

Agricultural research for poverty alleviation: Europe's challenge

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About this Newsletter

Bioversity International is one of the 15 Centres of the Consultative Group on International Agricultural Research (CGIAR). Bioversity's vision is that: "People today and in the future enjoy greater well-being through increased incomes, sustainably improved food security and nutrition, and greater environmental health, made possible by conservation and the deployment of agricultural biodiversity on farms and in forests."

Bioversity's Regional Office for Europe provides the Coordination Secretariats for the European Cooperative Programme for Plant Genetic Resources (ECPGR) and for the European Forest Genetic Resources Programme (EUFORGEN).

Bioversity publishes two issues of the Newsletter for Europe a year. This Newsletter is intended to serve as an informal forum for the exchange of news and views, and to create closer ties within the genetic resources community in Europe. Previous issues are available from the Bioversity Web site: www.biodiversityinternational.org

We invite you to send your ideas and contributions for this Newsletter to Bioversity's Regional Office for Europe by Email to biodiversity-europe@cgiar.org. Please send all contributions for Issue 40 by **16 March 2010**.



Photo: Sergey Shuvalov, VIR, St. Petersburg, Russian Federation

New Year's greetings from the Regional Office for Europe

Dear Reader,

Agricultural research faces big challenges. Recent figures on the drastic increase in the number of hungry people and even the more optimistic scenarios of climate change are alarming. Autumn 2009 has been marked by intense discussions on challenges and priorities in agricultural research for development. The process has been spearheaded by the Global Forum on Agricultural Research (GFAR). So far, it has mainly consisted of regional consultations in each of the six Regional Research fora. They have offered important contributions for the first biennial Global Conference on Agricultural Research for Development, which will be held in March 2010. Expectations are very high for the Conference as it hopefully will reshape agricultural research and innovation, improve resources for research and increase its overall impact on development. The Conference, and the regional consultations,

effectively influence the formulation of the new research strategy and programmes of the CGIAR (Consultative Group on International Agricultural Research), which is currently ongoing. The reader may find an update on the CGIAR process in previous issues of this Newsletter.

The regional consultations reached out to the stakeholder groups in agricultural research for development. Although most participants of the face-to-face meetings came from the research and academic community, the voices of representatives of farmer organizations, civil society, the private sector and donor agencies were heard, to a greater or lesser extent. The regional meeting for Europe took place in Brussels, Belgium at end of September 2009 and gathered about sixty participants.

The drivers that affect global development and research in agriculture are widely agreed on and well formulated. They

are the big challenges – food security, adaptation to and mitigation of climate change, energy security, agricultural biodiversity, ecological and evolutionary science and management, soil and water management, food safety, nutrition, and plant breeding and biotechnology. However, details of researchable issues are often not well described. In fact, key researchable issues were identified, reviewed and prioritized during the regional consultations. This is certainly the most valuable contribution that the process has made.

The central issue for agricultural researchers and their donors is the fight against poverty. Europe has a dominant role in supporting agricultural research for development at a global level. Recognizing and agreeing to better focus research efforts on global poverty, and improving donor coordination were among the key outcomes of the European meeting.

(continued on page 12)

Third meeting of the Network Coordinating Group on Sugar, Starch and Fibre Crops



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The Network Coordinating Group (NCG) of the ECPGR Working Groups (WG) on *Beta*, Potato, Fibre Crops (Flax and Hemp) and Medicinal and Aromatic Plants (MAPs, see article on page 3 for further information) met at the Julius Kühn-Institut (JKI), Quedlinburg, Germany on 8-9 October 2009. The meeting started with a brief review of the Network budget and workplans. In 2008 the Network budget for actions in Phase VIII was directed to the *Origanum* project of the MAPs WG instead of funding several small projects for all crops. This project comprises molecular characterization of 1200 genotypes (20 plants x 3 populations x 20 countries) by means of SSR's to analyze the genetic diversity of *Origanum*.

It was noted that methodologies and tools for

the *in situ* management of crop wild relatives applied for *Beta* and other model crops by the AEGRO project (<http://aegro.bafz.de/>) will be of interest to the MAPs Working Group.

The Chair of the Fibre Crops WG, Martin Pavelek (AGRITEC, Czech Republic), informed the NCG that the cultivation of flax and hemp has decreased considerably in Europe during recent years due to imports e.g. from China. Moreover, at the Centro di Ricerca per le Colture Industriali, Bologna, Italy, research on hemp has ceased.

Since 2006 an on-line tool facilitates data input in the European Cultivated Potato Database directly by the collection curators. Fifteen curators received a password from the database manager, Heather Campbell (SASA, United Kingdom), and seven

of them are entering data via this tool regularly. The Wild Potato Database was recently updated and is available as a downloadable system.

Ana Maria Barata (INRB/INIA, Portugal) informed the NCG on the recent developments in the AEGIS process while Roel Hoekstra (CGN, the Netherlands) elucidated the concept of the Accession Level Information System and its implementation in the Global Instrument on Germplasm Accessions (GIGA). The NCG then discussed the future role of the European Central Crop Databases (ECCDBs) and concluded that they provide Working Groups with corporate identity and, if sufficiently supported, will continue to play a significant role as a central management instrument within the ECPGR Working Groups. The NCG is convinced that although this Network deals with a very wide range of crops, synergies can be created by a stronger cooperation in the field of data documentation and *in situ* management.

At the end of the meeting Roel Hoekstra was elected as the new Network Coordinator. The participants warmly thanked Lothar Frese (JKI, Quedlinburg) who has chaired the NCG for the past ten years.



Flax field in France, Picardie, close to Saint-Valery-sur-Somme. If the decline in production area continues, such views will become rare in Europe. Photo: Lothar Frese, Julius Kühn-Institut (JKI), Quedlinburg, Germany

AEGIS is now formally established

On 22 April 2009 the AEGIS Memorandum of Understanding (MoU) was sent to the ECPGR National Coordinators for signature by the respective country authorities. On 23 July 2009, upon signature of the MoU by the tenth country eligible for membership, AEGIS entered into force. As of 10 December 2009, the following 17 countries are now AEGIS member countries: Albania; Azerbaijan; Bulgaria; Cyprus; Czech Republic; Estonia; Finland; Georgia; Germany; Ireland; the Netherlands; Norway; Portugal; Slovak Republic; Slovenia; Switzerland; and Ukraine.

At the present time, plant genetic resources for food and agriculture (PGRFA) in Europe are conserved in more than 600 institutions scattered over more than 40 European countries. While coordination of activities is carried out within the framework of ECPGR and the ECPGR Crop Working Groups, each genebank basically operates on its own, providing for the conservation of a full range of crop germplasm important for agriculture in the area it serves.

With this in mind, the countries of the European region believe that there is a need to improve coordination and share responsibilities with respect to the conservation of, management of and access to PGRFA in Europe by setting up AEGIS.

The legal mechanism for establishing AEGIS is the Memorandum of Understanding (MoU) entered into by eligible countries of the region and the European Commission. To be eligible for AEGIS membership, the countries listed must be members of ECPGR, and either Contracting Parties to the Treaty or otherwise willing to make PGRFA under their jurisdiction available under the conditions of the Treaty.



www.ecpgr.cgiar.org/AEGIS/AEGIS.htm

Fourth Working Group meeting on Medicinal and Aromatic Plants

The Fourth meeting of the ECPGR Working Group (WG) on Medicinal and Aromatic Plants (MAPs) was held on 29 September to 1 October 2009 in Kuşadası, Turkey, a beautiful setting selected by the local organizers of the Aegean Agricultural Research Institute (AARI). The meeting was attended by 23 representatives from ECPGR member countries and 7 observers.

The WG members reviewed the tasks achieved since the previous meeting (June 2007, Olomouc, Czech Republic – see NL35 page 2) and agreed on tasks to be carried out till the end of the current Phase of ECPGR (2013).

The finalization of the crop-specific characterization and evaluation descriptors for the ten target species selected by the WG was given high priority. In addition, descriptors developed at national level for other species will also be made available to the WG.

Documentation of *ex situ* collections will follow the EURISCO channels and procedures; for *in situ* populations, members will continue to use their own tools until a common ECPGR database is developed for this purpose at the regional level.

The Oregano Project for “Conservation and characterization of oregano (*Origanum vulgare* L.) wild populations in Europe” was approved by the ECPGR Steering Committee (SC) in September 2008. The Project Coordinator, Dea Baričević (University of Ljubljana, Slovenia), presented a revised project document, adapted to the available funds, with a revised time frame of 1 June 2010 to 31 March 2011. The workplan will include: sampling of *Origanum vulgare* L. populations; collecting of herbarium specimens; study of genetic and chemical variability of oregano populations; documentation; and distribution of collected

data. Several countries expressed their wish to join the project and the number of partners has reached 19, with the University of Veterinary Medicine in Vienna as subcontractor for molecular and chemical analyzes. Partners should provide material for analyzes before 1 October 2010. Guidelines for the collecting, preparation and shipment of material were also prepared and distributed. Results of the project will be presented before the next Mid-term meeting of the SC planned late 2011.

The data collected within the Oregano Project would contribute to the selection of oregano accessions to be included in a European Collection according to the AEGIS concept.

More generally, the WG believes that MAP *ex situ* accessions can be offered as European Collection accessions. Criteria for the selection of these accessions were discussed. The WG further agreed to adopt the AEGIS quality standards for conservation of accessions in *ex situ* genebanks as far as possible.

The WG decided that the original “priority list” of MAP species should be expanded, to show the existence of some common regional strategies and priorities and support the choice of species by national projects. The expanded list will be based on the first list of species proposed by the MAP WG after its first meeting (September 2002), from which the “ten priority species/ genera list” was selected. WG members will be able to add relevant MAP species to the original list, and asked to indicate those considered as priorities in their respective countries. The new priority list for MAP species in Europe will include a much broader range of species. The ten target species will, however, remain as highest priority for the WG.

In a second step, the

expanded priority list will be used to produce a document showing the level of threat and the Red List status for MAP species in Europe. Ali Osman Sari (AARI, Turkey) will be responsible for compiling information about Red List status provided by WG members.

In order to better standardize the procedures across the WG, it was also decided to prepare a protocol for the regeneration and multiplication of MAP accessions. Karel Dušek (Crop Research Institute, Czech Republic) will prepare this document.

The review of the status of MAP collections and related activities in all member countries, and further information provided by members regarding the plans and priorities at national level for MAP species, led to identifying other opportunities for cooperation: the need to increase the focus on *in situ* conservation of MAPs; the potential of *in vitro* or cryopreservation methods to improve the status of safety-duplication of MAP collections, which is insufficient; and the usefulness of micropropagation methods for rare and threatened species, for conservation and reintroduction of species into former habitats, and for

commercial production of plants and MAP products.

The report of the meeting and all working documents produced by the MAPs WG will be available on the MAPs WG’s web page:

www.ecpgr.cgiar.org/Workgroups/Med_aromatic/med_aromatic.htm.



Top to bottom: *Pimpinella saxifraga* L. (Burnet saxifrage). Photo: Wolfgang Kainz, Austrian Agency for Health and Food Safety; *Equisetum* sp. Photo: Ali Osman Sari, AARI, Ismir, Turkey; Thyme. Photo: Ferdinando Branca, DOFATA, University of Catania, Italy; *Ruta graveolens* L. (Common rue). Photo: W. Kainz, AGES, Austria.

Vegetables Network meets in Sicily

The Third ECPGR Vegetables Network meeting was hosted by the University of Catania in Sicily, Italy, on 10-12 November 2009. About 60 representatives of the six ECPGR Vegetables Working Groups (WG) gathered from 30 countries to discuss about cooperative action for vegetable genetic resources conservation and use.

The main objective of the meeting was to try to make the European Genebank Integrated System (AEGIS) work within the framework



Christine Daunay thanks Dave Astley for his long-standing service as Chair of the ECPGR Vegetables Network Coordinating Group.
Photo: L. Maggioni, Biodiversity International

On-farm / In garden contacts database

Within the framework of the EC-funded project Diverseeds, "Networking on conservation and use of plant genetic resources in Europe and Asia" (www.diverseeds.eu/), an on-line database of European Institutions working for on-farm and in garden conservation has been established. This database is managed and supported by the Applied Biology Department of the University of Perugia, Italy, on behalf of the ECPGR *In situ* and On-farm Conservation Network.

The database currently consists of a structure that is ready to be populated with data regarding contact persons and institutions carrying out on-farm activities (research, conservation, public awareness, etc.) in Europe. Information will be uploaded directly by the respective institutions in a decentralized way. The ECPGR Network will promote and facilitate data population of the database, raising the attention of the relevant contacts within each country. The overall objective is to create a simple inventory of institutions working on the same area, in order to facilitate exchange of information and experience and promote the development of collaborative projects and an improved conservation and management of crops on-farm in Europe. Self-registration will be soon opened and relevant institutions are encouraged to access the website at www.sharinginformation.eu.

of the Vegetables Network, by making sure that all the members understand what it is, how it should operate and also understand its technical and scientific concepts, as well as the responsibilities of each member within their country and as a member of the Network. The general concepts of AEGIS (the Strategic Framework, the Memorandum of Understanding, the Most Appropriate Accessions) and AQUAS (A Quality Management System for AEGIS) were introduced by the AEGIS Coordinator and the ECPGR Coordinator. The experience gained by the model crop groups (*Allium* and *Brassica*) and by the Solanaceae WG in their attempt to identify Most Appropriate Accessions (MAAs) was communicated by J. Keller (IPK, Germany), C. Allender (Warwick HRI, United Kingdom) and W. van Dooijeweert (CGN, the Netherlands), respectively. It was recognized that the identification of duplicates is very time consuming and controversial. It was agreed that a positive approach to deciding what should be included in the the European Collection would be to focus on what needs to be conserved as a priority.

All WGs intend to make progress in the implementation of AEGIS and this requires good data in the databases. Therefore, efforts will be made to complete the Central Crop Databases as well as include missing data into EURISCO. Efforts to identify MAAs will focus, as a priority, on leek and wild *Alliums*, lettuce and spinach, carrot, melon, *B. rapa* and various Solanaceae crops.

A general consensus was expressed by the group about the principles of AQUAS, and the need to reach pragmatic solutions when it comes to defining common standards. At the same time, the requirements for quality standards and routine network audits were considered by the *Allium* WG as essential components of the AEGIS

agreements.

As a starting point, the Network will fill in a table of the current genebank practices and operations of all institutes conserving vegetable accessions in Europe.

Surveys of wild relatives of *Allium* and umbellifer crops in collections and in the wild are planned during Phase VIII, to identify gaps in the collections and to carry out characterization work. Characterization activities are also planned for collections of *B. rapa* and wild brassicas. Surveys of landraces are planned by the *Allium* WG, while the Cucurbit WG intends to survey on-farm conservation activities. Work on definition of descriptors was scheduled by the Leafy vegetables WG (for asparagus and minor leafy vegetables) and by the Umbellifer Crops WG (agreed minimum lists).

Improving safety-duplication will be a task for the *Allium*, Cucurbits, Leafy Vegetables and Umbellifer Crops WGs. The assessment of virus elimination training needs in Europe and the establishment of a Web Portal will be specific activities of the *Allium* WG.

After the resignation of Dave Astley (Warwick HRI, United Kingdom) as Coordinator of the Network, the Network Coordinating Group nominated Marie-Christine Daunay (INRA, France) as its new Coordinator, with Willem van Dooijeweert taking the role of Vice-Coordinator.

D. Astley was honoured with a note of thanks for his long-standing service as Network Coordinator. The meeting was dedicated to Prof. César Gómez Campo, who passed away this year (see page 20) and who was a very active collaborator of the *Brassica* WG and a friend to many members of the Vegetables Network. The minutes of the meeting and all the presentations will be made available on the ECPGR website.

European landraces: on-farm conservation management and use

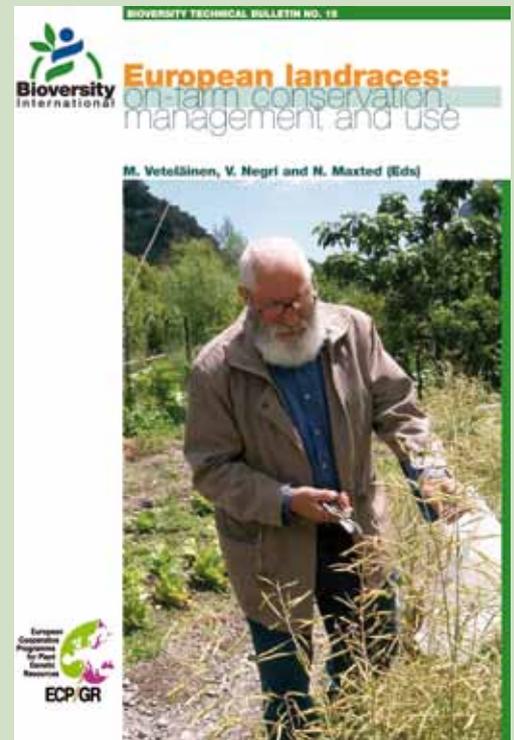
Nigel Maxted, School of Biosciences, University of Birmingham, UK. N.Maxted@bham.ac.uk

European agriculture, like all the world's agriculture, went through a significant change during the twentieth century. At the beginning of the last century the population was largely rural and agriculture was based on traditional systems, now, the percentage of the population involved in agriculture is less than 4% and agriculture is largely industrialized. As for seed in particular, genetically uniform commercially bred cultivars now dominate agricultural production in Europe, to the detriment of the previously grown more genetically variable crop varieties traditionally grown by European farmers. Although a wealth of landrace diversity has undoubtedly been lost, European landraces have not been completely wiped them out. A relatively large number of landraces survives cultivated in marginal agricultural zones or being grown to meet niche markets or grown by enthusiasts and are a significant resource for European agriculture as a whole because of the genetic diversity they contain that could be critical in times of climate change.

It may seem surprising that such a practical, economic and cultural resource should have been allowed to be so widely replaced by modern cultivars without ensuring that the resource was effectively conserved. The few gap analysis reviews of European landraces show that the majority of landrace diversity is not being actively conserved *in situ* in on-farm systems or has been sampled and held *ex situ* in genebanks. Furthermore it is impossible to quantify what potentially useful resources have been lost because we never catalogued what was available. European landrace diversity remains threatened and in decline, due to the rising age and morbidity of landrace maintainers and because landrace cultivation is not being actively passed to the next generation. Therefore the aim of this text is to promote the conservation (and use) of European landraces before further landrace loss occurs.

This Technical Bulletin first establishes the context of European landrace diversity conservation and use; it reviews how landrace inventories can be generated, using practical examples of such inventories for European countries; it then provides specific case studies of the on-farm management of landraces; and exemplars of how landrace use has been and might be further promoted within a European agricultural context. The recent introduction of the Commission Directive 2008/62 EC on Conservation Varieties will impact European landrace diversity; this is discussed together with the development of diverse European and National policies to support the conservation and use of landraces in production systems for sustainable agriculture. It concludes with a proposal for a European on-farm conservation and landrace management strategy that will both ensure the systematic conservation landrace diversity and promote its sustainable use, thus helping to underpin European food security and well being.

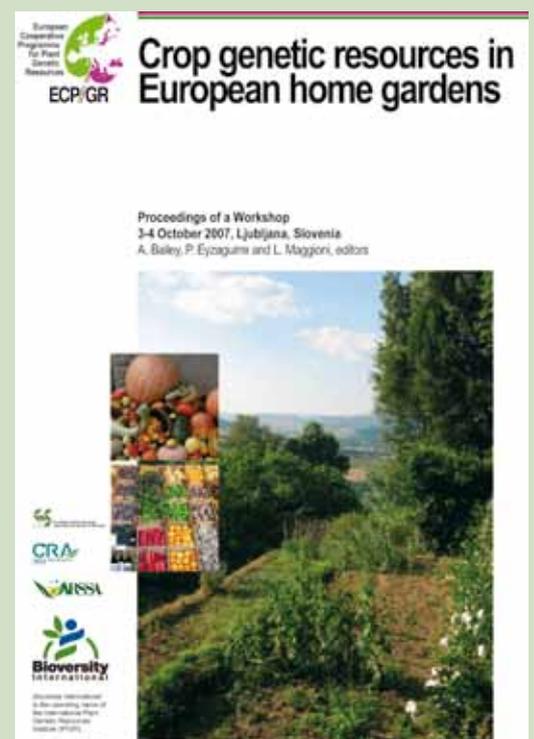
Veteläinen M, Negri V and Maxted N. 2009. *European landraces: on farm conservation, management and use*. Bioversity Technical Bulletin No. 15. Bioversity International, Rome, Italy.



Crop genetic resources in European home gardens

These proceedings relate to a Workshop on home gardens that was organized in Ljubljana, Slovenia, 3-4 October 2007 by the ECPGR *In situ* and On-farm Conservation Network. The opportunity to convene nearly fifty scientists working on home gardens in a regional meeting was based on the awareness that home gardens probably constitute the richest agro-ecosystems in Europe in terms of genetic diversity of agricultural crops. At the same time, there is incomplete information on the actual composition of home gardens and on the trends that may affect the maintenance of these precious but possibly fragile ecosystems in the near future. The workshop intended to collect information on the composition, status and distribution of home gardens in Europe; and the role of home gardens for the conservation of diversity; incentives and policies. It also aimed at defining ways to bring forward research, assessing possibility of forming networks and raising awareness. This book collects together a number of the contributions that were made in Ljubljana and intends to be a starting point in demonstrating the opportunity to join efforts to understand and maintain precious resources in Europe.

Bailey A, Eyzaguirre P, Maggioni L. editors. 2009. *Crop Genetic Resources in European Home Gardens. Proceedings of a Workshop, 3-4 October 2007, Ljubljana, Slovenia*. Bioversity International, Rome, Italy.



Report of a Working Group meeting on Medicinal and Aromatic Plants

This book includes the reports of the Second (2004) and Third (2007) meeting of the ECPGR Working Group on Medicinal and Aromatic Plants (MAPs). A rich collection of articles elucidates the strategy of the Group for the conservation, sustainable management and use of MAPs in Europe and gives an overview of inventory, conservation, characterization and research activities in nearly 30 countries of Europe.

Lipman E, editor. 2009. *Report of a Working Group on Medicinal and Aromatic Plants. Second Meeting, 16-18 December 2004, Strumica, Macedonia FYR / Third Meeting, 26-28 June 2007, Olomouc, Czech Republic*. Bioversity International, Rome, Italy.

Boosting European plant cryopreservation research

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Left: WG1/WG2 meeting participants of COST Action 871 at the University of Oulu, Finland (February 2008). Right: Cryopreservation of germplasm from the global banana collection at the Bioversity International Transit Centre, K.U. Leuven, Belgium. Photos: Bart Panis, K.U. Leuven, Belgium

“Cryopreservation” is the storage of biological material at ultralow temperature, generally the temperature of liquid nitrogen (-196°C). Its main advantage is that stored material does not undergo cellular divisions and moreover most physical processes are stopped at this low temperature. Therefore, plant material preserved under cryogenic storage can be maintained for very long, if not unlimited, periods of time and problems that are typical for storage in the active growth state, like genetic instability and the loss of accessions due to contamination, loss of vigour and totipotency and human error during continual subculturing are surmounted. So far, cryopreservation procedures have been developed for the *in vitro* tissues and non-orthodox seeds of about 200 plant species. Cryopreservation can thus be considered as a welcome, but necessary, long-term storage alternative for those plants that can not be stored by means of their seed (for example at the Svalbard Global Seed Vault).

There are, however, only a limited number of collections in Europe where cryopreservation is used routinely for plant germplasm conservation. A well known example is IPK (Leibniz Institute of Plant Genetics and Crop Plant Research, Gatersleben, Germany) that stores more than 1000 potato accessions in liquid nitrogen

together with a substantial number of mint and garlic accessions. Also tropical plant germplasm is stored in European institutes; e.g. 720 banana accessions are safely stored at the International Musa Germplasm Collection of Bioversity International (hosted at K.U. Leuven, Belgium).

Until 2002, cryopreservation research in Europe was rather scarce and dispersed. A first boost came in 2002 through the approval of a three-year EU FP5 research project entitled “CRYMCEPT: Establishing Cryopreservation Methods For Conserving European Plant Germplasm Collections” (Project QLK5 CT-2002-01279), Directorate-General Research - Quality of Life and Management of Living Resources Programme - see also www.biw.kuleuven.be/dtp/tro/crymcept/CRYMCEPT.htm. This project, coordinated by K.U. Leuven, Belgium was carried out in collaboration with partners from UK (University of Abertay Dundee, University of Derby), France (Institut de Recherche pour le Développement-IRD), Italy (Istituto Sperimentale per la Frutticoltura-ISF), Germany (Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH-DSMZ) and Bioversity International (formerly IPGRI), and aimed to develop more efficient and generally applicable plant cryopreservation protocols based on fundamental research.

To unravel cryoprotection, research was initiated on the analysis of sugars, polyamines, anti-oxidants, proteins and different membrane components, water thermal behaviour (using differential Scanning Calorimetry).

A second boost came again from the EU by the approval in 2006 of the EU COST (European Cooperation in Science and Technology) Action 871 “CRYOPLANET” (Cryopreservation of Crop species in Europe, www.agr.kuleuven.ac.be/dtp/tro/cost871/Home.htm). The aim of this COST Action is to create a network that brings together European scientists with an expertise and/or interest in plant cryopreservation, to develop efficient cryopreservation procedures. Emphasis is placed on using this approach as a complementary technique for the preservation of crops that are vegetatively propagated and/or produce non-orthodox seeds with a focus on underutilized crop species grown and/or conserved in Europe, and their wild relatives. The network, now counting 20 EU countries, will also alert and inform stakeholders in plant breeding and conservation practitioners who require cryopreservation to implement and underpin sustainable crop plant breeding programmes. One major event was the organization of the “First

International Symposium on Cryopreservation in Horticultural Species” Leuven, Belgium on 5-8 April 2009, co-organized by the COST Action together with ISHS (International Society for Horticultural Science). The organizers welcomed 149 registered participants from 43 countries from all parts of the world. The opening lecture, entitled “Why diversity Matters”, was presented by Emile Frison, Director General of Bioversity International, who emphasized the importance of preserving agricultural biodiversity for: i) source of traits for breeding; ii) resilience, stability and sustainability; iii) improved livelihoods; and iv) better nutrition and health.

The FP5 EU research project (2002-2005) as well as the EU COST Action (2006-2010) resulted in:

i) the availability of efficient and robust cryopreservation protocols applicable to many plant species and diverse germplasm types; ii) awareness of plant researchers previously unacquainted with recent developments in cryogenic storage methods; and iii) coordinated research on plant cryopreservation. Moreover, it has considerably improved the worldwide visibility of EU plant cryopreservation scientists. For further information on the Cost Action Action 871 “CRYOPLANET”, please contact the author (bart.panis@biw.kuleuven.be).

European Native Seed Network Success

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Over the past four years, the EU FP6-funded European Native Seed Conservation Network (ENSCONET) project has been transforming the way that seeds of Europe's wild plant species are banked. Before its inception, staff from banks storing wild species (mainly in botanic gardens) met only occasionally at conferences. Now a community exists where data, expertise, problem solving and facilities can be shared. Furthermore, this collaboration has been coordinating seed collection work at a bioregional scale, reflecting the nature of species' boundaries, rather than political ones. This coordination has involved a "gap analysis" looking at what has or hasn't been conserved already. This analysis has revealed that ENSCONET member banks make a significant impact on target 8 of the Global Strategy for Plant Conservation, namely, that 60% of threatened plant species can be found in accessible *ex situ* collections.

ENSCONET is providing improved access to European native seed collections through the development of a "virtual" seed bank, ENSCOBASE. This facility holds data from 29 European seed banks

on almost 42 000 seed collections representing more than 9200 taxa (around 70% of the European flora) from 40 countries. Notably, the database includes the results of around 21 000 associated germination tests. These data are publicly accessible via the ENSCOBASE website (<https://enscobase.maich.gr>) with an estimated 60% of the seed collections listed being available for distribution on request to the conservation and research communities. For some seed banks this will be the first time their collections have been made accessible via the web. We would welcome contact by other European banks that might wish to contribute data to the virtual seed bank and also from banks outside the continent with significant holdings of European wild species.

The project has improved the quality of seed banking activities through an exchange visit scheme and through the development of seed collecting and curation manuals that synthesize the current state of the art knowledge for wild species. These documents are available via the website (www.ensconet.eu/download) and are

being translated into European languages.

Education has been vital to ENSCONET's work. To communicate with a wider audience, a seed bank Virtual Tour has been developed. This online educational tool, aimed at users from the age of nine upwards, introduces why seed banking is needed and how it is achieved. An interactive section allows users to explore the rooms of a seed bank and the equipment used. The Virtual Tour is online in English, French and Spanish, and will soon be available in German, Greek, Hungarian, Italian, Polish and Portuguese.

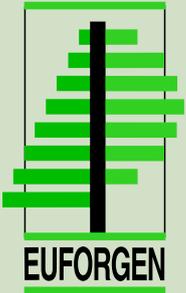
Having built significant dialogue and momentum, a key aim is to maintain these into the future. On a continent where land conversion for human use continues apace and the effects of climate change have yet to be quantified with certainty, the conservation of wild plants in Europe has never been more important. Seed collections will prove to be an essential resource in finding solutions to these pressures. However, for us to store and provide the most valuable collections, there will need to be much greater dialogue with end users, be they in habitat restoration, biotechnology or climate studies. This will bring "nature conservation" banks more in line with crop banks in their outlook. Although threat is always going to be a driver of our targeting, if the Network's seed banks are going to demonstrate their maximum worth to wider society, it is no longer reasonable to hope that users may find something of value in the collections. Maintaining the balance between our traditional interest in threatened plants and demonstrating usefulness will be both challenging and stimulating as ENSCONET moves into its next Phase.

For more information please visit www.ensconet.eu or contact the ENSCONET coordinator j.mueller@rbgkew.org.uk.



Fifth ENSCONET AGM members and Seed Collecting Practical Workshop participants during a field day at "Ciampedie Catinaccio", in the Fassa Dolomites, Trentino, Italy. Photo: Renzo Vicentini, Museo Tridentino di Scienze Naturali, Trento, Italy

New Phase of EUFORGEN ready for launch



During the past 15 years, European countries have made good progress in conserving their forest genetic resources. According to a report released in 2007 at the fifth Ministerial Conference on the Protection of Forests in Europe (MCPFE), areas managed for *in situ* and *ex situ* gene conservation of forest trees show an increasing trend since 1990. However, the gene conservation efforts have largely focused on relatively few, widely occurring tree species while fewer gene conservation areas have been established for scattered tree species, many of which are also rare or endangered ones.

At regional level, the countries have been collaborating through the European Forest Genetic Resources Programme (EUFORGEN) since 1994. This collaboration has enabled the countries to exchange ideas and learn from each others' experiences in carrying out the gene conservation efforts. As a result, national programmes and strategies for the conservation of forest genetic resources are now in place in most European countries. EUFORGEN has also developed technical guidelines for gene conservation of various tree species and carried out assessments of the status of the gene conservation efforts from the pan-European point of view. Furthermore, EUFORGEN has served as a platform for developing other collaborative initiatives on forest genetic resources and for disseminating relevant information and results of



Forests on the Mount Olympus National Park, Greece. Photo: J. Koskela, Biodiversity International

various research projects.

As we reported in the previous issue of this Newsletter (NL38, July 2009), the EUFORGEN Steering Committee endorsed the continuation of the Programme into Phase IV (2010-2014) at its sixth meeting held in Thessaloniki, Greece in June 2009. This decision was based on the need to further strengthen the gene conservation efforts for many tree species and the fact that climate change is raising additional challenges to the forest sector throughout Europe. Climate change scenarios and predicted impacts are still being debated but climate change has already increased the uncertainty faced by policy-makers and managers responsible for promoting and implementing sustainable forest management. In this regard, the appropriate use of forest genetic resources offers opportunities to maintain the

resilience of forests, mitigate the risks, and facilitate the adaptation of forests to climate change.

However, these opportunities are not yet fully acknowledged in relevant policies, such as national forest programmes (NFPs) and national adaptation strategies to climate change (NAS), or deployed in practical forest management. Furthermore, forest managers often do not pay enough attention or are not aware of genetic consequences of forest management practices and the importance of using high-quality forest reproductive material. NFPs are an important policy tool to support implementation of sustainable forest management and to provide cross-sectoral coordination on forest-related issues. Thus NFPs also have a key role in integrating conservation and use of forest genetic resources into implementation of sustainable

forest management.

In many countries, NFPs include recommendations on the conservation and use of forest genetic resources but they are not always translated into actions at practical forest management level. It is equally important that the conservation and use of forest genetic resources is incorporated into national adaptation strategies to climate change and national biodiversity action plans (NBAPs). Many NAS emphasize changes needed in man-made systems to reduce the impacts of climate change but, in the forest sector, they often ignore what is needed to ensure genetic adaptation of forests. Similarly, NBAPs focus mainly on conservation of biological diversity at landscape and species levels only. During Phase IV, EUFORGEN will continue promoting integration of conservation and use of forest genetic resources into these policies and strategies.

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The EUFGIS project moves into its final year



In 2010, the EUFGIS project (Establishment of a European Information System on Forest Genetic Resources) will carry out its last activities to produce the planned outputs. The national focal points are now finalizing uploading of data on the dynamic gene conservation units of forest trees into the information system. A documentation manual is also under development based on the pan-European minimum requirements and data standards for the dynamic gene conservation units. The manual is targeted to the national focal points and other professionals who are responsible for documentation of the gene conservation efforts. It will also provide them with guidelines for various reporting purposes.

In early 2010, the project will carry out two case studies, which will analyze the current status of the gene conservation efforts in Europe and the needs for further development of gene conservation strategies for forest trees at pan-European level. This supports the earlier EUFORGEN efforts to identify the most valuable gene conservation units at pan-European level.

Bioversity International is continuing the development of the EUFGIS Portal, including further improvement of the intranet and the uploading mechanism. Once the Portal has been finalized, end-users will be able to view maps of the gene conservation units for different tree species and countries, and they can also

download data for further analyzes. The Portal will be launched at the final meeting of the project, to be held on 14-16 September 2010 in Vienna, Austria. The results of the case studies and the documentation manual will be also presented at the final meeting, which will be hosted by the Federal Research and Training Centre for Forests, Natural Hazards and Landscape (BFW).

The EUFGIS project is co-funded by the European Commission (Council Regulation No 870/2004 on genetic resources in agriculture) and coordinated by Bioversity International. Further information on the final meeting and other activities is available on the project website (www.eufgis.org).

New EUFORGEN website launched: www.euforgen.org



New Phase of EUFORGEN continued...

(continued from page 8)

On a more practical level, there are two issues for which recommendations are highly needed across Europe. Firstly, as climate change is expected to alter the existing provenance regions, there is a need to develop guidelines for knowledge-based use and transfer of forest reproductive material. Secondly, there is a need to better understand how existing forests should be managed to ensure that they are able to cope with the impacts of climate change. There are several ongoing European research projects which are already addressing the two issues and which are expected to make available new information and results. EUFORGEN will collaborate with these projects in synthesizing the latest research findings into recommendations for policy-makers and managers. This will also enable the research projects to leverage their dissemination efforts through EUFORGEN.

Finally, EUFORGEN will continue development of pan-European gene conservation strategies for forest trees by carrying out more comprehensive analyses on the status of existing dynamic gene conservation efforts across Europe. This work will be facilitated by the new European Information System on Forest Genetic Resources (EUFGIS), which will be launched in September 2010. The information system will be maintained and further developed as part of EUFORGEN activities after the EUFGIS project has ended. EUFORGEN will also collaborate with the UN Food and Agriculture Organization (FAO) in the development of the State of the World's Forest Genetic Resources report (to be released by FAO in 2013).

More information on Phase IV can be found on the new EUFORGEN website (www.euforgen.org).



Four new EUFORGEN Technical Guidelines for *Alnus cordata*, *Fagus orientalis*, *Populus tremula* and *Betula pendula* are available soon. To download please visit: www.euforgen.org. They can also be requested from: euforgen@cgiar.org.

EVOLTREE Stakeholder Group meet in Austria and visit the common DNA repository centre



A Second Stakeholder Group meeting of the EVOLTREE Network of Excellence took place in Eisenstadt, Austria on 16-17 September 2009.

The meeting was well attended and was aimed at continuing the involvement of EVOLTREE stakeholders in the activities of the Network, to ensure that research findings influence policies and contribute to sustainable use of forests and their biodiversity.

The meeting illustrated to non-specialists the most recent scientific findings related to how forest ecosystems respond to major environmental changes. The presentations stimulated a discussion with the Stakeholders on possible actions to support sustainable use and conservation of forest resources based on the most advanced scientific understanding.

The various ongoing European research frameworks and initiatives related to different aspects of intraspecific diversity of trees were presented, to illustrate their different focus and complementarities. In particular, speakers representing the following European projects and initiatives were invited to deliver presentations: TREEBREEDEX, NovelTree, EUFORGEN, EUFGIS, COST Action E52 on the "Evaluation of Beech Genetic Resources for Sustainable Forestry".

A visit was organized to the common DNA repository centre, established within the EVOLTREE framework at the Austrian Institute of Technology in Seibersdorf, as a common



A beech (Fagus sylvatica) forest near Lake Vico (Viterbo, central Italy). Photo: B. Vinceti, Bioversity International

infrastructure of the Network. A full description of the facility and its main features is available online at: www.evoltree.org/index.php/repository-centre.

Furthermore, invited scientists from EVOLTREE presented a series of overviews of their specific areas of work. The objective was to illustrate the current level of knowledge acquired in different scientific areas related to forest tree genetics and genomics, highlighting the practical applications of possible interest to the Stakeholders. The topics covered were: the movement of forest reproductive material: a strategy to cope with climate change (Reiner Finkeldey, University of Göttingen, Germany); examples of practical applications of tree genetic and genomic research: incorporating genomic insight into forest management, screening for drought resistance (Bruno Fady, INRA, France); molecular tools for certification of plant material (Giovanni Giuseppe Vendramin, CNR, Italy); and application of modelling approaches to anticipate future scenarios

with regard to European forests (Koen Kramer, Alterra, the Netherlands).

Two points in particular were presented to the attention of the Stakeholders to seek their feedback: i) the preparation of policy briefs or information notes on scientific findings of relevance to the Stakeholders, derived from EVOLTREE and associated initiatives; and ii) the organization of the last Stakeholder Group meeting in occasion of the final EVOLTREE scientific conference, to be held in San Lorenzo del Escorial, near Madrid, on 9-11 June 2010.

Participants agreed that more policy-makers should be involved in the process of discussion with scientists, but that this is challenging tasks. It was also observed that the Stakeholders EVOLTREE is trying to reach belong to distinct groups (policy-makers and forest practitioners) and the messages should be diversified to meet different needs or action should be taken to address primarily policy-makers, who would themselves influence other categories of stakeholders.

It was also noted that final recipients of the policy briefs should not be overwhelmed by information and a common agreement was reached on a series of simple messages to be communicated to policy-makers with regard to forest genetic and genomic resources. The topics proposed for the policy briefs were reviewed in light of a strategic approach.

The messages to be disseminated should focus on highlighting the consequences of unadapted management practices (in terms of job losses, economic value lost), and on communicating a sense of what the chances of success will be in fostering adaptation by looking a tree genetics and genomics. However, also simple, basic concepts should be flagged to the attention of a wide audience, such as the idea that genetic diversity is fundamental for adaptation to environmental changes.

Finally, the Stakeholders provided some preliminary ideas on how to organize the final Stakeholders' event to be held in conjunction with the EVOLTREE final scientific conference.

EVOLTREE Conference on Forest ecosystem genomics and adaptation

Preparations are underway for the final scientific conference of the EVOLTREE Network of Excellence. The event will focus on forest ecosystem genomics and adaptation and will take place on 9-11 June 2010, in San Lorenzo del Escorial (Madrid), Spain.

The conference will present the main research findings generated by EVOLTREE, but the event is also open to the scientific community outside the Network of Excellence. In addition, a Stakeholders' event is planned during the conference, aimed at engaging policy-makers, practitioners and scientists in a discussion on how to incorporate the research findings into sustainable forest management.

Programme – main scientific themes:

- Phenomics under climate change;
- Population genomics of adaptive traits;
- Evolutionary responses to environmental change;
- Community responses to environmental change;
- Migration under climate change;
- Eco-regional trends in adaptation;
- New technologies in ecosystem genomics;
- Climate change mitigation options.

Invited speakers: they include scientists from EVOLTREE, but also researchers who are not members of the Network of Excellence, from Europe and other regions of the world. A series of high profile speakers, external to the EVOLTREE Network, have confirmed their contribution:

- Prof. Robert Watson – Defra Chief Scientific Adviser (United Kingdom);
- Prof. Graham Bell – Professor, McGill University, Montreal (Canada);
- Prof. Christopher G. Eckert – Professor, Department of Biology, Queen's University, Kingston, Ontario (Canada);
- Dr. Jessica J. Hellmann – Assistant Professor of Biological Sciences, University of Notre Dame, Indiana (USA);
- Prof. Stefan Jansson – Professor, Umeå Plant Science Centre, University of Umeå (Sweden);
- Dr. Konstantin Krutovsky – Associate Professor,

Department of Ecosystem Science & Management, Texas A&M University, Texas (USA);

- Dr. Magnus Nordborg – Scientific Director, Gregor Mendel Institute (GMI) of molecular plant biology (GMI in Vienna, Austria, and the University of Southern California, Los Angeles, USA);
- Dr. Thomas G. Whitham – Executive Director, Merriam-Powell Center for Environmental Research, Northern Arizona University (USA).

More information is available at the conference website: www.ecosystemgenomics2010.fgua.es.



2nd Announcement

Deadlines:

Submission of abstracts:
1 February 2010
Early conference registration:
15 March 2010
Joint registration to the conference and EVOLTREE Annual meeting:
15 March 2010
Closing of registrations:
10 May 2010



The Royal Monastery – a striking architectural complex in San Lorenzo del Escorial (Madrid). Photo: B. Vinceti, Bioversity International

New transatlantic cooperation in forest genomics to be launched

A new collaborative project funded by the European Commission called FoResTTraC (Forest ecosystem genomics Research: supportIng Transatlantic Cooperation), is about to start in January 2010. It will be coordinated by Antoine Kremer from INRA-Bordeaux, France, and will include the participation of 11 partner organizations from Europe and North America (USA and Canada). Bioversity International is also involved and is responsible for the dissemination of the project results to a wide audience, particularly to the relevant Stakeholders.

The overall objective of FoResTTraC is to provide the European Commission, National Research agencies and the European research community at large, with a strategic research agenda in the field of forest ecosystem genomics for the next ten years.

This effort is in response to the concerns about the consequences of climate change on forest ecosystems. Major regional changes are foreseen in forest species compositions, tree range expansions and contractions, levels of exposure of trees to drought, nutritional conditions and community interactions. Besides regional differences there are strong transcontinental similarities between Europe and North America.

In the boreal regions of both continents, increases in temperature and a longer growing season will enhance tree growth and production, but also insect outbreaks due to milder winters.

Northwards, migrations of broadleaves (especially *Fagus* and *Quercus*) reaching boreal regions are expected in Europe and North America.

Prolonged exposures to drought in southern Europe and southeast USA will aggravate risks of forest fires. In addition to similarities of risks and impacts due to climate changes, the two continents also show strong similarities in the taxonomic units that will be exposed to these changes: spruces and pines in the boreal regions, broadleaves (mainly oaks) throughout the temperate regions and Mediterranean conifers in southern regions.

In Europe and North America, there are ongoing large scale projects in forest genomics aiming at discovering genes of adaptive and economic significance and monitoring their diversity in natural populations. FoResTTraC will produce a synthesis of the ongoing research efforts in the two regions, with a particular focus on the most ecologically and economically important forest tree families in the two continents: *Salicaceae*, *Fagaceae* and *Pinaceae*.

In addition, FoResTTraC will extend these efforts by building the next generation of research projects linking genomics and ecology for understanding the response of trees to climatic change.

Characterization of genetic structure of *Juniperus seravschanica* Kom in Kyrgyzstan

Ormon Sultangaziev, from the Kyrgyz National Agrarian University, Bishkek, Kyrgyzstan, is the last research fellow to be sponsored by the Austrian government and Bioversity International under the programme "Developing training capacity and human resources for the management of forest biodiversity." His sponsored study on "Characterization of genetic structure of *Juniperus seravschanica* Kom in Kyrgyzstan" was carried out at the Department of Genetics Federal Research and Training Centre for Forest, Natural Hazards and Landscape (BFW), Austria for a period of two years from 1 November 2007 to 31 October 2009.

The findings of this study are relevant for the juniper conservation strategy in Kyrgyzstan, where populations are divided by north and south subpopulation, with high genetic diversity in the south. One must take into account geographical structuring of haplotypes when formulating a conservation strategy of seravschan juniper in Kyrgyzstan. It is important to conserve southern populations, especially Andarak, Kempir Oi, Arka and Suu Bashy which possess high haplotypic variation and have different

climatic and ecological conditions.

Seravschan juniper (*J. seravschanica* Kom. syn. *J. polycarpus* var *seravschanica*) is dioecious, a wind-pollinated slow-growing shrub or small tree attaining a height of up to 15-18m.

The species is mostly under anthropogenic pressure in Kyrgyzstan.

Conservation efforts need prioritization in the face of limited funding. Patterns of genetic diversity can be used for prioritization of conservation efforts;

therefore the investigation of genetic variation in natural populations is not only of scientific interest. Here we investigated juniper species with chloroplast DNA (cpDNA) markers and morphometric analysis. Morphometric analyzes of 11 needles, cone traits and, in addition, dbh, height, stem form and sex was studied. Results show that male individuals invest more in vegetative growth than females. Sex ratio was strongly female based and not determined by habitat condition. The survey by two newly developed minisatellites, cpDNA, SNP, PCR-RFLP for 541 individuals distributed among 15 populations allowed the detection 12 haplotypes. Clear north-south population differentiation were identified. The coefficient of differentiation among populations computed on the basis of haplotype frequency ($G_{st}=0.123$) was one of the lowest found within other examined *Juniperus* species, but within the range from the other coniferous species.

Allelic diversity was highest in the south, so probably the refugial or founding populations were there. Most likely Kyrgyzstan has been colonized by *J. seravschanica* Kom. from the south, with slow long distance dispersal by birds.



Ormon Sultangaziev.
Photo: Kurmanbaev Bekbolot, Kyrgyz National Agrarian University, Bishkek, Kyrgyzstan

Agricultural research for poverty alleviation continued...

(continued from page 1)

Europe also needs to drastically change the way research is performed. Research priorities must be lead by demand, involve stakeholders from the beginning, be iterative rather than linear and have clear uptake pathways. The traditionally competitive European model of research generally does not promote maintenance of legacy of public research outcomes. There is a recognized need for change in this model.

One outcome from the consultation was striking: poverty issues in Europe. The European agricultural research community has paid very little attention to poverty in the research agenda. In the European Union (EU), out of the total population of 500 million, some 43 million people were thought to be at risk of food poverty in 2007. In most countries, the rural population are poorer than the urban population. Absolute and relative poverty has unequal patterns of distribution in Europe, with absolute poverty

rampant in some regions of eastern Europe.

The timing of the regional consultations and the Conference is also very relevant for the EU political agenda as it takes place in the middle of concurrent discussions on the future of agricultural and research policies (revision of the Common Agricultural Policy and the Eighth Framework Programme for Research). The set of community policies that affects agricultural research for development needs to become

much more coherent, targeted and consistent than it has been so far.

In addition to the face-to-face meetings, electronic consultations and commissioned regional review papers were completed as part of the regional consultations. They provide valuable sources of information on existing national and regional reports, policies and views on how agricultural research priorities match the development aims and needs (www.egfar.org).

Regional Director for Europe

Focus on the other regions...

Symposium on Forest Genetic Resources in the Asia-Pacific region

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Vulnerability to climate change, prioritization of species and community involvement in forest conservation were the subject of intensive discussions, when researchers and forest administrators across Asia and the Pacific gathered for the International Symposium on Forest Genetic Resources in Kuala Lumpur, Malaysia, 5-8 October 2009.

The symposium was part of the project "Strengthening National Capacity and Regional Collaboration for

Sustainable Use of Forest Genetic Resources in Tropical Asia", which is funded by the International Tropical Timber Organization (ITTO). The symposium also provided an opportunity for the members of the Asia Pacific Forest Genetic Resources Programme (APFORGEN) to meet and share ideas on future collaboration.

Presentations of country reports revealed that many countries in the region already have substantial capacity for conserving and managing their forest genetic resources. Strategies for genetic conservation have been formulated and national databases or platforms established e.g. in Cambodia, China, Indonesia and Malaysia. At the same time, habitat loss continues at a high average pace, and its impacts on forest species and local communities are exacerbated by climate change. Many countries still lack capacities and resources, especially at sub-national levels, for assessing their forest genetic diversity. This makes it difficult

to plan and implement effective conservation and management strategies.

The participants of the symposium strongly endorsed the need to continue regional collaboration for sharing information and supporting national programmes and efforts in order to conserve and sustainably manage forest genetic resources. It was also suggested that the APFORGEN programme be strengthened by broadening it from tropical Asia to include Pacific and East Asian countries.

The symposium was jointly organized by the Forest Research Institute of Malaysia (FRIM), Asia Pacific Association of Forestry Research Institutions (APAFRI) and Bioversity. Other collaborating institutions were ITTO, Food and Agriculture Organization of the UN (FAO), International Union of Forest Research Organizations (IUFRO), Forest Tree Breeding Centre of the Japan Forestry and Forest Products Research Institute, and the Secretariat of the Pacific Community.

The symposium was followed by a one-day workshop on the State of the World's Forest Genetic Resources report, where the draft guidelines for country reports and the thematic background studies were discussed. The process provides a good opportunity and framework for the countries in the region to continue collaboration on conservation and management of their forest genetic diversity.



The symposium on forest genetic resources brought together over 60 participants from 19 countries across the Asia Pacific region. Photo: Forest Research Institute Malaysia

LAFORGEN side event at XIII World Forestry Congress

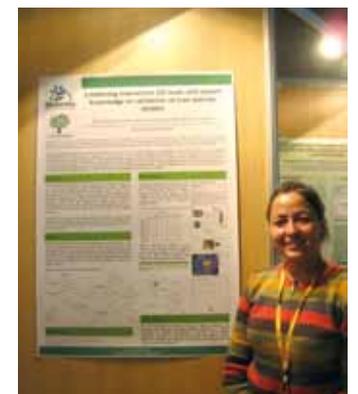
With support from Bioversity International and the sponsoring of the Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA) from Spain, LAFORGEN, the Latin American Forest Genetic Resources Programme, organized a side event at the XIII World Forestry Congress held in Buenos Aires, Argentina, 18-23 October. The objective of the side event was to raise awareness on LAFORGEN, which is catalyzing, supporting and implementing priority actions related to conservation and use of FGR in Latin America, through enhanced collaboration among countries and development of capacity building initiatives.

Intra-specific diversity of tree species is a dimension of forest biodiversity that is often neglected. In the final declaration of the World Forestry Congress (http://foris.fao.org/meetings/download/2009/xiii_the_world_forestry_congress/misc_documents/wfc_declaration.pdf), considerable emphasis was placed on the threats posed by climate change on forests, on the goods and services they provide, as well as the potential of forests in climate change adaptation and mitigation. However, the role of genetic resources was not mentioned in this official statement, although their importance is self-evident. Genetic diversity is the foundation for adaptation of natural forests to climate change and is also the resource basis for the selection of adapted forest reproductive material to establish planted forests and agroforestry systems.

The LAFORGEN side event was successful, with more than 90 people attending. Four members of the LAFORGEN Coordinating Committee participated in the panel at the side event. Some of the panel members delivered presentations on: the progress in the initiative since its establishment, on the FAO-led initiative to prepare a State of the World's report on forest genetic resources, on the first results of MAPFORGEN (a project undertaken within LAFORGEN to assess the threats on, and conservation status of 100 tree species native to Latin America), and on a case study from the Peruvian Amazon on participatory domestication (presented by World Agroforestry Centre).

In the discussion that followed the presentation, evidence of a strong demand for capacity building initiatives in the LAC region on forest genetic resources emerged from students and professionals alike. It is indeed within the objectives of LAFORGEN to contribute to raising the profile of forest genetic studies in university curricula in Latin American countries. Action has already been taken in this direction and the LAFORGEN members from INTA-Bariloche (Argentina) gave visibility to this area of work by organizing a pre-congress training course on forest genetic resources, which received good feedback and was the only training initiative offered before the congress.

During the congress, Bioversity presented a poster on the work undertaken by Nora Castaneda, Maarten van Zonneveld and Xavier Scheldeman, on the use of GIS-based model climate envelopes for 100 key tree species in Latin America, aimed at predicting their distribution. The use of GIS tools was combined with the inputs of the experts from LAFORGEN to refine and validate the results of the modelling exercise.



Nora Castañeda-Álvarez (CIAT) at the Bioversity stand during the World Forest Congress. Photo: B. Vinceti, Bioversity International

Apple tree landraces and rowan populations of the Karelian Isthmus: safe conservation measures

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In the framework of the joint project between N.I. Vavilov Research Institute of Plant Industry (VIR), Biodiversity International and Centre de Recherche Publique (C.R.P.) Gabriel Lippmann, Luxembourg, an exploration was launched in June 2009 to collect leaves of Rowan/European mountain ash (*Sorbus aucuparia* L.) and to disclose polymorphism of its populations in Leningrad Province. At the same time, the team of plant explorers examined the impact of severe frosts in the winter of 2005/06 on the status of local fruit plants. Special attention was paid to the extant orchards of apple landraces, bearing in mind the potential economic importance of apple-tree and its adaptability to local soil and climate conditions.

Rowan is most widely spread in the Karelian Isthmus and is traditionally used by the local population. Rowan berries have a particular nutritional, dietary and medicinal value, as they are rich in vitamin C (up to 200mg/100g), vitamin P active compounds (up to 770mg/100g) and vitamin K1 (about 1mg/100g). In terms of carotene content, rowan berries are in no way inferior to apricot and carrot. An important

chemical composition indicator is the content of sorbitol that is used as a sugar substitute for the sugar diabetes patients. Pectin, that is also present in rowan berries, is capable of binding toxins, heavy metal salts and radionuclides.

Rowan also has an important sacral significance for Russian people. In national folklore, rowan often represents a token of happiness, peace, luck and order within a family. The ancient ancestors of Russians held rowan trees sacred and believed them to possess magical powers. Rowan is regarded as one of the symbols of Russia.

Since wild rowan had always been so abundant, there was no urgent necessity to domesticate this fruit plant, as was common practice in the centres of diversity of wild fruit species. At the same time, significant differences in many morphological and economically important traits have been found to exist between rowan populations at different locations. In this regard, it will be very interesting to analyze DNA from leaves in order to assess the degree of polymorphism in the studied populations. This work will be carried out at C.R.P. Gabriel Lippmann, Luxembourg within the framework of the current project. The information resulting from the study will be very important for refining taxonomic problems and for the inclusion of selected rowan samples into the VIR *ex situ* collection.

The most noteworthy finding of the June exploration was the rich diversity of old local cultigenic apple-tree landraces growing in derelict orchards on the sites of former Finnish farmsteads, in the vicinity of Lake Otradnoye, in the Karelian Isthmus (Priozersk District of Leningrad Province). The Karelian Isthmus is an old area of Finnish horticulture at the intersection of two powerful plant introduction flows – one from Scandinavia and Western

Europe, the other from the Russian Empire. Several centuries of cultivation made the local assortment of apple-tree varieties quite different from those grown in other areas of North-Western Russia.

In these orchards it is still possible to find not only landraces whose pomological names were lost long ago, but also landraces selected by the owners of the orchards among horticultural materials of unknown origin and identified by them as the most valuable. The results of the collecting mission have shown that further, more detailed exploration of the Karelian Isthmus targeted on fruit crop landraces identification will be of special interest and usefulness because the ancient orchards still occurring in this territory are endangered due to the intensive housing development activities.

Besides the collecting mission carried out within the framework of the project, some other regions featuring ancient orchards in the Karelian Isthmus were explored in the autumn and some fruit crop landraces were identified for their further inclusion in the VIR collection.

This local apple-tree diversity has unique adaptive potential, as it has survived a number of winters when frosts were below -40°C . However, it is also very vulnerable, since most of the trees have surpassed the age of 65–80 years. Due to the lack of maintenance, many trees have begun to dry out, resulting in their permanent loss, even in the immediate future.

The collecting mission identified 18 cultigenic forms of apple-tree that deserved to be included in VIR's national collection for safe conservation. All of them were marked with labels bearing individual identification numbers. Their cuttings will be placed for *ex situ* conservation and duplicated in the cryopreservation facility at VIR.

Top to bottom: Estimation of Karelian apple tree landrace; *Sorbus* plant in the forest (Priozerskij district Leningrad province); *Sorbus aucuparia* L. collected near St. Petersburg (Leningrad region), September 2009. Photos: Artem Sorokin, VIR, St Petersburg, Russian Federation

Second International Conference on Forest Genetic Resources in Siberia

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Pinus sibirica plantation, Novosibirsk region, Iskitim Forestry (Yelbashi District), Russian Federation.
 Photo: Alexander Klimashin, Siberian State Academy of Geodesy, Novosibirsk, Russian Federation

The Second International Conference on Conservation of Forest Genetic Resources in Siberia was held under the aegis of the International Union of Forest Research Organizations (IUFRO) in Novosibirsk, Russian Federation. More than 100 participants from Russian Federation and Austria, Bulgaria, Italy and Ukraine took part. Seventy-two presentations were made during the conference. The presentations were grouped into two sections: i) the structure and dynamics of population genepools under conditions of global climate change and other anthropogenic effects; and ii) forest tree breeding and genetic conservation: condition, genetic inventory and tree improvement practices.

The majority of the reports presented in the section "Structure and dynamics of population genepools" were devoted to the study of population differentiation and species phylogeny using molecular genetic markers.

A number of presentations were devoted to the international importance of forest genetic resources (FGR) of Siberia, an invaluable basis for adaptation, genetic improvement and the increase of forest quality and productivity. A vast area of autochthonous stands and the ability of Siberian tree species to grow in extremely

severe climatic conditions are remarkable. There is a long history of forest tree breeding and biodiversity conservation in Russia. However, despite certain success in creating breeding programmes and studying populations of forest-forming tree species, the negative tendencies in FGR conservation of recent decades in Siberia still persist.

Modern methods of forest management and their effects on FGR conservation and stability of forest tree populations solicited a keen discussion. Most participants agreed that it is necessary to distinguish between the principles of forest management in genetically heterogenic self-regulated natural forests, on the one hand, and artificial stands on the other. Concerning natural populations of main tree species, the idea was expressed that a population can be considered not only as an elementary unit of the evolutionary process, but also as that of preservation of a forest's genetic stability. Moreover, it is important to pay attention to populations characterized by the most ecological diversity, as well as to populations in glacial refugia.

About half the reports were presented in the section on "Breeding Programmes and Conservation Management". It was emphasized that the

extent of *in situ* and *ex situ* genetic conservation in Siberia still remains inadequate, and the establishment of *in situ* and *ex situ* conservation sites has decreased dramatically. The protection of genetic reserves located close to industrial centres poses a substantial problem. It was felt necessary to appeal to the Federal Russian Forest Management Agency ("Rosleskhoz") for urgent consideration of a revised set of regulations on FGR.

Provenance research was given considerable thought. Many years' worth of data on growth, phenotypic traits and chemical content of the biomass of the progenies from different geographic populations of *Pinus sylvestris*, *P. sibirica* and *Larix sibirica* in Siberia were summarized and used for forest-seed zoning.

The problem of evaluation of mass selection effectiveness is still under discussion. In experiments on pine and spruce in the Kirov region, the growth rate of plus-trees progeny on average does not differ from that of control trees; that is why the creation of seed plantations of the first generation is unprofitable. Individual selection of those species though, can be very efficient. A suggestion was made to create monoclonal seed plantations of the second generation on the basis of rare "elite" trees, but their

seeds should be used only for short rotation plantations. Promising forms and varieties of poplar for different soil-climatic zones have also been suggested. The urgent need for a genetic inventory of clones was noted. The prospect of remote sensing methods for measuring traits in pine clones was demonstrated. The global warming effect on the reproduction of trees was discussed.

The conference ended with the agreement on a resolution that was passed to the President, the Prime Minister and Russian Federation's nature conservation organizations. The participants noted that one of the main goals of the first conference in Barnaul in 2007 (see NL35 page 12) – the creation of an informal international community of forest scientists and managers concerned with the problems of conservation, protection, study and sustainable use of FGR of Siberia – has been fulfilled. The next conference is scheduled in autumn 2011 at the Institute of Forest of the Siberian Branch of the Russian Academy of Science, Krasnoyarsk. The proceedings of the Novosibirsk conference will be published in a special issue of the journal "Conifers of the Boreal Area" (www.forest-culture.narod.ru/HBZ/HBZ.html). See also the conference website: www-sbras.nsc.ru/ws/cfgrs2009/index.en.html.

12th Session of the Commission on Genetic Resources for Food and Agriculture

The FAO Commission on Genetic Resources for Food and Agriculture (CGRFA) held its 12th Regular Session in Rome on 19–23 October 2009. The CGRFA, established in 1983, has strong experience in addressing issues related to the sustainable use, development and conservation of genetic resources for food and agriculture.

The delegates spent a large part of the meeting discussing access and benefit-sharing for genetic resources for food and agriculture before they adopted a resolution on related policies and arrangements. The resolution invites the ongoing negotiation process for the International Regime on Access and Benefit-sharing, carried out under the Convention on Biological Diversity (CBD), to consider the specific nature of genetic resources for food and agriculture for achieving food security. Furthermore, the resolution calls for inclusion

of flexible mechanisms in the International Regime to ensure continued access and exchange of genetic resources for food and agriculture. The International Regime is scheduled to be adopted at the 10th Conference of the Parties to the CBD in Japan in October 2010.

The CGRFA Secretariat presented the draft Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture for final comments. The Commission endorsed the Second Report and requested the Secretariat to finalize it taking into account the comments received from the delegates. The Commission thanked FAO for preparing the Second Report and acknowledged the contributions of a wide range of stakeholders. In particular, the Commission expressed its appreciation to Biodiversity International and the other Centres of the Consultative Group on International Agricultural Research (CGIAR). The Commission also requested FAO to prepare an updated Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture for its consideration at its next session.

Regarding forest genetic resources, the Commission discussed the preparation of the First Report on the State of the World's Forest Genetic Resources and acknowledged the efforts made by FAO so far in preparing the process and in strengthening international cooperation for this purpose. It stressed that the process for preparing the report should be based on country reports, supported by thematic studies and reports from international organizations, as well as inputs from other relevant stakeholders. The Commission decided to establish a new Intergovernmental Technical Working Group on Forest Genetic Resources to oversee

the development of the report. It elected a total of 27 members to the Working Group, including five European countries (Finland, France, Italy, Norway and Spain). In early 2010, FAO will approach countries and ask them to nominate national focal points for the preparation of the country reports. The first meeting of the Working Group is likely to take place in late 2010. The full report is expected to be presented to the Commission in 2013.

The Commission also reviewed activities, partnerships and projects undertaken by FAO in support of the implementation of the Global Plan of Action for Animal Genetic Resources since 2007. The Commission acknowledged the progress made in this regard and encouraged its members to prepare their first country progress reports by 2011. It then adopted a Funding Strategy for the implementation of the Global Plan of Action for Animal Genetic Resources and urged FAO to implement the strategy.

The meeting encouraged the Global Crop Diversity Trust and the CGIAR Centres to continue close cooperation with the Commission and contribute to the implementation of relevant activities. The Commission also welcomed the ongoing reform of the CGIAR, and expressed hope that the new governance structure will further strengthen conservation and use of genetic resources for food and agriculture on a system-wide basis, in close collaboration with partners at national and international levels. The Commission encouraged the CGIAR Centres to continue developing an integrated and system-wide coordinated approach to genetic resources, which could significantly contribute to the implementation of the Multi-Year Programme of Work of the Commission.

The full report of the 12th Regular Session is available at the CGRFA website (www.fao.org/nr/cgrfa/cgrfa-home/en/).



Scots pine seed orchard in Cikota, Hungary.
Photo: J. Koskela, Biodiversity International

Global Food Security and the International Alliance Against Hunger

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The global food price crisis of 2007/08 opened the eyes of the world on the fragility of the global food systems and the inter-connectedness of all countries with regard to food security. During the crisis in 2008, food prices shot up markedly. The cost of foods such as wheat and rice rose by more than 100% during the year, and generally food security was threatened especially for the poor. Food prices have since gone down somewhat, below the 2008 levels, however, prices are still high, compared to pre-2008 levels. The issue, however, is not just a food price crisis in a particular year or period, the core issue is the enduring global food and nutrition challenge, which currently sees over one billion people chronically hungry – 105 million more than in 2008.

One “positive outcome” of the 2008 food price crisis has been the fact that it has contributed to raising awareness at the highest levels, on the issues of food and nutrition security and the urgency of the global situation. Since 2008, various high-level conferences and summits have taken place, including the FAO High Level Conference on World Food Security, organized in Rome, in June 2008; the high focus on agriculture in the G8 Summit in Hokkaido, Japan in July 2008; the creation of the UN High Level Task Force on Global Food Security; and the launching of a process for reform of the Committee on World Food Security, to be the foremost global mechanism on food security governance in the world. These high-level events, with a focus on agriculture and



Left: Orange-fleshed Fe'i bananas from the Pacific are rich in vitamin A precursors and an important source of good nutrition. Utin lap is one such variety, and like all Fe'i types, the stalk stays upright on the plant. Photo: Lois Englberger; right: Banana diversity on sale in Kolonia, Pohnpei, Micronesia. The darker fruits on the right are also Fe'i bananas. Banana and plantain are two of the world's staple crops feeding millions of people world wide. Photo: Luigi Guarino, Global Crop Diversity Trust, Rome, Italy.

food security have continued into 2009. Notable among 2009 events have been the G8 Summit in L'Aquila, Italy in July, where there was a shift in policy in favour of food security support for developing countries, and a decision to mobilize over 20 billion USD over three years for this cause.

Various civil society and stakeholder platforms have actively engaged and called on governments and political leaders of the world to take the issues of fighting hunger more seriously and work towards the elimination of hunger from our world. One such multi-stakeholder platform has been the International Alliance Against Hunger (IAAH), an initiative that was jointly founded in 2003 by Rome-based UN Agencies (Food and Agriculture Organization (FAO), International Fund for Agricultural Development (IFAD) and World Food Programme (WFP)), and Bioversity International, following the call of the “World Food Summit-five years later” for a global partnership to end hunger. The IAAH partnership includes a number of Civil Society Organizations, such as Action Aid and Oxfam, Non-Governmental Organizations (NGOs), and with National Alliances Against Hunger in a number of countries.

The Working Group of IAAH is currently chaired by Kwesi Atta-Krah (Bioversity International).

The celebration of World Food Day in 2009, became a World Food Week, with three inter-related high-level events, including a two-day FAO conference on “How to Feed the World in 2050”, followed by the plenary sessions of the Committee on World Food Security, which this year, considered and endorsed the reforms of the CFS; and finally the celebration of World Food Day on 16 October. The Week's events were kicked off by the IAAH launching the World Food Day Exhibition, mounted by the Rome-based Agencies, to demonstrate some of the emerging developments and best practices in favour of food and nutrition security.

Another major event launched by IAAH during the World Food Week, was the special side event on “Accountability in Food Security Governance”, aimed at seeking views on the issue of accountability as it relates to ensuring the delivery of food security commitments, and seeking ideas on mechanisms for promoting the entrenchment of accountability within global and national food security strategies. The event, chaired by K. Atta-Krah

(Bioversity), was attended by participants from civil society, NGOs, countries and international agencies.

The event concluded with the importance of having accountability built into food security governance at all levels, but agreed that this was a very sensitive issue for a number of countries, and that appropriate processes and mechanisms would need to be established for this. The proposed mechanism presented by Oxfam was accepted for further development. IAAH and Civil Society organizations were encouraged to continue to work within the context of the reformed CFS, to ensure that accountability mechanisms are indeed built into the functioning of the new CFS, and into food security governance at global and national levels.

The two-year cycle of high-level events on global food security, ended in November 2009, at the highest level – the World Food Summit 2009, followed immediately by the FAO Conference. It is believed that conclusions reached at these events will contribute towards a realization of the targets that have been established for making progress in food and nutrition security in the world.

Diversity for Life: a global campaign for agricultural biodiversity

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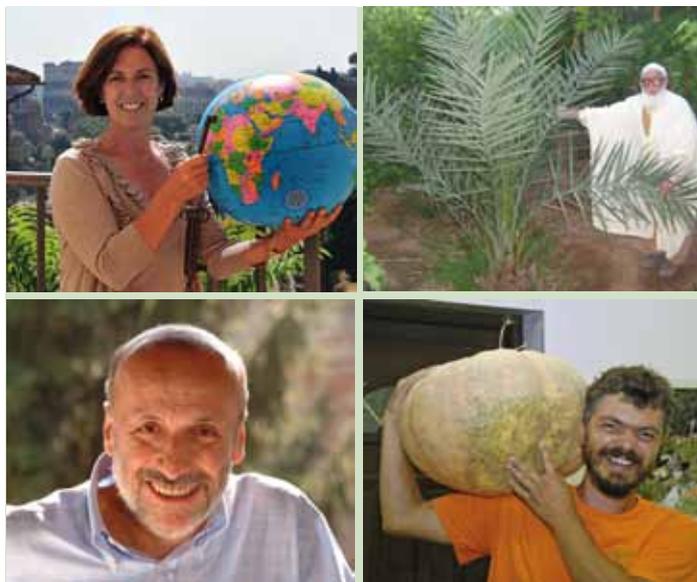


In collaboration with a wide range of partners, Bioversity International is mounting a global awareness campaign "Diversity for Life" that will gather momentum during 2010, the International Year of Biodiversity. The campaign was officially launched on 22 May 2008 in Rome and Nairobi. The purpose of Diversity for Life is to inspire people to use agricultural biodiversity to improve their nutrition, their livelihoods and the health of the planet.

The Secretariat of the Convention on Biological Diversity has strongly endorsed Diversity for Life and has informed its national focal points that supporting and participating in the campaign is considered a contribution to national commitments to recognize the International Year of Biodiversity in 2010.

Diversity for Life has planned a host of campaign activities around the world, in particular in Italy, Kenya and Peru. Headquartered in Rome, the campaign will particularly focus on activities there. This is not just a matter of logistics: Italy has long played a lead role in the conservation and use of agricultural biodiversity.

Activities in Italy will be addressed to policy-makers, the media, schools and the general public. Diversity for Life is already working with a number



Four of the 2008 Guardians of Diversity in the Mediterranean. From top left clockwise: Isabella dalla Ragione, Italy (photo: S. Vollono, Bioversity International); Slimane Bekkay, Algeria (photo: N. Nasr, Bioversity International); Panagiotis Sainatoudis, Greece (photo: Peliti); and Carlo Petrini, Italy (photo: Slowfood).

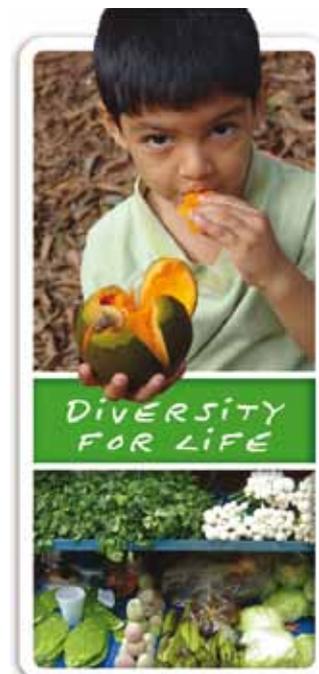
of Italian schools on a number of projects. An oral history project involves 10-12 year-old students who interview their grandparents and other older relatives about the foods they remember eating as children and the memories and traditions they associate with these foods. The oral histories – together with photos, videos and voice recordings of the interview subjects – are entered on the campaign website, allowing students to learn about food cultures around the world. At the moment six schools from three Italian regions are participating.

Ten high schools in Rome are also testing lesson plans and teaching materials on agricultural biodiversity that have been developed by Bioversity in collaboration with the Italian Association of Science Teachers, the National Research Council, the University of Naples and the National Academy of Sciences. The lesson plans focus on the importance of agricultural biodiversity and its relationship to climate change, sustainable development and nutrition.

The celebration of the International Year of Biological Diversity in Italy will have its

peak in May 2010, when Rome will become the "capital of biodiversity". From 19 to 23 May, Diversity for Life will sponsor "La Settimana della Biodiversità", a week-long celebration of biodiversity in music, video, poetry, drama and art. It will include keynote addresses, roundtable discussions, concerts, exhibits and workshops for children. Based in Rome, at the Auditorium Parco della Musica and targeting an international audience, the festival will provide an unprecedented opportunity to raise awareness of the value of agricultural biodiversity to the lives of human beings. World-renowned scientists, humanists, philosophers, gardeners and chefs will ensure that the festival has wide appeal and an international spotlight. La Settimana della Biodiversità is being organized in collaboration with a wide range of partners: IFAD, FAO, Slow Food, the National Research Council, the National Academy of Sciences and Italian NGOs such as Crocevia, Acra, Ucodep and Movimondo.

Diversity for Life is also shining a spotlight on the



A global campaign for agricultural biodiversity

Guardians of Diversity: the many people around the world who have devoted their lives to safeguarding agricultural biodiversity and its related cultural heritage. On the 22 May 2009, on the occasion of the International Day of Biodiversity, Bioversity International and Diversity for Life, in collaboration with the Mayor of Rome, held a special event at the Campidoglio (Rome's Capitol) to pay tribute to eight Guardians of Diversity in the Mediterranean. The Guardians included farmers, community activists, scientists and scholars. The celebration of Guardians of Diversity in the Mediterranean will be an annual event, in partnership with COPEAM (the Permanent Conference of the Mediterranean Audiovisual Operators) and will open *La Settimana della Biodiversità* in 2010.

The campaign intends to undertake activities with other European countries, starting in 2010—notably in the UK. The nature of those activities is currently under discussion with potential campaign partners Kew Gardens and the Eden Project.

EURISCO Training and Seminar is held in Ukraine



A EURISCO Training and Seminar was held in Kharkiv, Ukraine on 20-22 October 2009, organized by the Institute of Plant Production n.a. V.Y. Yuriev of UAAS - National Centre for Plant Genetic Resources of Ukraine (NCPGRU) and the EURISCO Coordinator from Bioversity International, with NCPGRU funding the 44 Training and Seminar participants. This is the fourth in a series of Trainings and Seminars, which is also envisioned to be held in other countries.

The objectives of this Training and Seminar were to: strengthen the national capacity in data exchange and the sustainability of EURISCO; pursue the improvement of data richness and completeness through the enhancement of the quality and quantity of data flowing into the Catalogue; and provide training to Ukrainian documentation experts and to the national focal point (NFP).

This Training and Seminar had six main goals: i) identify and define support needed for the further development of the National Inventory (NI); ii) discuss and identify ways to improve data quality and quantity; iii) discuss and identify ways to increase the availability of NI to EURISCO; iv) set a plan for new NI upload and update; v) identify the type of support needed to carry out data sharing; and vi) discuss and identify ways to establish a collaboration mechanism between collection holders to improve data sharing.

The seminar, involving genebank documentation systems' managers, representatives from the working collections and researchers, provided up-to-date information to the members of the Ukrainian network of data providers to the National Inventory and represented an opportunity to raise awareness of the importance of plant genetic resources information activities.

On the first day several presentations were made: setting the scene on documentation, informing about quality and quantity data, tools, practical examples and the global system.

On the second day an overall presentation was made on EURISCO, followed by another six presentations from participants: "International Information Systems of Plant Genetic Resources"; "WIEWS, GRIN, European database etc."; "The Characterization and Evaluation database in Ukraine"; "Statistic methods for plant genetic resources"; "Database for seed conservation"; "Database

system for germplasm registration"; "National Inventory of Ukraine"; and "Use of component information system for plant genetic resources". There was also a session on the descriptors, facilitating the discussion for better understanding of their definition/meaning and usability at national level.

The activities proposed helped the participants to engage their discussions on the need to improve data quality and to provide data to the central repository timely and in the requested format.

The training focused on data quality and completeness, and clarification of descriptors' definitions and usability for the NI.

The main outcomes of the Seminar were a better clarity and understanding of the EURISCO system structure and flow of information; the role of the NFP of the EURISCO NI and the feedback process for data quality and completeness at all levels. Furthermore, the role and responsibilities of collections' managers/curators, as the first level, and the NFP, as the next level of information flow, was explained and clarified.

The outputs and recommendations of the Training and Seminar were discussed at the end of each day.

Further information on this Seminar and Training, including the agenda, the presentations made and outcomes can be found at http://eurisco.ecpgr.org/contact_menu/training.php. They are also available in the December 2009 EURISCO E-Bulletin. If you would like to receive the E-Bulletin, please register at: http://eurisco.ecpgr.org/releases/e_bulletin.php.



Traditional cake, called a "karavay" (loaf) was prepared in honour of the Training and Seminar event. It is traditionally baked for special, solemn occasions: to greet and welcome guests, for weddings and other important celebrations. Photo: S. Dias, Bioversity International

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Forthcoming meetings

8 January 2010

CBD Celebration
and Launch of the
International Year of
Biodiversity 2010.
Curitiba, Brazil.
www.cbd.int/

25-29 January 2010

UNESCO International
Year of Biodiversity
Conference on Science
and Biodiversity.
Paris, France.
www.unesco.org

1-4 February 2010

ICARDA/NCARDE/Jordan
Ministry of Agriculture:
Food Security and Climate
Change in Dry Areas.
Amman, Jordan.
www.icarda.org

17-20 February 2010

BioFach-World Organic
Trade Fair.
Nuremberg, Germany
www.biofach.de

15-17 March 2010

International Conference
on Biodiversity in Relation
to Food and Human
Security in a Warming
Planet.
Chennai, India.
www.mssrf.res.in/

6-8 April 2010

EUCARPIA Cereal Section
meeting.
Cambridge, United Kingdom.
www.eucarpia.org/

24-27 April 2010

2nd International
Symposium on Genomics
of Plant Genetic Resources.
Bologna, Italy.
www.gpgr2.com/

26-29 April 2010

IAALD XIIIth World
Congress: Scientific and
Technical Information
and Rural Development:
Highlights of Innovative
Practices.
Montpellier, France.
http://iaald2010.agropolis.fr

9-11 June 2010

EVOLTREE: Forest
Ecosystem Genomics and
Adaptation.
San Lorenzo de El Escorial
(Madrid), Spain.
www.ecosystemgenom-
ics2010.fgua.es/

13-18 June 2010

BGCI 4th Global Botanic
Garden Congress.
Dublin, Ireland.
www.4GBGC.com

28 June - 1 July 2010

ISDA 2010. International
Symposium on
"Innovation and
Sustainable Development
in Agriculture and Food".
Montpellier, France.
www.isda2010.net

22-27 August 2010

ISHS 28th International
Horticultural Congress.
Lisbon, Portugal.
www.ihc2010.org/

30 Aug - 1 Sept 2010

EUCARPIA *Capsicum*
and Eggplant Breeding
Working Group meeting.
Valencia, Spain.
www.eucarpia.org/

3-5 September 2010

4th SAVE European
Agrobiodiversity Seminar.
Castle Criewen,
Brandenburg, Germany.
www.save-foundation.net

14-16 September 2010

EUFGIS Final Project
meeting.
Vienna, Austria.
www.eufgis.org

Sorbus L. (Rosaceae)

Obituary

Professor César Gómez-Campo (1933-2009)

Prof. César Gómez-Campo, an outstanding pioneer in plant genetic resources conservation, died on 5 September 2009. Born in 1933, he obtained two Ph.D. degrees in Agricultural Engineering and Biological Sciences. In 1965, he became Professor of Plant Physiology and Organography at the Polytechnic University of Madrid (UPM) and throughout his professional life he led the Departments of Plant Physiology and Organography, and Plant Biology. In the sixties, Prof. Gómez-Campo pioneered the establishment of *ex situ* conservation strategies for wild plants. In 1966, he created the first seed bank in the world devoted to wild plant species. As an expert in crucifers, he developed a most relevant seed collection of *Brassicaceae*, participating in collecting expeditions around the world. This collection has played a key role in PGR research initiatives from many countries. Throughout his life he enthusiastically provided knowledge and motivation that led to the creation of several seed banks throughout the Mediterranean Region and in other parts of the world. In the eighties, he launched plant conservation biology in Spain by editing the first Red Books of threatened plant species of Peninsular Spain and the Balearic Islands, and of the Canary Islands. Prof. Gómez-Campo participated actively in ECPGR and many other international scientific committees and organizations related to plant conservation. His vast activity in plant conservation and the biology and systematics of crucifers produced over 250 publications including nine books. Throughout his career he was distinguished with many national and international awards. After his retirement, as Professor Emeritus, he remained very active and organized 47 workshops on seed preservation in 17 countries. His passion for plants, permanent contagious optimism, kindness and knowledge will always be remembered by those who had the privilege to work with him and by all members of the PGR and plant conservation communities.

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