information community should inform each other about existing training possibilities and encourage mutual visits. A list of training opportunities should be made available on the ECPGR website.

Appendix IV. Elements for a workplan to be implemented by the EURISCO Coordinator

The EURISCO Coordinator is expected to provide a new workplan and priority list by the end of June 2014, to be sent to the EURISCO Advisory Group for approval. Inputs from this meeting, as given in the following list of recommended actions should be taken into consideration:

1. Approach National Focal Points (NFPs), with copy to National Coordinators (NCs), in order to promote and support more frequent updating of EURISCO (with a target of once a year).
2. In consultation with the Doc&Info WG Chair, explore ways to identify gaps in EURISCO. Once gaps are identified, the EURISCO Coordinator should approach relevant NFPs (with copy to respective NCs) in order to encourage gap filling. In case of difficulties, the EURISCO Coordinator should contact the Executive Committee for advice.
3. Prepare an inventory of data quality issues in EURISCO and a list of proposed actions to promote improvements.
4. Implement the proposal to provide access to C&E data from EURISCO.
5. Explore the possibility of linking EURISCO accessions to available pictures.
6. Provide a social network for EURISCO, establishing a Wiki as helpdesk and provide supporting tools.
7. Prepare a proposal to extend the MCPDs with suitable descriptors to flag historical accessions and/or records.
8. Create web services at National Inventory and EURISCO levels (where possible, utilizing resources of GBIF).
9. Approach the WIEWS DB Manager to agree on the establishment of links from EURISCO to the existing WIEWS list of institution codes.
10. Establish a feedback mechanism (button) per accession. Feedback would go automatically to NFP and holding genebank, after inspection/approval by the EURISCO coordinator.
11. A link should be established from EURISCO to the ECPGR website listing all CCDBs/Portals.
12. Initiate a small group composed of members of the Doc&Info WG and of the Wild Species Conservation in Genetic Reserves WG for discussion on the extension of CWR descriptors to complement EURISCO descriptors.
13. Contribute to categorization of genepools as part of the Global Crop Diversity Trust/Kew Millennium Seedbank initiative.
14. An extra field on "Availability of genomic data" could be added in EURISCO, referring to the original data provider (keeping in mind that individual genebanks probably will not store these data themselves, but rather link up to genomic data repositories). A review paper could be prepared about cases of linking-up genebanks with genomic data.
15. The establishment of a communication strategy should be considered to reach out to various user communities (possibly with the involvement of professional people).

Appendix V. Acronyms and abbreviations

AEGIS	A European Genebank Integrated System
C&E	Characterization and evaluation
CCDB	Central Crop Database
CRI	Crop Research Institute, Prague, Czech Republic
CWR	Crop wild relative
ECPGR	European Cooperative Programme for Plant Genetic Resources
EU	European Union
EURISCO	European Internet Search Catalogue
ExCo	Executive Committee
GBIF	Global Biodiversity Information Facility
GBIF-IPT	Global Biodiversity Information Facility Integrated Publishing Toolkit
GRIN	Genetic Resources Information Network (<i>of the USDA-ARS</i>)
INSPIRE	Infrastructure for Spatial Information in the European Community
IPK	Leibniz Institute of Plant Genetics and Crop Plant Research, Gatersleben, Germany
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
LR	Landrace
MCPDs	Multi-crop passport descriptors
MLS	Multi-lateral system
NC	National Coordinator
NCG	Network Coordinating Group
NENA	Near East and North Africa
NFP	National Focal Point
NI	National Inventory
NordGen	Nordic Genetic Resource Center, Alnarp, Sweden
PGR	Plant genetic resources
SC	Steering Committee
SEEDNet	South East European Development Network on Plant Genetic Resources
SMTA	Standard Material Transfer Agreement
UPOV	Union internationale pour la protection des obtentions végétales (International Union for the Protection of New Varieties of Plants), Geneva, Switzerland
USDA-ARS	United States Department of Agriculture-Agricultural Research Service
WG	Working Group
WIEWS	World Information and Early Warning System

Appendix VI. Agenda

Tailoring the Documentation of Plant Genetic Resources in Europe to the Needs of the User

*Workshop of the ECPGR Documentation and Information Working Group
20-22 May 2014, Prague, Czech Republic*

Monday, 19 May

18:00-20:00 *Registration in the hotel lobby*

Tuesday, 20 May

08:30-09:00 *Registration*

09:00-09:30 **Opening of the meeting**

Welcome by host and organizers

09:30-10:30 **Plenary presentations**

- EURISCO at a new location, background and consequences (*Lorenzo Maggioni*) 10 min
- EURISCO: past, present and future (*Stephan Weise*) 45+5 min

10:30-11:00 *Coffee break*

11:00-12:30 **Plenary presentations**

- EURISCO and the Art. 17 Information system of the ITPGRFA, the larger picture (*Francisco Lopez*) 25+10 min
- Genesys: status and roadmap (*Matija Obreza*) 25+10 min
- EURISCO as a support tool for AEGIS (*Jan Engels*) 15+5 min

12:30-14:00 *Lunch*

14:00-15:30 **Plenary presentations**

- Data exchange: the Darwin Core and other approaches (*Dag Terje Filip Endresen*) 25+5 min
- C&E data: the EURISCO standard (*Jonas Nordling*) 25+5 min
- GRIN-Global, the solution for PGR documentation (*Iva Faberová*) 25+5 min

15:30-16:00 *Coffee break*

16:00-17:00 **Plenary presentations**

- Central Crop Databases, the current status (*Elinor Lipman*) 25+5 min
- EURISCO and CCDBs, coverage and overlap (*Theo van Hintum*) 25+5 min

17:00-17:30 **Plenary discussions**
Outcomes of the first day

17:30 *Closing first day*

Wednesday, 21 May

09:00-10:10 **Plenary presentations**

- Experiences managing a CCDB
 - Cucurbits (*María José Díez*) 10 min
 - *Pyrus* (*Marc Lateur*) 10 min

Q&A, *input from the participants*, discussion

- PGR portals 'give the user what the user needs' (*Frank Menting*) 25+5 min
- Explanation of the group discussions (process and expected outcome)

10:10-10:40 *Coffee break*

10:40-12:30 **'Identifying the issues' – Group discussions**
EURISCO, CCDBs and PGR portals
4 groups; either discussing only EURISCO issues (1 group), or only CCDB/PGR-Portal issues (1 group) or both items (2 groups)
EURISCO issues to be addressed:

- Improvement of quality and coverage of passport data in EURISCO
- Aspects of the inclusion of C&E data in EURISCO
- Future and new roles of EURISCO

CCDB/PGR-Portal issues to be addressed:

- Future of CCDBs in relation to other information sources
- Comparison of CCDBs and PGR portals
- Feasibility / opportunity / requirements of turning a CCDB into a PGR portal

12:30-14:00 *Lunch*

14:00-15:45 **Presentation outcomes and plenary discussion**
Presentation outcome groups (4 x 10 min)
Plenary discussion
Formulation of aspect of a consensus

15:45 **Visit CRI Genebank facilities**

17:30 *Return to hotel*

18:30 *Workshop dinner (in the hotel)*

Thursday, 22 May

- 09:00-10:00 **Plenary presentations**
- Linking *ex situ*, on-farm and *in situ* documentation in EURISCO – a case from Germany (*Frank Begemann*) 25+5 min
 - European genebanks in the genomics era (*Theo van Hintum*) 25+5 min
- 10:00-10:30 *Coffee break*
- 10:30-12:30 **'Drafting the roadmap' – Group discussions**
EURISCO, CCDBs, PGR portals and possibly other issues
4 groups; each group either drafts the elements of 'A roadmap towards the future of EURISCO' or the elements of 'A roadmap for the future development of CCDB and PGR Portals'. If there is sufficient interest in the audience a group can also work on the issue of 'X-omics; the best way for the genebank community to anticipate' or 'The needs of *in situ* PGR documentation'.
- 12:30-14:00 *Lunch*
- 14:00-15:30 **Presentation outcomes and plenary discussion**
Presentation outcome groups (4x 10 min)
Plenary discussion
Formulation of aspect of a consensus
- 15:30-16:00 *Coffee break*
- 16:00-17:00 **Wrap-up and closing of the meeting**
- 17:00 *End*

Appendix VII. List of participants

Tailoring the Documentation of Plant Genetic Resources in Europe to the Needs of the User

Workshop of the ECPGR Documentation and Information Working Group 20-22 May 2014, Prague, Czech Republic

(Listed in alphabetic order by surname)

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