

Networking on conservation and use of plant genetic resources in Europe and Asia

Report of the First European Workshop

05 October 2007

Agricultural Institute of Slovenia, Ljubljana, Slovenia



M. Schmidt and S. Kell, compilers



DIVERSEEDS

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Hosted by the Agricultural Institute of Slovenia, Ljubljana, Slovenia
In association with the On-Farm Task Force of the ECPGR *In Situ* and On-Farm Conservation
Network

Organizers

The Organization for International Dialogue and Conflict Management, Austria
The University of Birmingham, United Kingdom
Secretariat of the European Cooperative Programme for Plant Genetic Resources
Slovenian Institute for Hop Research and Brewing, Slovenia

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1.0 Workshop introduction

1.1 Context of the first European workshop

The first DIVERSEEDS European workshop, for the first time, brought all European project partners together. The workshop provided an opportunity to intensify our intra-regional discussion on issues regarding conservation and use of plant genetic resources (PGR). As the term 'networking' in the project title indicates, the aim of DIVERSEEDS is not to discuss a particular topic but '*to establish a communication platform, and to promote knowledge exchange on genetic resources*'. Therefore, our primary aims are to:

- Find PGR topics that are of mutual interest to European and Asian partners;
- Find PGR topics where one region has a lot of knowledge and expertise and the other has the need or the will to make progress on.

We will then use these topics as a way to intensify the dialogue between the regions.

It was clear that before the regions started interacting with each other, it was necessary for them to have intra-regional discussions first. In addition to the European workshop, two other DIVERSEEDS regional workshops have taken place: one in China (Beijing, 18 September 2007) and one in SE Asia (Hanoi, 28 September 2007). The outcome of all three regional workshops will be discussed and taken forward at the DIVERSEEDS First International Meeting, which will take place at Bioversity International, Rome, December 4–7, 2007. This procedure ensures that we agree on *intra*-regional issues first (regional workshops) and then discuss *inter*-regional issues (international meeting).

Prior to the first European workshop, the first steps for our intra-regional discussion were already laid by putting together and starting to discuss an extensive list of PGR issues. The first European workshop provided a platform to discuss these issues further and specifically to:

- Find issues that are considered important for the European region;
- Find issues where we have sufficient competence (or access to other people or institutions with sufficient competence);
- Look for important issues where colleagues from the other regions could possibly assist us.

1.2 Workshop objectives

The specific objectives of the first European workshop were to:

1. Introduce the DIVERSEEDS team members and external advisory board.
2. Update participants on project activities and progress.
3. Define the context and objectives of the first European workshop.
4. Review and discuss the list of issues regarding conservation and sustainable use of PGRFA selected by the European project partners:
 - 4.1 Present the background to development of the list of issues and give a brief overview to the workshop participants;
 - 4.2 Review the list of issues and invite comments from workshop participants for general discussion;
 - 4.3 Agree on the structure of the issues document and the summary of the issues.

5. Develop a proposal for Euro – Asian inter-regional discussion of key PGRFA issues:
 - 5.1 Review the list of issues selected by the Asian project partners;
 - 5.2 Discuss and define the criteria for selecting key issues for inter-regional dialogue;
 - 5.3 Select and prioritize key issues for inter-regional discussion.
6. Discuss DIVERSEEDS networking opportunities and exit strategy.
7. Review DIVERSEEDS communication challenges and dissemination activities.
8. Introduce the proposed online database of Euro-Asian cooperation.
9. Agree on a draft agenda for the first international meeting.
10. Discuss plans for the second European workshop and outline future project activities/next steps.
11. Attend to any other business, as necessary.

The workshop agenda is presented in Annex 3.

1.3 Participant introductions

The workshop participants introduced themselves, giving a short resume of their expertise and potential contributions to the DIVERSEEDS project. Markus Schmidt introduced the European members of the External Advisory Board (EAB) who were unable to attend the workshop, as well as the Asian partners and Asian members of the EAB. A list of workshop participants and those unable to attend can be found in Annex 4.

1.4 Update on project activities

Markus Schmidt provided an outline of the DIVERSEEDS project and an update on progress.

The primary aims of DIVERSEEDS are to:

- Open the European plant genetic resources (PGR) networks to Asian research colleagues working in centres of origin, to establish a communication platform and to promote knowledge exchange on genetic resources.
- Assist in the implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and contribute to overcome its gaps.

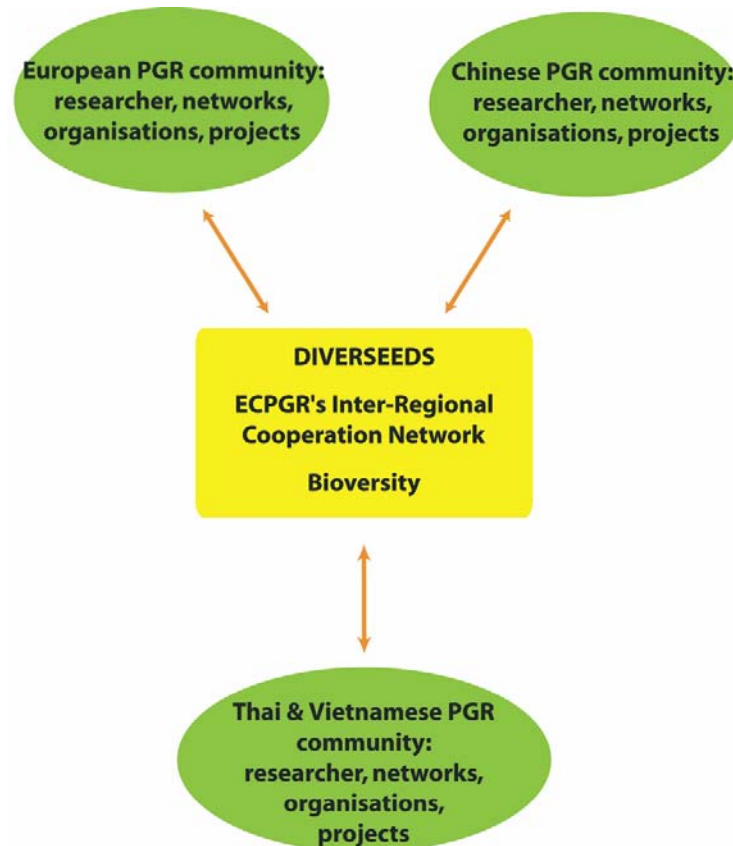
To achieve these aims, the DIVERSEEDS project has five basic steps:

1. Identification of main PGR issues and stakeholders.
2. First regional workshops and international meeting.
3. Open discussion.
4. Second regional workshops and international meeting.
5. Dissemination.

To date, the European and Asian partners have independently identified and produced preliminary lists of key PGR issues (see Section 2.0). These issues have been brought together into three lists—one for Europe, one for China and one for SE Asia (Thailand and Vietnam). Two Asian regional workshops have been held, one in China and one in Vietnam. The results of these workshops, together with the outcomes of the first European workshop, will feed directly into the inter-regional discussions that will be held at the first international meeting

The DIVERSEEDS project will work in close collaboration with the Inter-Regional Cooperation Network of the European Cooperative Programme on Plant Genetic Resources (ECPGR) and Bioversity International, building on the collaborative links already fostered. Figure 1 is a diagrammatical representation of the linkages that will be established and promoted by DIVERSEEDS.

Figure 1. Collaborative links established and promoted by DIVERSEEDS



2.0 Discussion of PGR issues

2.1 Background to the development of the list of issues and brief overview

To work towards the establishment of a communication platform and the promotion of knowledge exchange between Europe and Asia, key issues of relevance to PGR conservation and sustainable use have been identified by the European and Asian partners. From the European perspective, a first comprehensive collection of important issues, questions and possible knowledge gaps was compiled with input from each of the European partners. This was achieved through meetings with individual partners and the project coordinator at the start of the project, subsequent email correspondence and via the DIVERSEEDS Wiki¹. The resulting preliminary list of PGR issues is presented in Annex 1.

¹ See: <http://www.diverseeds.eu/wiki/pmwiki.php?n=PmWiki.Main>

2.2 Review of the issues with comments from workshop participants and general discussion

The workshop participants had a general discussion on the preliminary list of PGR issues identified by the European project partners, raising a number of specific points for further consideration.

Some key matters discussed during this session included:

- The need to carefully consider the requirements of the different regions involved in the project and to recognize that the collaboration fostered by the project will be bilateral (i.e., a two-way exchange of knowledge).
- The level of collaboration that we are aiming for and whether the resulting collaboration will be formal or informal:
 - Collaboration will be largely informal between individuals and organizations with similar interests and at network/regional level; however, the issues selected by the partners will largely determine the level of collaboration. For example, issues linked to the ITPGRFA will demand more formal collaboration at international level.
 - It was pointed out that at individual level, specific research projects may be the most appropriate means of collaboration and that within the European team, the partners represent different levels (e.g., Bioversity – international level; University of Birmingham – organizational/individual level).
 - There was general agreement that where possible, existing networks would be an important vehicle for communication and collaboration; however, it was also noted that in some regions, existing networks are largely inactive. DIVERSEEDS provides an opportunity to help bring existing networks together to gain inspiration and learn from each other.
 - Individuals and organizations who are not members of existing networks should not be excluded.
 - Organizations such as botanic gardens and nature conservation agencies will be important collaborators.
 - A key issue is that of a badly coordinated approach to collaboration at the intra-national level. Frequently, different organizations and individuals are working in competition with one another and not communicating. Many countries need to build on their infrastructure before establishing a workable national PGR programme.
 - There is currently no single model for establishing national PGR programmes. Could existing networks help in the establishment of national PGR programmes? Individuals can benefit and learn by participating in network activities, take ideas back to their home institutes and build on what they have learned.
 - The problem of funding of networks is an issue.
 - The CGIAR Centres may present strategic opportunities for collaboration.
- The opportunity that DIVERSEEDS provides to look at training needs and capacity building, which is a potential area for collaboration and would be a sustainable outcome of the project. In addition to exploring specific training programmes, organizations can benefit from learning about the operation of other organizations and networks with similar aims through organized visits (e.g., Chinese delegates visited Germany to learn about the German PGR programme).
- Plant breeding is an important issue that should be considered for inclusion in the prioritized list of issues, since it can be seen to contribute to PGR conservation and sustainable use.

2.3 Agreement on structure and summary of issues

A summary of the preliminary European list of issues is presented in Table 1. The list was also analysed to produce a preliminary classification of the issues (Table 2). The workshop participants agreed that the summary and preliminary classification of the issues was an accurate reflection of the overall preliminary list of issues identified.

Table 1. Summary of the preliminary list of PGR issues identified by the European project partners

Partner	Description
Bioversity	Task sharing and capacity building
	Characterization and evaluation for conservation
	Task sharing through collaboration
	<i>In situ</i> and on-farm conservation
	Documentation and information
	Establish a firm basis of mutual trust
	"Political/legal" agreement
U. Birmingham	CWR and landrace inventories
	PGR and climate change
	Genetic Gap Analysis / Integrated approach
	Loss of genetic diversity – 2010 target (characterization)
	Enhanced utilization of conserved diversity
	Threat assessment
	Conservation Prioritization
	Effective legislation for PGR protection
	National and regional PGR documentation
	Practical Taxonomy
U. Kassel	Integrative approach for conservation
	Home gardens and traditional farming (incentives, participation)
	Support & benefit to farmers and local communities
	Using PGR: are there markets (economy)
	Promotion of neglected and underutilized species
	Technical assistance, capacity building, scientific cooperation
Volcani Centre	Red list for crops
	Setting priorities for collection and <i>ex situ</i> conservation
	<i>Ex situ</i> conservation – Collection strategies (technical question)
	Criteria set to measure successful conservation
	On farm: traditional farmer knowledge and incentives
	Benefit to farmers
IDC	Modern methodologies to support PGR conservation
	ITPGRFA facilitation by Europe
	<i>Ex situ</i> : lessons learned from AEGIS
	<i>In situ</i> : ITPGRFA
	<i>In situ</i> and climate change
	On-farm: benefit to farmers, farmer incentive
	Home gardens: cooperation with civil society
	Synthetic biology: conservation and use
	Integrated approach
	Information system
	Neglected and underutilized crops (NUS)
	Dissemination and public awareness
	Financial support and capacity building
	Corporate social responsibility: cooperation with industry

Table 2. Preliminary classification of the European list of PGR issues

Task sharing through collaboration and capacity building	Characterization and evaluation for conservation / PGR Documentation and information	Sustainable utilization (traits of agronomic importance)	<i>In situ</i> and on-farm conservation, integrated approach	Other
Technical assistance, capacity building, scientific cooperation	Practical Taxonomy	Enhanced utilization of conserved diversity	Home gardens and traditional farming (incentives, participation)	PGR and climate change/ <i>in situ</i>
Corporate social responsibility: cooperation with industry	Loss of genetic diversity – 2010 target (characterization)	Using PGR: are there markets (economy)	Genetic Gap Analysis - Integrated approach	Dissemination public awareness
Financial support and capacity building	Conservation Prioritization	Promotion of neglected and underutilized species	Integrative approach for conservation	
ITPGRFA facilitation by Europe	Threat assessment	Synthetic biology: use	Benefit to farmers	
<i>Ex situ</i> : lessons learned from AEGIS	Modern methodologies to support PGR conservation	Neglected and underutilized crops (NUS)	Support & benefit to farmers and local communities	
home gardens: cooperation with civil society	<i>Ex situ</i> conservation – Collection strategies		Setting priorities for collection and <i>ex situ</i> conservation	
Effective legislation for PGR protection	Criteria set to measure successful conservation		On farm: traditional farmer knowledge and incentives	
"political/legal" agreement	Red list for crops		CWR and landrace inventories	
Information system	Synthetic biology: conservation		<i>In situ</i> : ITPGRFA	
National and regional PGR documentation			On-farm: benefit to farmers, farmer incentive	
establish a firm basis of mutual trust			Integrated approach	

3.0 Towards an inter-regional dialogue

3.1 Review of the Asian partners' list of PGR issues

The workshop participants briefly reviewed and discussed the Asian partners' list of issues, which is summarized in Annex 2. Some points of discussion that were raised during this session were:

- The Asian and European partners have identified many of the same issues. However, there are some issues identified by the Asian partners that are not included in the European list of issues. These include:
 - Intellectual property rights (IPR)
 - Genetically modified organisms (GMOs).
 - How farmers can benefit from the ITPGRFA.
- Regarding training, we need to ask the Asian partners to identify their needs (if any), as well as the European partners identifying how the Asian partners can help us.

3.2 Discussion and definition of the criteria for selecting key issues for inter-regional dialogue

A means of identifying issues of highest priority to be taken forward to the inter-regional discussion level was explored. Four main criteria for selection were identified:

1. Issues where we have the necessary expertise and competence.
2. Issues where our contribution—with our limited resources—can make a real impact.
3. Issues that we want to learn about from colleagues in Asia.
4. Issues that can be practically implemented.

Before selecting the highest priority issues, the participants discussed some specific issues; including:

- From the European perspective, access to genetic diversity for breeding and research is an important issue. This issue is linked directly to the implementation of the ITPGRFA.
- We are interested in both general methodologies and specific crop groups. For example, the University of Birmingham is interested in how genetic reserves are established in Asia, while the Federal Centre for Breeding Research on Cultivated Plants in Germany is interested in crop specific information (e.g., *Beta* in China).
- Issues of access to and exchange of information:
 - Information exchange has to be standardized.
 - It could be achieved via networks. For example, European networks could provide tools to colleagues in Asia for information collation and exchange.
 - Is there an opportunity to translate databases to promote access to and exchange of information? For example, there is a comprehensive Chinese database on buckwheat, soybean etc.; could this be translated into English?

3.3 Selection and prioritization of key issues for inter-regional discussion

Markus Schmidt proposed a methodology for starting the selection and prioritization of key issues to take forward for inter-regional discussion, which was implemented at the workshop. The 12 participants were asked to rank each issue listed in Table 1, giving them a score of 0 – 10, 0 being of no importance and 10 being of highest importance. Each issue was assigned a ranking according to the number of times it was mentioned as being of top priority (i.e., scored 10). The initial results of this exercise are presented in Table 3.

The results of this preliminary ranking give a rough indication of the issues considered to be greatest priority from the European partners' perspective and will be used to feed into the inter-regional discussions to be held at the first international meeting. However, the lowest ranking issues and those assigned no ranking should not be considered unimportant and therefore should not be ignored in future discussions, either during the lifetime of the DIVERSEEDS project, or later. This preliminary prioritization also needs to be assessed in the light of results from the Asian priority lists, which will be discussed at the first international meeting; therefore, it is by no means a final prioritized list of issues.

Table 3. Initial results of the European list of PGR issues ranking exercise

Origin	Short description of issue	No. of times issue mentioned as a top priority (<i>n</i> = 12)	Rank
Bioversity	Task sharing and capacity building	9	1
Bioversity	Documentation and information	7	2
Volcani Centre	Modern methodologies to support PGR conservation	5	3
IDC	<i>Ex situ</i> : lessons learned from AEGIS	4	4
Birmingham	Enhanced utilisation of conserved diversity	3	5
Kassel	Technical assistance, capacity building, scientific cooperation	3	5
IDC	<i>In situ</i> and climate change	3	5
NEW	Training	3	5
Bioversity	<i>In situ</i> and on-farm conservation	2	6
Bioversity	Establish a firm basis of mutual trust	2	6
Birmingham	PGR and climate change	2	6
Birmingham	Conservation prioritization	2	6
IDC	On-farm: benefit to farmers, farmer incentive	2	6
Bioversity	Characterization and evaluation for conservation	1	7
Bioversity	Task sharing through collaboration	1	7
Bioversity	"Political/legal" agreement	1	7
Birmingham	CWR and landrace inventories	1	7
Birmingham	Loss of genetic diversity – 2010 target (characterization)	1	7
Birmingham	Threat assessment	1	7
Birmingham	Effective legislation for PGR protection	1	7
Kassel	Home gardens and traditional farming (incentives, participation)	1	7
Kassel	Support & benefit to farmers and local communities	1	7
Kassel	Using PGR: are there markets (economy)	1	7
Volcani Centre	Setting priorities for collection and <i>ex situ</i> conservation	1	7
Volcani Centre	Criteria set to measure successful conservation	1	7
Volcani Centre	On farm: traditional farmer knowledge and incentives	1	7
IDC	ITPGRFA facilitation by Europe	1	7
IDC	<i>In situ</i> : ITPGRFA	1	7
IDC	Home gardens: cooperation with civil society	1	7
IDC	Information system	1	7
IDC	Neglected and underutilized species (NUS)	1	7
IDC	Corporate social responsibility: cooperation with industry	1	7
Birmingham	Genetic gap analysis / integrated approach	0	–
Birmingham	National and regional PGR documentation	0	–
Birmingham	Practical taxonomy	0	–
Kassel	Integrative approach for conservation	0	–
Kassel	Promotion of neglected and underutilized species	0	–

Origin	Short description of issue	No. of times issue mentioned as a top priority ($n = 12$)	Rank
Kassel	Red list for crops	0	–
Volcani Centre	<i>Ex situ</i> conservation – collection strategies (technical question)	0	–
Volcani Centre	Benefit to farmers	0	–
IDC	Synthetic biology: conservation and use	0	–
IDC	Integrated approach	0	–
IDC	Dissemination and public awareness	0	–
IDC	Financial support and capacity building	0	–

Ultimately, the final selection of key issues for inter-regional dialogue (to be undertaken at the first international meeting) will need to consider the following criteria:

- **Feasibility:** project partners should have the necessary expertise and competence.
- **Impact:** issues where we can make a real impact and that can be practically implemented.
- **Superposition:** issues that are of interest for all three regions.
- **Collaboration:** other activities that are planned/ongoing and that could provide an opportunity to collaborate.

4.0 DIVERSEEDS networking and dissemination activities

4.1 Networking opportunities, including DIVERSEEDS exit strategy

Networking opportunities and the project exit strategy were discussed by the workshop participants. Some key issues and ideas discussed were:

- How the collaborative links established by DIVERSEEDS will be taken forward at the end of the project:
 - DIVERSEEDS will contribute to the ECPGR Inter-Regional Cooperation Network (IRCEN), which is a major vehicle for taking the collaboration forward.
 - Other networking opportunities include:
 - Crop specific ECPGR networks
 - Bioversity regions (e.g., CWANA)
 - The FAO regions
 - IUCN regional offices
 - IUCN Specialist Groups – CWRSG, China Plant SG, Medicinal Plant SG
 - Agricultural Attachés
 - Does China have crop-specific networks?
 - Do the Asian countries have national crop-specific information systems?
- Funding is an important issue for sustainability:
 - Inter-regional collaboration could help to obtain funding (e.g., for training purposes).
 - Possible funding sources include UNEP/GEF and the EU 7th framework programme.
 - Technical assistance from European countries (e.g., German Technical Cooperation (GTZ), Asian-European University Network (ASEA UNINET))
 - Specific funding opportunities will be discussed at the first international meeting.

4.2 Review of dissemination activities and communication challenges

Markus Schmidt outlined plans to make a short documentary film to raise awareness on PGR conservation and sustainable use.

- Ideas for filming locations and topics were discussed; these included:
 - Home gardens in Sicily, Italy (ref. Lorenzo Maggioni, Bioversity) where both landraces and CWR can be found at the same sites.
 - Traditional farms in Umbria, Italy, where landraces are grown.
 - Potato fair in the UK at the end of January 2008 (ref. Bob Sherman, Garden Organic)
 - Pro Species Rara show garden, June/July 2008 (ref. Belá Bartha).
 - Grapevine breeding in Germany (ref. Lothar Frese).
 - Rice breeding and cultivation (could already be covered by IRR).
 - *Brassica* in European and Asian countries (ref. Brian Ford-Lloyd)
 - *In situ* CWR conservation in Israel (ref. Oz Barazani)
 - Farm in Seewinkel Frauenkirchen, Austria with over 400 tomato varieties (ref. Ralph Gretzmacher)
 - Traditional farms in SE Europe (e.g., Romania, Bulgaria (ref. Eva Thörn)
 - Svalbard Global Seed Vault (ref. Eva Thörn for contacts)
- Participants discussed ideas for dissemination of the film; including:
 - Schools
 - Adult education programmes
 - Chinese television
 - WDR (Westdeutscher Rundfunk), a German television channel
 - 'Facebook' or 'MySpace' for online distribution; possibly also via the Bioversity or ECPGR websites.
 - The public awareness office at Bioversity International will be approached for advice.
- The need to include CWR as well as landraces was stressed.

A first concept of the film has been developed by Camillo Meinhart and will be discussed at the first international meeting.

4.3 Introduction to the proposed online database of Euro-Asian cooperation

The workshop participants discussed the proposal to establish an online database of PGR experts. The general opinion was that this was an enormous task that was not possible to achieve during the short lifetime of the DIVERSEEDS project and was not cost-effective. Therefore, options for building on existing databases and/or establishing links were discussed. These included:

- ECPGR, which is already developing a database of expert contacts.
- Links to Asian databases of experts (translation may be needed).
- Development of a web portal linking to a range of contacts.
- Could such a database be developed in the context of the ECPGR IRCN?
- Links to DIVERSEEDS project partners' websites.
- Links to NGO websites, e.g.
 - The Biological Farming Association 'ELKANA', Georgia (<http://www.elkana.org.ge/>)
 - SwedenBIO (<http://www.swedenbio.com/>)
 - Redes de Semillas en España (<http://www.vidasana.org/agribio/semillas.asp>)
 - Réseau Semences Paysannes (<http://www.semencespaysannes.org/>)
 - Kokopelli Seed Foundation (<http://www.kokopelli-seed-foundation.com/>)
 - Colher Para Semear (<http://gaia.org.pt/?q=node/417>)
 - Association for the Conservation of Diversity of Crops (VEN) (<http://www.nutzpflanzenvielfalt.de/>)
 - Initiative of GE-Free Seed Breeders (IG Saatgut) (<http://www.gentechnikfreie-saat.de/index.html>)
 - Save Our Seeds (<http://www.saveourseeds.org/>)
 - Protect the Future (<http://www.vedegylet.hu/index.php>)
 - Arche Noah (<http://www.arche-noah.at/etomite/>)

- Garden Organic (<http://www.gardenorganic.org.uk/>)
- Pro Specie Rara (<http://www.prospecierara.ch/>)
- Links to other websites (e.g., PGR Forum, GBIF) and promote reciprocal links back to the DIVERSEEDS website.
- Links to the mailing lists of existing networks.

Information that should be included: name, organization, contact details, projects, publications, link to personal or institute website, research interests, interest in cooperation.

5.0 Next steps

5.1 First international meeting: presentation and discussion of draft agenda

The proposed schedule for the first international meeting was discussed and refined. The meeting will take place from Wednesday 5th to Friday 7th December 2007 at Bioversity International HQ in Rome, Italy, with an additional half day on the afternoon of Tuesday 4th December spent at FAO for discussions with the Secretariat of the ITPGRFA.

The incorporation of a technical workshop as part of the meeting was discussed. It was decided that topics related to both *in situ* and *ex situ* conservation would be included. Two presentations will be given by European partners: Bioversity (Jan Engels) will introduce the AEGIS project and the University of Birmingham (Nigel Maxted) will present methodologies for the conservation and sustainable use of CWR. The Chinese and SE Asian partners will be invited to give presentations on *in situ* and *ex situ* conservation activities in their regions. These presentations will form the basis of discussions and feed into the selection of key issues for inter-regional dialogue.

A summary of the programme for the first international meeting is presented in Table 4.

Table 4. Summary of the programme for the DIVERSEEDS first international meeting

Tuesday 4th December	<ul style="list-style-type: none"> - <u>Afternoon</u> Roundtable discussion at the Food and Agriculture Organization of the United Nations (FAO)
Wednesday 5th December	<ul style="list-style-type: none"> - <u>Morning</u> <ul style="list-style-type: none"> - Introductory session - Reports of the first round of regional workshops - Discussion session: towards an inter-regional dialogue - <u>Afternoon</u> ECPGR – DIVERSEEDS – Bioversity inter-regional session
Thursday 6th December	<ul style="list-style-type: none"> - <u>Morning</u> Technical workshop - <u>Afternoon</u> Selection of priority issues
Friday 7th December	<ul style="list-style-type: none"> - <u>Morning</u> <ul style="list-style-type: none"> - Towards inter-regional cooperation on priority issues - Public awareness and future DIVERSEEDS activities

Participants discussed additional experts who could be invited to the first international meeting. These included the DIVERSEEDS EC Project Officer and the President of CAAS. It was decided that the President of CAAS could be more appropriately invited to attend the second international meeting in China in 2008. Markus Schmidt will provide a list of additional experts who could be invited to attend the meeting.

Funding opportunities will be discussed at the meeting. Korous Khoshbakht and Nigel Maxted agreed to draft some concept notes for funding proposals for discussion. It was suggested that the Asian partners are also asked to prepare ideas for discussion. It was noted that these should be specific project proposals for bilateral collaboration, rather than more generic projects linked to the list of PGR issues.

The list of PGR issues and ranking exercise will be further analysed and refined by Markus Schmidt in preparation for the meeting. The Asian partners will also be asked to produce similar ranked lists for comparison. These will be circulated prior to the first international meeting to allow for some comment and discussion via email to lay the foundations for discussions at the meeting.

5.2 Future workshops/meetings and project activities

A second round of regional workshops will take place in Spring/early Summer 2008. Ideas for a suitable meeting for piggy-backing the second European workshop onto were discussed. Lorenzo Maggioni noted that there were no ECPGR meetings that would be suitable to hold the meeting in conjunction with around that time. Oz Barazani suggested that the meeting could be held in Israel and that visits to CWR genetic reserves could be organized as part of the meeting. Participants were asked to think about other possible options, which will be discussed at the first international meeting.

The second Chinese workshop will take place at the end of July in Zhejiang Province and the second SE Asian workshop will take place in Thailand (venue and dates to be decided).

A proposed e-conference to take place during 2008, prior to the second international meeting was also discussed and participants were asked to think about potential invitees.

5.3 Any other business

The possibility of exchange opportunities was discussed (e.g., Erasmus Mundus (http://ec.europa.eu/education/programmes/mundus/index_en.html))

6.0 Summing up and close of workshop

Markus Schmidt outlined the expected outcomes of DIVERSEEDS project:

- Contribute to network building for European and Asian cooperation on PGR issues, that:
 - Strengthens the interaction between ECPGR, EA-PGR, and RECSEA, by putting effort into the ECPGR-IRCN.
 - Involves the formal and informal sector.
- Recommendations of strategic research questions for Europe, China and SE-Asia (and global) targeted at:
 - Funding organizations in Europe and Asia (and global); e.g. EC-FP7.
 - Exchange of experts and students.
- Provide PGR community in Europe and Asia with suggestions where to obtain funding for further cooperation.
- Define specific issues for further bilateral cooperation.
- Real PGR project ideas involving European and Asian partners.
- Contribution to a database that facilitates cooperation between European and Asian partners.
- Recommendations to overcome the gaps of the ITPGRFA.
- Suggest to Chinese and Vietnamese decision makers to take a look at the ITPGRFA (problem: how can this be measured—the aim is too ambitious?)
- Short documentary film explaining the need for conserving and using agrobiodiversity in Europe and Asia.

Annex 1. European list of PGR issues

Compiled by Markus Schmidt, this annex includes the original contributions from the European DIVERSEEDS project partners regarding issues for the conservation and use of PGR.

A1.1 Bioersity

List of issues identified within the ECPGR context for DIVERSEEDS. By Jan Engels, Lorenzo Maggioni, Jozef Turok

A1.1.1 ECPGR priorities 2004–2008

As a result of a questionnaire filled in by the ECPGR (European Cooperative Programme for Plant Genetic Resources www.ecpgr.cgiar.org) National Coordinators, carried out in 2003 in preparation for Phase VII (2004–2008) of ECPGR, the ECPGR Steering Committee decided in October 2003 that priorities for Phase VII should focus on 4 main issues:

- Characterization and evaluation for conservation (e.g. genetic integrity, genetic drift, diversity analysis), and sustainable utilization of genetic resources (including for traits of agronomic importance) using inter alia modern technologies such as molecular markers, genomics and bioinformatics;
- Task sharing through collaboration, rationalization and specialization of activities and collections (formation of core collections, identification of most original samples) to maximize efficient use of human and financial resources;
- *In situ* and on-farm conservation, including an analysis of material subject to *in situ* and on farm conservation, and development of conservation and management techniques in relation to the existing opportunities of *ex situ* conservation;
- Documentation - establishment, completion, improvement and maintenance of national PGR inventories, central crop databases, including validation of data, integration of characterization and evaluation data, improved and integrated data management, completion of infrastructure for automatic up-dating and completion of the national inventories and the EURISCO catalogue in the EPGRIS project.

A1.1.2 ECPGR priorities 2009–2013

At its mid-term meeting in September 2006, the Steering Committee reconfirmed that the priority issues defined for Phase VII will still be valid for Phase VIII (2009-2013), as modified:

- "Task sharing and capacity building" will be the top priority issue for Phase VIII, considering the need to keep up the momentum for the implementation of AEGIS project. The element of "capacity building" was added for Phase VIII, upon consideration of the additional need to devote part of the existing collaboration to enhancing the capacity of the less developed sectors of the European genetic resources community.
- "Characterization and evaluation" will still be very important, since this is the activity that enables making the connection between *ex situ* conservation and use.
- "*In situ* and on-farm conservation and management" will still be important and due consideration should be given to the urgency of preventing or reducing the loss of *in situ* and on-farm genetic diversity. **H&K: Having a Red List for crop plants and their wild relatives will be necessary.**
- "Documentation and information" will still be very important, in support of actions 1-3 above.

Note from Jan to Markus (as per his discussion with Lorenzo) and for Markus to react to: Thank you very much for these inputs. I think that they should be adequate for the time being as a first input into the DIVERSEEDS project. However, as Markus was stating a few times I also think that we should make an additional step and analyze what the "issues" are that underlie these priorities. For instance, in order to promote regional collaboration it will be important to establish a firm basis of mutual trust and an issue could be on how to establish such trust? One important element of the latter could/would be the development of a transparent and widely supported "quality management system" (as we are planning to develop in AEGIS) and another aspect could be (or is) a transparent and clear "political/legal" agreement among the partners on which such collaboration is based (also this aspect we are planning to tackle in AEGIS through a collective MOU). Although I take your point of running the risk of becoming "subjective" I wonder if we should not try to make a similar analysis for the other points (e.g. documentation cum information management, incl. sharing: what are the fundamental issues that we are facing? Is it also a lack of trust, is it lack of capacity, lack of good quality of data, or what?).

A1.2 University of Birmingham

The challenges from a European perspective. By Brian Ford-Lloyd and Nigel Maxted

A1.2.1 CWR and landrace inventories

- *In situ* conservation of crop wild relatives is strongly facilitated by the availability of the CWR catalogue for the Euro+Med region, originating from PGR Forum. Within Europe its expansion in relation to demographic and threat data should be targeted and its value exploited.
- We should be attempting to transfer this capability to other parts of the world, and in which case assessment of available baseline data will be required.
- **H&K: Agreed**
- *In situ* conservation of landraces in Europe is currently poorly served both by a lack of data and by a lack of understanding of drivers of on-farm conservation. Data acquisition is therefore a major priority for the development of a European on-farm landrace catalogue.

A1.2.2 Plant genetic resources and climate change

- Climate-proofing of *in situ* conservation of crop wild relatives and landraces is a priority for urgent consideration.
- If our intention is to move forward to the identification of genetic reserves for CWR conservation and to the identification of farms for on-farm conservation of landraces, how will these designations be affected by climate change in the short, medium and long term?
- To what extent can we climate-proof our conservation efforts by selecting reserves and farms most immune to climate change? Will it be possible to identify geographical 'pockets' of least climate change, or can we determine the extent to which our target species, crop or wild species, are environmentally adaptive.
Throughout the short history of PGR *in situ* conservation it has always been argued that this form of conservation allows for continued adaptation to the environment rather than being static as in *ex situ* conservation – is this realistic under climate change? – does climate change make *in situ* conservation more important or less valid as a methodology?

A1.2.3 Genetic gap analysis

- In order to ensure effective CWR and landrace conservation and to climate-proof *in situ* conservation it is important to consider much more carefully the comparison of natural and conserved genetic diversity and the relationship between *in situ* and *ex situ* conservation.
- With limited budgets for conservation and the magnitude of the perceived threat to CWR and landrace diversity in Europe recently developed methodologies for genetic gap analysis enable more efficient targeting of conservation efforts.
- Within Europe it is clear that we have little information about the overlap or complementarity of *in situ* and *ex situ* conservation and this should be an aim of future documentation.
- The urgency of this is highlighted by the relatively small proportion of crop wild relative species existing within *ex situ* collections. It will be important to undertake detailed analysis of the EURISCO data as a prelude to climate-proofing.

A1.2.4 Loss of genetic diversity – 2010

- The component of genetic diversity referred to in the 2010 targets currently does not represent a realistic goal as far as curtailing its loss is concerned. There are more and less obvious reasons for this.
- More obvious is the fact that there is very little baseline data on which to base assessments of genetic erosion and acquiring such data would be extremely expensive and time consuming. Less obvious is the fact that the actual population tools for analysing genetic data may be too crude for large scale use, to be able to identify anything but the most extreme trends in loss of genetic diversity.
- There is a need to develop, test and apply direct and proxy indicators of change in genetic diversity and distinguish natural from deleterious change.
- There is a further need to identify more precisely the drivers of genetic diversity loss and to propose strategies that negate their effects.

A1.2.5 Enhanced utilization of conserved diversity

- It is widely recognized that conservation and use are intimately linked and that continued conservation of resources should be directly linked to demonstration of exploitation (BFL2) of conserved diversity.
- As such there is a need to improve the conservation and use link and ensure conserved germplasm is more regularly exploited.
- One approach would be to undertake virtual characterization of conserved populations on the basis of their passport data to identify potential candidate germplasm with desired traits, e.g. adaptations to environmental stress, pest and disease resistance and climate-proofing.
- Virtual characterization would be accomplished for populations by overlaying distribution maps of PGR with GIS-layers on environmental data including climate and soil. Statistical analysis techniques will be used to classify and predict the distribution of certain characteristics.

A1.2.6 Threat assessment

- Effective *in situ* PGR conservation is often associated with assessment of threat and the most wide-spread means of threat assessment is the application of the IUCN Red List Criteria.
- There is a need for systematic assessment of threat for European PGR.
- However, the IUCN Red List Criteria were developed for threat assessment at the taxon (most commonly species) level and are not so useful when assessing threat to CWR and landrace diversity.
- Methodologies need to be developed for threat assessment of entire gene pools and between landraces within crops.

A1.2.7 Conservation prioritization

- The creation of the PGR Forum Catalogue of the Crop Wild Relatives of Europe and the Mediterranean has highlighted the relatively high percentage of CWR species (? 80%) as a component of the entire flora.
- It is not possible to actively conserve this number of species equally; there is therefore a need for prioritization.
- Work has begun on identifying the criteria that can be used to prioritize competing taxa but there is a need for objective methodologies for CWR prioritization.

A1.2.8 Effective legislation for PGR protection

Many countries have been stimulated by the CBD and other international Treaties and Conventions to enact biodiversity related legislation. However, there is a need for PGR conservation to ensure that appropriate legislation is in place to:

- Secure national PGR diversity from threats i.e. stop over-collection from the wild
- Ensure material transfer agreements are in place and used
- Ensure farmers' rights are enforced to facilitate the fair and equitable benefits from exploitation
- While promoting PGR conservation, exploitation and research collaboration between countries and regions.

A1.2.9 National and regional PGR documentation

- Europe has led the way in providing regional access to PGR documentation through the EURISCO model of sharing *ex situ* gene bank holdings information.
- There is a need to expand the model to other regions.
- There is also a need to extend the model to include CWR and landrace diversity conserved *in situ*.

A1.2.10 Practical Taxonomy

- Inadequate taxonomy remains a limiting factor in much PGR conservation. Often the wild relatives of crops are poorly understood, poorly defined and pass unrecognized in the field. Conventional taxonomy has not addressed these issues in a way that can be readily applied by conservationists.
- There is a need for taxonomic clarity and stability in the gene pools of major crop complexes.
- There is a need for systematic ecogeographic study of poorly understood crop gene pools.
- There is a need for Conservation Field Guides designed to meet the needs of PGR conservationists in the field.
- There is a need to produce Conservation Action Plans for priority crop gene pools using recently developed models.

A1.3 University of Kassel

A list of important questions and current issues on conservation and sustainable use of plant genetic resources. By Korous Khoshtakht and Karl Hammer

A1.3.1 Survey and inventory of existing PGR

Conservation and sustainable use of plant genetic resources as well as equitable sharing of their benefits are main objectives of International Treaty on Plant Genetic Resources for Food and Agriculture. Rational conservation ideally begins with the surveying and inventorying of existing PGR and their wild relatives especially in the centres of origin.

- Is there enough effort concerning that?
- How can we promote these activities?
- What are the limitations of these activities? (Scientific and political limitations)
- How farmers and local communities can benefit of these activities?

A1.3.2 Conservation

Conservation of PGR is important for their direct and indirect benefits to society. There are so far some methods for conservation of these materials (*ex situ*, *in situ* and on-farm). Most of activities related to conservation, and to utilization of plant genetic resources for food and agriculture are, to a large extent, carried out in parallel without adequate linkages and coordination. These activities are often concentrated in particular parts of the world distinct from "centres of diversity" that are nevertheless, largely located in developing countries.

- What is the best method of conservation?
- In which extend, each method should be considered?
- What are the limitations of each method?
- Where, which method should be used?
- Is there a single method for conservation of all of PGR? Or do we need to combine these methods?
- How can we implement them?
- How sustainable are these programs?
- How can we support indigenous farmers and local communities towards *in situ* conservation of wild crops and their relatives?
- In the case of on-farm method, because finally farmers undertake the conservation not conservationists, the economic conveniences for local farmers have to be considered.
- Is there any participatory approach for conservation and sustainable use PGR?
- How can farmers benefit from them?
- How can we promote farmers to protect their landraces?
- How is the contribution of home gardens and traditional farms in conservation of threatened species and domestication of new crops?
- Is there any market (Local, national, international) for them?
- How can we improve demand for them?
- Is there any way to promote use of locally adapted varieties, underutilized and neglected species?
- Is there any technical assistance for developing countries or countries with economies in transition? How can we promote that?
- How effective are established programmes for scientific and technical education and training in conservation and sustainable use of PGR?
- Are scientific research programmes carried out in cooperation with institutions of developing countries especially those that are that located in centres of origins?

A1.3.3 Training programmes

The focus of training programmes should be to help farmers better incorporate new knowledge and technologies and indeed become better technicians, and researchers become better enablers and supporters of farmers.

A1.3.4 Genetic erosion

Genetic erosion is occurring in a steadily increasing way and seems likely to become graver in the future with replacement of landraces with new highly inbred cultivars. According to some estimation about 1000 of crops species (excluding ornamentals) are under threat. Relatively many efforts have done to prepare a "Red List" for wild plants but less about crop and ornamentals. There are some efforts towards a red list for crop and ornamentals. The number of cultivated plants of the world is

estimated about 7000. Of this number about 2000 species (mainly from staple crops) are maintain in gene banks (*ex situ*). These figures show that landraces and traditional cultivars are under high threat. Therefore, concerning our main objective in DIVERSEEDS, we would like to propose specific attention on threatened crops and ornamentals.

- What are threatened crops and ornamentals? (Red list for crops and ornamentals)
- In which extant are they in the threat? (According to IUCN categories)
- What are the main strategies to conserve and use of these plants in sustainable way?
- What is the role of home gardens and traditional farming?
- Do these agro-systems are sufficiently taken into account?

A1.4 Volcani

Important questions and current issues with respect to conservation and sustainable use of PGR. By Rivka Hadas

A1.4.1 *Ex situ*

- Setting priorities for collection and *ex situ* conservation of PGR, a problem of a region with rich biodiversity. Which criteria have impact on collection scheme?
- *Ex situ* conservation – Collection strategies, e.g. how many seeds per sample? How many populations per species? How to collect and store the seeds as pooled samples (of sites, populations) or as individual accessions?

A1.4.2 On-farm conservation

- Integration of traditional farmer knowledge (indigenous knowledge, the story behind the seeds), and farmer incentive into the strategies of conservation and use of PGR, way of documentation and gathering this information. **BFL: this is certainly important.**
- How can farmers benefit from the Initiative?
- What are the incentives for a farmer to keep landraces?
- Modern methodologies, using DNA fingerprinting and other techniques as practical tools to support PGR conservation.
- Criteria set to measure successful conservation.

A1.5 IDC

First list of selected issues regarding current and future challenges for conservation and use of PGR. By Markus Schmidt

A1.5.1 ITPGRFA facilitation

What can be done from European side to facilitate the accession of those countries (e.g. China, Vietnam), that do not (yet) participate in the ITPGRFA?

A1.5.2 *Ex situ*

What are the lessons learned from the ongoing transition to a European gene bank integration system (AEGIS)? Can we provide these lessons to other world regions?

A1.5.3 *In situ*

- How does the FAO ITPGRFA takes *in situ* PGR and crop wild relatives into account?
- Which pre-requisites would be needed to ensure that *in situ* resources can be covered by the treaty in meaningful way?
- Are existing *in situ* PGR reserves climate change proof? How can this be evaluated, and which strategies are available to make them climate change proof? How to include climate change in the future selection of genetic reserves?

A1.5.4 On-farm/home gardens

- How can farmers actually benefit from the ITPGRFA?
- What are the incentives for a farmer to keep landraces? How can knowledge about farmers' interests benefit the conservation and use of PGR?
- Is the role of home gardens sufficiently taken into account in PGR conservation, especially when they are used to cultivate formerly wild species that become extinct or more difficult to find in the wild?
- How can academia and NGOs (e.g. Henry Doubleday, Arche Noah) be better integrated in the home garden conservation process?

A1.5.5 Synthetic biology

In situ – *ex situ* – *in silicio*: New Kew enabling technologies especially in DNA sequencing and synthesis, could mark the beginning of a new technology revolution and heavily impact the management of PGR in the future.

- How could new developments in biotechnology, such as cheaper and faster DNA sequencing, DNA synthesis, synthetic biology and virtual gene banks change the way PGR conservation and use is practiced today?
- Will improved characterization by means of more powerful sequencing technologies lead ultimately to a more efficient conservation approach?

A1.5.6 Integrated approach

In order to optimize and increase efficiency in conservation and use of PGR, a combination of *in situ* (including on-farm and home gardens), *ex situ* and eventually *in silicio* be useful.

- What are the pros and cons of existing integrated approaches?

A1.5.7 Information system

- Can recently developed information systems also benefit PGR conservation in other regions?
- Is it realistic to aim for a supra-regional or even global information system in the long run?

A1.5.8 Neglected and underutilized species (NUS)

- Apart from genetic diversity among the world's most important crops, how are NUS taken into account by the ITPGRFA and the SMTA?
- What could be done to emphasize the importance and inclusion of NUS?

A1.5.9 Dissemination

How can current dissemination strategies be improved to reach farmers and the interested public?

A1.5.10 Financial support and capacity building

- Which funding opportunities or other financial means are available to support the activities for conservation and use of PGR in Europe?
- Which means are available to support cooperation and networking between European and Asian (and other) networks in the future?

A1.5.11 Corporate social responsibility

The challenges of globalization have contributed to a renewed discussion on Corporate Social Responsibility (CSR) which since the turn of this century has been actively fostered by international organizations, like the OECD, the United Nations or the European Community, as well as by business associations, e.g. the World Business Council for Sustainable Development. Special attention has been given to the ability of trans-national corporations to improve environmental performance and societal concerns. CSR therefore is seen as a major contribution to sustainable development.

- How can CSR – from a European perspective - be used in order to improve conservation and sustainable use of PGR?

Annex 2. Asian list of PGR issues

May 15, 2007. Compiled by Markus Schmidt with input from all Asian project partners
Comments by Wei Wei (in green)

A2.1 Introduction

This annex summarizes the input from all Asian DIVERSEEDS project partners regarding important issues for the conservation and use of plant genetic resources, and shows the original contributions from all project partners

A2.2 Contributions by Asian project partners

This chapter includes the original contributions from the Asian DIVERSEEDS project partners.

A2.2.1 Institute of Botany of the Chinese Academy of Sciences

Issues on the conservation of PGR – IBCAS, Wei Wei

Current status of PGR at international and national/local level

- Current distribution and genetic diversity of PGR: in farmland, wild and the storehouse of the farmers
- Current and traditional knowledge on PGR especially in countryside

Conservation practices of PGR

- Efficiency of *in situ* and *ex situ* conservation in the diversity centre in the field and the preservation of the plant germplasm in gene pool.
- Favourite habitat (ecological condition) for PGR reserved in field
- Technology in preserving plant germplasm and its efficiency

Issues on the effect of GMOs

- Transgene escape
- Gene contamination
- Dominant cultivation of GM crops

Loss of PGR diversity

- The effect of human activities: disturbance/destruction of the habitat of wild PGR
- The loss of diversity of crops by adapting several dominant varieties in agricultural practices
- The loss of wild due to the genetic erosion
- The effect of global change on the PGR

Extinction of PGR: rate and extent

- Extinction of wild population
- Extinction of cultivated PGR
- The ability and possibility to be liable to extinct

Sharing and exchanging of PGR at international level

- Species included in the ITPGRFA
 - The ones originating in China
 - The ones not originating from China but important for the breeding of new varieties.
- Species not included in the ITPGRFA
 - The ones originating in China
 - The ones not originating from China but important for the breeding of new varieties.
- Species solely endemic to a country or local region.
- The capacity of the ITPGRFA
- Intellectual property rights of PGR
- Utilization of exchanged PGR (wheat, soybean)

Benefits of PGR

- For research and breeding
- For farmers
- Mechanisms for encouraging conservation
- Popularity and dissemination

Issues on Sustainable Utilization of PGR

- Establishment of PGR database:
- Enhancement of germplasm

A2.2.2 Chinese Academy of Agricultural Sciences (CAAS)

Issues on the conservation of PGR, by Lijuan Qiu and Zhang Zengyan, Institute of Crop Sciences, CAAS

***Ex situ* conservation of PGR**

- Criteria for adding new accessions and deleting the duplicated accessions
- Criteria for propagating PGR

***In situ* conservation of PGR**

- Are there sufficient numbers of *In situ* PGR? If not, what is criteria for selecting the location of *In situ* conservation of PGR
- What kind of study should be carried out for *In situ* conservation?
- Should the PGR conserved at *In situ* be sampled and conserved in *ex situ*?
- How to establish sufficient information on phenotype, physiology and genotype of PGR adapted on certain ecology?
- How to prevent destruction of the habitat of wild PGR and loss of plant diversity from human activities and agricultural practices?
- How to make *in situ* PGR keeping climate change proof?

On-farm conservation

- Integration of traditional farmer knowledge (indigenous knowledge, the story behind the seeds), and farmer incentive into the strategies of conservation and use of PGR
- What are the incentives for a farmer to reserve landraces?
- How to integrate traditional knowledge and farmer incentive into the strategies of conservation?
- How can farmers benefit from PGR?

Valuation of PGR

- Is there an efficient criterion for assessment of successful conservation?
- How to standardize the procedures and mechanisms to conduct detailed valuation of germplasm, including valuation on phenotype, physiology, genotype and molecular characteristics of germplasm?
- How to identify the specific types for use directly or in the breeding program?
- Should we emphasize equally potential underutilized species in this context?

Integrated information of PGR

- Establishment of linking system of database among different countries
- How to integrate *in situ* with *ex situ* PGR?
- Should integrated gene management be developed through participation of multi-stakeholders and policy support?

Intellectual Property Rights (IPR) issues

- How to share germplasm and its relative production, such as patent, paper, and cultivars, at international level?
- What are benefits of the farmers and other stakeholders?
- How to establish appropriate modalities/framework for PGR management for benefit sharing?

Others

- What are effective evaluating PGR methods at genotypic level in order to mining favourite novel gene which can be used in breeding program?
- How can we promote the germplasm enhancement widely in order to decreasing the genetic bottleneck?

A2.2.3 Khon Kaen University

The List of Important Questions and Current Issues Regarding to Conservation and Use of Plant Genetic Resources

By Khon Kaen University, Prof. Anan Polthanee and Dr. Poramate Banterng

Ex situ

- How can we share the legal PGR with the other countries?

In situ

- Is there sufficient information on morphology, physiology and DNA of PGR adapted on certain ecology?
- Who are important plant genetic resources person?
- What about climate change impact on genetic diversification?
- Is there sufficient for *In situ* conservation of PGA in each region?

On-Farm

- What are the incentives for a farmer to keep indigenous plant species?
- Is the role of home gardens and hut gardens sufficient for conservation of PGR?

On-Community

- How can the Mong (ethnic minority) in Asian country conserve the PGR?
- Is the role of community forest sufficient for conservation of PGR?

WW: *obviously not.*

- How to increase the number of integrated farming as PGR conservation?

Dissemination

- How current dissemination strategies be improved to reach farmers and interested public?

Other

- What about biology impact on genetic diversification and PGR?

Input for Myanmar and Cambodia

Should be also create a section for Myanmar and Cambodia? Covered by KKUs Master students?

A2.2.4 Hanoi Agricultural University

THE LIST OF IMPORTANT QUESTIONS AND CURRENT ISSUES REGARDING TO CONSERVATION AND USE OF PLANT GENETIC RESOURCES by Hanoi Agricultural University (Synthesis by Nguyen Thanh Lam)

Such issues could be e.g. those related to the FAO International Treaty on Plant Genetic Resources ITPGRFA. Here are some examples

Ex situ

- What are the main obstacles for countries, such as Vietnam, that do not (yet) participate in the ITPGRFA, to join in?
- How can we get material support for *ex situ* facilities? (question for policy makers)

- Do policy makers and relevant authorities fully understand the benefit from *ex situ* conservation?
- Copy right on data sharing about *ex situ* techniques.
- The skills for *ex situ*?
- Time constraints of *ex situ*?
- Could be students participate in the *ex situ* process?
- What are criteria for prioritized plant species under *ex situ* program?

In situ

- How does the FAO ITPGRFA takes *in situ* PGR and crop wild relatives into account and which pre-requisites would be needed to ensure that *in situ* resources can be covered by the treaty in meaningful way?
- Are existing *in situ* PGR reserves climate change proof? How can this be evaluated, and which strategies are available to make them climate change proof?
- How to increase the number of *in situ* conservation farm representing different ecological regions?
- How to improve FAO ITPRG procedures for evaluating plant species to adapt local conditions?
- What about the facilities and funding support for *in situ* conservation of PGR?

On-farm

- How can farmers in Asian and European countries benefit from the ITPGRFA?
- What are the incentives for a farmer to keep landraces?
- Is the role of home gardens sufficiently taken into account in PGR conservation, especially when they are used to cultivate formerly wild species that become extinct or more difficult to find in the wild?
- Should be take into account botanic garden/parks in schools, colleagues, universities as well as in cities, rural areas.
- Should raise the habit of individual persons on the collection of PGR.
- The farms should be representing a wide diversity of ecological regions.
- Farmer's knowledge on plant species should be acknowledged and disseminated.
- The farms should be used for multiple purposes including conservation of PGR.
- Policy and funds are needed in order to support local farmers, who cultivate wild species or local varieties.
- How occurrence of new improved varieties change the way of PGR conservation at the farm level?

Integrated approach

- Approaches aiming at combining the three above mentioned aspects to an integrated gene management.
- Should be develop integrated gene management through participation of multi-stakeholders and policy support.
- Rotation methods (Laboratory? on-farm test? *ex situ*? *in situ*? *in vitro*).
- How to utilize all PGR with farmers' participation in order to reduce cost of conservation and increasing effectiveness and diversification?

Information system

- Can be joint effort among Ministry of Education and Training, Ministry of Natural resources and Environment (MONRE) and Ministry of Agriculture and Rural Development (MARD) to develop Plant Genetic Information System in Vietnam? If yes, what are regulations of data sharing and financial support? What are functions and duties of each institutions/organizations involved in the Plant Genetic Information System?
- How to get adequate funding for development network on plant genetic breeding and conservation?
- Policy support for development of PGR information systems in Vietnam and data sharing with European PGR network?
- How to validate the data that contribute to the information systems?
- How to develop suitable measures for genetic bank management?

Dissemination

- What are suitable measures for data sharing among all parties working on plant genetic resources?
- How to disseminate results of plant genetic conservation through education channel and general public?
- Skills on Conservation of PGR should be transferred from scientists to farmers as well as from farmers to farmers.
- How to organize training on the skills of PGR conservation in the systematic way?
- How to introduce the red book to the farmers? Then, what are benefits to the farmers?

Biotechnology / Synthetic Biology

- How could new developments in biotechnology, such as DNA synthesis change the way PGR conservation is practiced today?
- Are In vitro practices used as alternative way for PGR in the near future of Vietnam? If yes, how does it cost?

A2.2.5 Bioersivity APO Headquarter

Some important PGR issues in APO region, by Percy Sajise

Need for harmonizing biosafety issues in Asia-Pacific region

In keeping with the need for the safe application of biotechnology, several countries in Asia-Pacific region (India, Philippines, and China) have developed biosafety regulations and guidelines for research, development and movement of crop germplasm crops and their products

This necessitates action for harmonizing regulations at the regional level and building capacities that are critical for their coordinated implementation, and are vital for transferring the benefits of biotechnology to farmers and consumers in the region.

Also, possibilities of creating regional/sub-regional networks for plant quarantine for safe movement of germplasm need to be considered.

Intellectual Property Rights (IPR) issues

This aspect needs to be looked into in greater depth for policy advocacy in the regional context as these hinder in the free use of technology for the benefits of the farmers and other stakeholders and sharing of material as International Public Goods; need for developing appropriate modalities/framework for IPR management for benefit sharing; and other options dealing with IPR regime. *WW: I do agree.*

Strengthening *ex situ* conservation in the region

i) Regional strategy for conservation and utilization of crop diversity in South, Southeast and East Asia (SSEEA) region

Need for such a strategy to provide a framework for the efficient and effective *ex situ* conservation of the most important crop diversity collections in SSEEA region and to promote the availability of these PGRFA – in line with the mandate, area of interest of Global Crop Diversity Trust. All the three sub-regional networks (SANPGR, EA-PGR, RECSEA-PGR) will focus on this on-going process to promote collaboration, coordination of PGRFA activities, PGR conservation responsibilities among network partners for activities such as germplasm storage including cost effective in vitro and cryopreservation, documentation, regeneration, characterization and evaluation, safety duplication, germplasm health, quarantine safeguards (standards and monitoring), germplasm exchange and distribution. There is also a need for more effective documentation system for the existing collections for Annex. 1 crops including development of user friendly system for improved access to germplasm

*ii) Regional strategy for the *ex situ* conservation and use of crop genetic diversity in the Pacific islands region*

In the Pacific region, the focus is on conserving existing diversity of priority regional crops *ex situ* safely and sustainably with adequate safety duplication to make regional diversity available to farmers, other workers for direct use, enhancement and improvement and to study diversity in regional gene pool; strengthening gene bank management at national and regional level. The regional network on PGR (PAPGREN) needs to be strengthened with greater coordination role to deal with diverse PGR issues in the region more effectively, as also recently highlighted in the recommendations of Heads of Agriculture and Forestry services (HDAFS) to SPC.

Strengthening collaboration with regional fora

Regional collaboration is necessary to implement several PGR coordinated activities across the region. Recent activities of Bioversity-APO has yielded positive interactions among diverse national, regional, international stakeholders in meetings organized under the umbrella of APAARI, namely, implementation of ITPGRFAFA with APAARI as facilitator, SSEEA strategy endorsed by APAARI, meeting facilitated by APAARI for the development of standard material transfer agreement (SMTA). Other possible areas of collaboration with APAARI include: PGR management/networking and some aspects of capacity building; holding policy dialogues, workshops for future implementation of IT, SMTA, and APAARI initiatives on linking farmers to markets, PGR information/communication link with APARIS (Asia-Pacific Agricultural Research Information System)/Regional Research Networks (RRNs database), and on biosafety issues. Likewise, possibilities for collaboration with SAARC in South Asia and with ASEAN in Southeast Asia need to be established.

Promoting/strengthening of PGR activities of weaker NARS

Several countries in the Asia-Pacific region hold rich diversity but possess poor infrastructure and know-how. Capacity building in implementation of PGR activities need to be strengthened in these national programmes as Bioversity International (formerly IPGRI) at regional level has been doing this effectively.

Valuation of germplasm

There are large numbers of crop collections held in national gene banks in several countries which have been characterized. However, the information on their specific value and use is scanty as a result of which these are not being used for the benefit of the humankind. Emphasis needs to be given to standardize the procedures and mechanisms to undertake detailed valuation of germplasm so as to identify the specific types for use directly or in the breeding programme to develop high yielding and nutritive varieties. Valuation with respect to improved nutrition and health related aspects also needs to be given utmost attention. Potential underutilized species will need equal emphasis in this context.

This information on value addition traits with respect to the crop collections will add considerably to their further exploitation.

Enhancing *in situ* conservation and developing integrated conservation strategies

There is a growing need for developing ways, methods and approaches in enhancing *in situ* and complementary conservation strategies given the fact that farmers are major custodians of landraces on farm. Protected areas are also important reservoirs of reservoirs for wild crop relatives which are important diversity components that can be tapped for future crop improvements. There is also the need to look at ways of developing integrated and complementary conservation strategies at the national level.

Other issues and needs

There is a need to develop PGR conservation and use strategies in the context of climate change, global warming and increasing risks and occurrence of disasters which is more relevant for the APO region. Similarly, there is a growing need for deployment of PGR for alternative energy sources in the context of increasing fossil-based oil and energy cost in various countries in the region. Increasingly, countries in the region who have ratified the International Treaty on PGRFA are seeking assistance in the harmonization of their existing national policies with respect to CBD and trade with their obligations to the ITPGRFAFA

Annex 3. First European workshop: agenda

08:30	Workshop introduction
	1. Introduction of team members and external advisory board
	2. Update on DIVERSEEDS project activities (MS)
	3. Context and objectives of the first European workshop (MS)
09:00	Discussion of PGRFA issues
	4.1 Background to development of the list of issues and brief overview (MS)
	4.2 Review of issues with comments from workshop participants and general discussion (All)
	4.3 Agreement on structure and summary of issues (All)
10:30	COFFEE
11:00	Towards an inter-regional dialogue
	5.1 Review Asian partners' list of PGR issues (MS/All)
	5.2 Discuss and define the criteria for selecting key issues for inter-regional dialogue (All)
	5.3 Select and prioritize key issues for inter-regional discussion (All)
12:30	LUNCH
14:00	DIVERSEEDS networking and dissemination activities
	6.1 Networking opportunities, including DIVERSEEDS exit strategy (MS/All)
	6.2 Review of dissemination activities / communication challenges (MS/All)
	6.3 Introduction to the proposed online database of Euro-Asian cooperation (MS/All)
15:30	COFFEE
16:00	Next steps
	7.1 First international meeting: presentation/discussion of draft agenda (MS/SK/All)
	7.2 Future workshops/meetings and project activities (MS/SK)
	7.3 AOB (All)
17:00	Summing up and close of workshop

Annex 4. First European workshop: list of participants

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