The CGIAR centres* are 15 international food and environmental research organizations located around the world. The centres pursue a research agenda to improve the lives of the poor, in partnership with national agricultural research systems (NARS), the private sector and civil society. The centres are supported by the Consultative Group on International Agricultural Research (CGIAR), a strategic alliance of countries, international and regional organizations, and private foundations. In collaboration with NARS, civil society and the private sector, the CGIAR fosters sustainable agricultural growth through high-quality science aimed at benefiting the poor through stronger food security, better human nutrition and health, higher incomes and improved management of natural resources. The CGIAR is cosponsored by the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the United Nations Development Programme (UNDP) and the World Bank. See www.cgiar.org.

The CGIAR System-wide Genetic Resources Programme (SGRP) joins the genetic resources activities of the CGIAR centres in a partnership whose goal is to maximize collaboration, particularly in five thematic areas: policy, public awareness and representation, information, knowledge and technology, and capacity building. These thematic areas relate to issues or fields of work that are critical to the success of genetic resources activities. SGRP contributes to the global effort to conserve agricultural, forestry and aquatic genetic resources, and promotes their use in ways that are consistent with the Convention on Biological Diversity (CBD). The Inter-Centre Working Group on Genetic Resources (ICWG-GR), which includes representatives from the centres, FAO and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), is the Steering Committee. Bioversity International is the Convening Centre for SGRP and hosts its coordinating Secretariat. See www.sgrp.cgiar.org.

Bioversity International is the world’s leading organization dedicated to researching agricultural biodiversity to improve people’s lives. Bioversity focuses on three important challenges: malnutrition and hidden hunger; sustainability and resilience in food supplies and farming systems; and conservation and use, ensuring that agricultural biodiversity remains accessible to all. Bioversity also provides policy information and analysis to improve the legal framework needed to ensure that agricultural biodiversity can be put to work to deliver sustainable solutions for economic development. Bioversity International is one of 15 international agricultural research centres supported by the CGIAR Fund. See www.bioversityinternational.org.

Cover photo: A Tanzanian farmer tends her home garden. Dirk Musschoot/Vredeseilanden.


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* Africa Rice Center – AfricaRice, Cotonou, Benin; Bioversity International, Rome, Italy; CIAT Centro Internacional de Agricultura Tropical, Cali, Colombia; CIFOR Center for International Forestry Research, Bogor, Indonesia; CIMMYT Centro Internacional de Mejoramiento de Maíz y Trigo, Mexico DF, Mexico; CIP Centro Internacional de la Papa, Lima, Peru; ICARDA International Center for Agricultural Research in the Dry Areas, Aleppo, Syrian Arab Republic; ICRISAT International Crops Research Institute for the Semi-Arid Tropics, Patancheru, India; IFPRI International Food Policy Research Institute, Washington DC, USA; IITA International Institute of Tropical Agriculture, Ibadan, Nigeria; ILRI International Livestock Research Institute, Nairobi, Kenya; IRRI International Rice Research Institute, Los Baños, Philippines; IWMI International Water Management Institute, Colombo, Sri Lanka; World Agroforestry Centre – ICRAF, Nairobi, Kenya; WorldFish Center, Penang, Malaysia.
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This year marks the 16th year of fruitful inter-Centre collaboration through the CGIAR’s System-wide Genetic Resources Programme—SGRP. In the decade and a half since its inception, the SGRP has been actively engaged in some of the most significant developments in the history of genetic resources conservation, policy and use.

The year in which the SGRP was established, 1994, was momentous, not least because of the entry into force of the Convention on Biological Diversity (CBD), which changed the international rules governing access to and ownership of genetic resources. The CGIAR Centres quickly responded to the CBD by entering into legal agreements with the Food and Agriculture Organization of the United Nations (FAO) that formally placed the international germplasm collections held by their genebanks ‘in trust’ on behalf of humanity, thus ensuring their legal status as international public goods. That same year, the CGIAR established the SGRP, based on a recommendation of the 1994 Stripe Study of Genetic Resources within the Centres supported by the CGIAR, and proposed that a standardized information system and database (SINGER) be developed for the genetic resources held by the Centres.

These developments were followed in 1996 by the Fourth International Technical Conference on Plant Genetic Resources, held in Leipzig, Germany. This saw the release of the first report on The State of the World’s Plant Genetic Resources for Food and Agriculture and the endorsement of a forward-looking Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (GPA), both developed with the active involvement of the Centres and the SGRP.

These historic milestones set the stage for the substantive negotiations to transform the outdated and non-binding International Undertaking on Plant Genetic Resources into the legally binding International Treaty on Plant Genetic Resources for Food and Agriculture. The Treaty was adopted by the FAO Conference in November 2001 and subsequently entered into force in June 2004. The establishment and widespread adoption of the Treaty is a momentous international policy achievement that has had tremendous significance for managing and mobilizing the vast in-trust germplasm collections held by the Centres.

The SGRP was instrumental in coordinating the Centres’ contributions to the Treaty, including the negotiation and subsequent use of the Standard Material Transfer Agreement and in the promotion of the Treaty’s fledgling Multi-Lateral System of Access and Benefit Sharing. The SGRP has been fully engaged in paving the way ahead for the Centres and their partners to participate more actively in the emerging global system of genetic resources conservation, access and use.

The SGRP raised awareness about agricultural biodiversity through a series of policy briefs, side events and direct interactions targeting the negotiators of the Nagoya Protocol on Access and Benefit Sharing. This engagement was successful in guiding the negotiation of the Protocol, which was adopted.
by the Conference of the Parties to the CBD in October 2010. The Protocol includes recognition of the Centres’ agreements with the Treaty’s Governing Body and acknowledges the unique status of agricultural genetic resources – a big step for the CBD.

The 16 years of SGRP’s existence have also seen stunning developments in science and technology that have transformed the way we work. These include the enormous advances in molecular genetics, biotechnology, in vitro and cryogenic conservation, the boom in information technologies, bioinformatics and geographic information systems and the phenomenal expansion of the Internet and web-based information-sharing platforms and networks.

Other significant developments include the establishment of the Global Crop Diversity Trust, which is now an active contributor to sustaining the world’s most important germplasm collections, and the adoption by the FAO Commission on Genetic Resources for Food and Agriculture of a Multi-Year Programme of Work that provides a roadmap for assessing and developing global capacity in the conservation and use of all sectors of agricultural biodiversity, in which the CGIAR Centres will play a pivotal role.

Within the SGRP, the support from the World Bank through the two phases of the Global Public Goods Rehabilitation project has readied the Centre’s genebanks to effectively underpin a rational global system of conservation and use of plant genetic resources, in concert with a broad spectrum of national and regional partners.

SGRP members are proud of the services, achievements and collective research opportunities that have been enabled by the Programme over the past 16 years. Many of these services have contributed to the CGIAR’s mandate and live up to its unique responsibilities to the global community by increasing its effectiveness in generating and delivering the international public goods associated with the conservation and rational use of genetic resources.

Our past experience and clear collective vision for the future makes us optimistic and confident that collective actions such as the SGRP can continue to make vital contributions to the CGIAR and the world, and effectively confront and overcome the many daunting challenges to agriculture that await us.

Thomas Payne
Chair, ICWG-GR

Emile Frison
SGRP Programme Leader
INTRODUCTION

This multi-year report departs from the scope of previous SGRP Annual Reports, not just because it reports on the past four years’ activities, but also in that it celebrates the 16 years of the SGRP’s existence. It offers the opportunity to pause for a moment at this milestone to reflect upon the progress made and to project the cumulative lessons of the SGRP’s experiences into the future.

The report begins with a brief overview of the first dozen years following the SGRP’s creation in 1994, followed by a more detailed reporting of the activities carried out from 2007 to 2010. It concludes with a collective view towards the future in light of the far-reaching and rapid changes taking place within the CGIAR and in the world at large.

At this turning point in the CGIAR’s evolution, we have included with this report a CD-ROM containing almost all of the publications and reports produced or supported by the SGRP over the past 16 years, to provide as complete a record as possible of the Programme’s many accomplishments.

The historical review shows how, building on the foundations provided by the Inter-Centre Working Group on Genetic Resources (ICWG-GR), the SGRP moved rapidly from initial reviews of genebank operations to development of research agendas and strategies for the Centres and standards and guidelines for both the Centres and their partners around the world. Over the years the SGRP also broadened its scope to encompass not only plant genetic resources but also animal, fish, forest and microbial diversity. Between 2004 and 2010 the World Bank-funded Global Public Goods (GPG) initiative helped ensure the Centres have both the infrastructure and the resources needed to fulfil their obligations to maintain the in-trust collections they hold. Beyond the realm of the Centres themselves, the SGRP was a key player in the establishment of the Global Crop Diversity Trust and in supporting the development and functioning of the International Treaty on Plant Genetic Resources for Food and Agriculture.

The SGRP also gave the Centres a unified voice at many forums, including meetings of the Convention on Biological Diversity, the World Intellectual Property Organization (WIPO) and many international and regional conferences and congresses.

To give the reader a better glimpse into the past, we have also included a few candid reflections contributed by some of the people who were instrumental in various aspects of the SGRP’s activity over the years. These vignettes add a personal dimension to this otherwise factual technical report and remind us that the work of the SGRP was and continues to be carried out by dedicated genetic resources professionals such as these, both within CGIAR Centres and among our partners around the world.

Some important developments in the SGRP’s governance and coordination...
took place during the past four years. Staffing changes at the SGRP Secretariat included the recruitment of a new SGRP Coordinator and a full-time project coordinator for the second phase of the GPG project (GPG2). The membership of the ICWG-GR was expanded in 2008 to include a representative from the Treaty. Regular ICWG-GR meetings were held in the first semester of each year, and extraordinary meetings of the Group were organized in conjunction with some GPG2 meetings where most of the members were already convened. With the CGIAR Change Process on the horizon, the 2009 ICWG-GR meeting was dedicated to producing a proactive position paper that spelled out the SGRP members’ collective vision of an integrated approach to genetic resources as the most appropriate future direction for the CGIAR to take in this strategically important arena.

The first phase of the CGIAR genebank rehabilitation project, GPG1, which was originally scheduled to conclude in 2006, arrived at the end of that year with unspent funds that were carried over into 2007, allowing some unfinished and additional upgrading of the genebanks to be completed. Also in 2007, GPG2 came on line with the signing of the numerous Letters of Agreement between the participating Centres that laid the groundwork for the dozens of intensive Centre-own and collective activities that took place over the following three years. The GPG2 project was by far the most ambitious activity yet undertaken by the SGRP and demonstrated the maturity and capacity of this system-wide programme to conceive, organize and implement such a complex and demanding workplan involving 11 Centres, and bring it to a successful and timely conclusion. (Read more about this activity on pages 38–42.)

SGRP Secretariat staff and colleagues from the Centres were kept busy with a large number of international technical, scientific and policy events and meetings where they represented the CGIAR, made technical inputs, organized side events and raised public awareness about the objectives and work of the Centres in the field of genetic resources. Most noteworthy of these were the preparations for and participation in the Convention on Biological Diversity’s two most recent meetings of the Conference of the Parties (COP-9 in 2008 and COP-10 in 2010), the Twelfth Regular Session of the FAO Commission on Genetic Resources in 2009 and the Second and Third Sessions of the Governing Body of the Treaty in 2007 and in 2009, respectively.

A successful Technical Exchange Fellowship Programme was implemented by the SGRP in 2009 which enabled technical staff from six Centre genebanks to spend a few weeks working with their counterparts at four other Centres. The Platform for Agrobiodiversity Research has become quite active since its establishment in 2006 and has gained important visibility.
through its website; this is now a recognized virtual venue for news dissemination and for discussions dealing with climate change, pest and disease management in crops and agrobiodiversity management by indigenous communities.

In 2008, a panel of experts contracted by the CGIAR Science Council conducted a meta-review of all existing system-wide and ecoregional programmes, including the SGRP, to assess their potential as mechanisms for implementing the CGIAR's research agenda and how they might best contribute in the future. The panel gave a ringing endorsement of the SGRP’s performance and value to the CGIAR system, stating that “SGRP has been very effective in coordinating genetic resources issues among all relevant Centers and has had a strong role in facilitating framework planning.” It also noted that the “justification for maintaining SGRP is very strong.”

This is a vital time for reflection in the CGIAR, and the Science Council review and the ICWG-GR’s forward-looking position paper provide ample evidence of the benefits of getting technical specialists across the Centres to work together on important issues that affect all the Centres.

The SGRP has accomplished a great deal over the past 16 years—but much work remains to be done.
In 1994 the Stripe Study of Genetic Resources in the CGIAR found that the CG’s collections were critical to CGIAR breeders in making the impressive advancements that they were making, but that the Centres’ genebanks did not measure up to the responsibilities they had accepted. In particular, their efforts were uncoordinated and their databases were incomplete and inaccessible.

The System-wide Genetic Resources Programme (SGRP) was established under the leadership of the International Plant Genetic Resources Institute (IPGRI) in 1994 as the CG’s response to demands to meet their international responsibilities on the newly-created in-trust agreements with FAO and to create a coordinated genetic resources programme. The SGRP moved rapidly to establish collaborative activities and to help determine CGIAR policy on the CG’s genetic resources collections. It also instigated the establishment of a System-wide Information Network for Genetic Resources (SINGER).

The changes were immediately acknowledged by donors, who provided additional support to IPGRI for the effort. The SGRP, on behalf of its steering committee, the Inter-Centre Working Group on Genetic Resources (ICWG-GR), became an effective tool for responding to the requests from the FAO Commission on Plant Genetic Resources. While the focus at the time was plant genetic resources, the SGRP dealt with other agriculturally important genetic resources as well. It assisted the Secretariat of the Convention on Biological Diversity in producing documents relative to the CG collections as well as on the ex situ and in situ conservation of crop wild relatives and other life forms. The quality reports produced by the SGRP were seen very positively by the world’s genetic resources community and increased respect for the CGIAR.

Internally, the SGRP members were instrumental in improving coordination among the genebanks and gave new personnel at the genebanks a cadre of people at the other CG genebanks they could turn to for assistance. By inviting outside experts to their meetings the SGRP brought in knowledge that aided both new and established personnel. This was a welcomed opportunity to guide the CG’s genebanks in meeting international issues and challenges.

The CGIAR selected very capable leaders to head the SGRP but its funding enabled it to do only a limited amount of coordinated work. Faced with these funding constraints the leadership of the SGRP took the issue of upgrading the genebanks to the World Bank and prepared a comprehensive list of needs and cooperative activities for which they needed support. The Bank responded with funding in 2003 to upgrade the genebank infrastructure to meet international standards and to regenerate their collections. A second phase was funded in 2006.

With the completion of the upgrading projects, the CG genebanks were placed on a sound footing to meet their goals.

The SGRP has been extremely effective and I hope it will be again in the future. Thanks, SGRP, for a job well done.

Henry Shands chaired the 1994 Stripe Study of Genetic Resources in the CGIAR, whose recommendations led to the establishment of the SGRP.
The SGRP is the manifestation of the long-standing collaborative partnership among CGIAR Centre scientists and technicians to address common research problems related to genetic resources. A major focus of the collaboration has always been the plant genetic resources collections held in the CGIAR Centres’ genebanks and the challenges surrounding their management.

The first step was taken in formalizing the collaboration among the Centres with the creation of the Inter-Centre Working Group on Plant Genetic Resources (ICWG-GR) in 1987. The ICWG-GR was established to provide a forum for exchange of information among representatives of Centre crop and forage genebanks and the International Board for Plant Genetic Resources (IBPGR; now Bioversity International), and for developing common policies and activities for managing the collections. It comprised the CGIAR genebank managers plus a representative of FAO. The Group met every two years to share experiences and review current and future Centre activities. In 1993 it expanded its remit to include activities related to forest, animal and aquatic genetic resources.

A review of CGIAR priorities and strategies conducted in 1992 by the then Technical Advisory Committee (TAC) of the CGIAR identified an urgent need for a system-wide strategy and programme on genetic resources. TAC then commissioned a Stripe Study of Genetic Resources in the CGIAR. The study, initiated in 1993 and reporting in 1994, strongly advocated for an integrated, system-wide programme. The response was swift, with the establishment in the same year of the SGRP, coordinated through a Secretariat based at IPGRI/Bioversity International and with the Inter-Centre Working Group serving as its steering committee. Specific collaborative activities were initiated that complemented the individual Centres’ genetic resources programmes.

**Setting the scene—review of CGIAR genebanks**

One of the first major actions of the newly-established SGRP was to commission a review of the CGIAR’s genebank operations in 1995. This was to set the baseline for many of the future actions of the Programme.

The focus of the review was on assessing the constraints and opportunities facing the genebanks, in
In 1993 the CGIAR’s Technical Advisory Committee commissioned a Stripe Study of genetic resources activities across the CGIAR Centres. The Stripe Panel, led by Dr Henry L. Shands, assessed the state of genetic resources work at the international agriculture research centres, considered legal issues relating to conservation and use of genetic resources and examined various aspects such as: species coverage; *in situ* conservation; implications of molecular biology techniques; ecoregional research; databases; networks; and training.

In its report, the Panel stated: *In order to respond efficiently and effectively to the global demands on genetic resources, the CGIAR must leap from its paradigm of individual voices of autonomous centres to a fully coordinated policy on genetic resources management across the System. The Panel also sees an urgent need for greater visibility of the System’s effort in genetic resources. Anything less may bring undesirable responses through further funding cuts, reduced access to genetic resources and continued controversy.*

The report recommended that all work concerned with the conservation of genetic resources should be integrated into a single system-wide programme, within which policies would be developed and coordinated, and the provision of funds to operate the programme. Other key recommendations included that the Centres’ germplasm collections should be held in trust, the Centres should not seek financial benefits from their commercialization, and that a standardized information management system should be created to integrate databases across the CGIAR.

The Panel’s recommendations were endorsed by International Centers Week in 1994, and the System-wide Genetic Resources Programme was born.

Principal recommendations arising from the review included:

- completing safety duplication of all collections held under formal agreements
- further assisting national agricultural research systems (NARS) with germplasm restoration and in strengthening national capacity, including training
- enhancing advisory mechanisms by strengthening NARS and network linkages
- ensuring storage and management of collections meet international scientific standards
- advancing research, system-wide, on methods to estimate the coverage of collections, and to improve the utilization and conservation of collections
- quantifying the costs and impact of germplasm conservation and utilization
As a result of the review findings, several Centres invested in new genebank facilities over the following years, and a number increased the emphasis given to characterization of accessions—both areas in which the review had identified short-comings. Centres also put in place policies to ensure systematic off-site duplication of the collections to ensure their long-term safety.

**System-wide planning, developing standards and guidelines**

The first years of the Programme also saw a flurry of planning meetings in such areas as animal and fish genetic resources, *in situ* conservation, and economic and policy research related to conservation and use of genetic resources. These led to development of research agendas and strategies in the context of the SGRP. Technical consultations on the regeneration of seed crops and management of field and *in vitro* genebanks resulted in guidelines published in 1997 that formed the basis for the agreed standards of genebank operations used by the CGIAR Centres up until recently. Other publications followed, guiding genetic resources activities both within the CGIAR and among its partners. One such publication was *A Guide to Effective Management of Germplasm Collections*, by Jan Engels and Bert Visser. The book aims to help ensure that genebanks have the skills and human resources to make closer contact with researchers and breeders and to connect with politicians, planners and their local communities, making the collections more useful, better used, and better appreciated in wider society.

The SGRP also funded initial research on the impacts of forest fragmentation and disturbance on forest genetic resources.

These early studies laid the foundations for the SGRP’s strategic planning, which focused on four areas critical to the development of a global system for the conservation and use of genetic resources:

- biodiversity and genetic resources management and research
- information management and sharing
- policy research and
- capacity building

These became the cornerstones of the SGRP’s activities for the lifetime of the Programme.

**First External Programme and Management Review**

In 1998, the SGRP underwent its first External Programme and Management Review. The review raised a number of issues, two of which were to play a major part in the future activities of the Programme.

The first was the observation that the CGIAR system had yet to determine its role in the global genetic resources effort, including the nature of its relationships with other stakeholders and networks. The Review Panel
The Birth of the SGRP

Geoff Hawtin

When I joined the International Board for Plant Genetic Resources (IBPGR) in 1991, the Inter-Centre Working Group on Plant Genetic Resources (ICWG-GR) was already in existence and had been active for several years. All the Centres with plant germplasm collections participated in the group, with membership being voluntary and each Centre bearing its own costs. There were no external funds and it has been argued, I believe with some justification, that the absence of competition for funding helped foster a strong spirit of collaboration among the pioneering group of genebank managers. While the focus of the ICWG-GR was primarily technical, such as the setting of genebank standards, it also addressed certain policy issues. The ‘CGIAR Policy on Genetic Resources’ of 1989, for example, set out for the first time the principle that the collections maintained by the Centres were held ‘in trust’ for the world community. Interestingly, this Policy makes no mention of intellectual property protection, which was not considered relevant for the CGIAR at that time. It was not until 2000 that the Centre Directors finally issued a joint statement of ‘Guiding Principles on Intellectual Property Rights Relating to Genetic Resources’, a statement that was largely crafted by the SGRP.

In the late 1980s and early 1990s, however, the world was changing fast. The IPR debate was heating up, with a growing number of private companies taking measures to secure their intellectual property—prompting increasingly vocal opposition from many NGOs. At the same time the environmental movement was gathering strength and flexing its muscles, as exemplified by the coming into force of the Convention on Biological Diversity, adopted at the Earth Summit in Rio de Janeiro in 1992.

During the process of drawing up the Convention, and especially during the final negotiations in Nairobi, the CGIAR had come under public attack by NGOs concerned that the ‘priceless treasure’ contained in the Centres’ genebanks might become privatized and be lost as an international public asset. Attempts to allay these concerns ultimately led to the Centres signing in-trust agreements with FAO and subsequently with the International Treaty. However, at the time of the Earth Summit, the CGIAR was still largely unprepared for these events. The small CGIAR delegation that I led in Rio (only IPGRI, CIP and CIAT attended) reflected the prevailing view within the CGIAR at that time that international agricultural research was largely independent from the environmental movement, with neither substantially influencing—or relevant to—the other. However, following the success of Rio, which served to greatly heighten awareness of the importance and highly political nature of biodiversity (including genetic resources), it became abundantly clear that the CGIAR needed to get its act together, and fast! Recognizing this in 1993, the TAC commissioned a Stripe Review of Genetic Resources, chaired by Henry Shands of USDA, which concluded that the CGIAR needed to ‘leap from its paradigm of individual voices at autonomous Centres to a fully coordinated policy on genetic resources management across the System’. It recommended that the genebanks be combined within a single Centre. This recommendation caused quite a stir among the Centre Directors at the time, with many of them seeing it as a move that would divorce them from their Centre’s germplasm collections, their ‘jewel in the crown’. The Centre Directors then counter-proposed an alternative approach: to create a System-wide Genetic Resources Programme, convened by IPGRI and under the leadership of its DG. The Centre Directors’ proposal was endorsed and adopted by the CGIAR at its Mid-Term Meeting in New Delhi, India, in 1994, under the Chairmanship of Ismail Serageldin, and the SGRP was born.
proposed a dialogue, both within the CGIAR and with other stakeholders, to help define the CGIAR’s role, particularly with regard to plant genetic resources for food and agriculture. As part of this effort, the Review Panel recommended that the Centres should clarify the aims of their conservation programmes.

The second concern was that funding constraints had severely limited the ability of Centres to implement the recommendations of the 1995 SGRP-commissioned review of Centre’s genebank operations.

Upgrading the genebanks of the CGIAR Centres

Based on a 1999 SGRP study of the costs of fully upgrading the 11 Centre genebanks, the SGRP was successful in obtaining US$13.6 million from the World Bank to address the most pressing upgrading actions.

The Global Public Goods Rehabilitation Project – Phase 1, known as GPG1, ran from 2004 to 2007 and met 90% of its objectives. This led to:

- improved storage facilities at all Centres
- safety duplication agreements negotiated between genebanks within and outside the CGIAR
- safety duplication of more than 190,000 accessions from all Centres
- improved seed processing facilities at six Centres
- reduced processing backlogs at all Centres, down by more than 400,000 accessions
- improved regeneration facilities at nine Centres
- reduced regeneration backlogs at all Centres, down by almost 200,000 accessions
- improved plant health facilities at four Centres
- reduced plant health backlogs at eight Centres, down by a total of more than 170,000 accessions
- new molecular characterization facilities at two Centres
- characterization of a total of more than 80,000 accessions at six centres
- hardware and software upgrades at all Centres
Over time, shortfalls in funding for genebank operations in the CGIAR Centres had led to deterioration in the infrastructure of the genebanks and backlogs of crucial activities, such as regeneration, characterization and evaluation of accessions and associated documentation.

The Global Public Goods initiative, a two-phase project funded by the World Bank, aimed at removing limitations in infrastructure and addressing bottlenecks and backlogs in processing and testing, storage and safety back-up duplication, regeneration and characterization, documentation, and the genebanks’ sustainability, in terms of staff and budget, of the upgraded operations.

The expected outcomes of the first phase—GPG1—were:
- Physical security of the collections improved
- Fully functional and secure storage facilities meeting international standards of conservation
- Duplication of collections in off-site safety back-up storage
- Viability and genetic integrity of the germplasm accessions ensured
- Removal of backlogs in the processing, testing, storage and regeneration of materials
- Field operations at prescribed standards for isolation, pollination and timeliness of harvest and processing of materials
- Effective genebank management systems in place
- Quality standards for germplasm distribution met
- Accurate identification of accessions with essential taxonomic, passport and phenotypic information
- Appropriate phytosanitary status for germplasm transfer
- Public access to all available information on the collections through SINGER

Phase 2 of the initiative—GPG2—extended these outcomes to include:
- Uniform risk management procedures developed and implemented in all CGIAR genebanks
- Best practices for genebank management developed and implemented by CGIAR Centres and made available to partners
- Unified protocols for locating and delivering germplasm and for sharing information on common crops in place at all CGIAR genebanks
- Strategies and tools for enhancing knowledge on the diversity held in the intrust collections
- Recommendations for the wider involvement of the CGIAR genebanks in addressing genetic and genomic stocks, associated biodiversity and underutilized species
- Mechanisms for improved collective action among the CGIAR genebanks in the delivery of global public goods and promotion of international collaboration on conservation
Major milestones prior to 2007

- bar-coding equipment installed at seven Centres
- enhanced functionality of SINGER and improved data quality at eight Centres

Based on the success of this upgrading project, the World Bank granted funding of US$10.46 million for a second phase (GPG2) that would build on the achievements of the first phase and also support collective action among Centres on key activities. The second phase ran from 2007 to 2010 and is reported on pages 40–42.

Conserving germplasm in perpetuity requires long-term funding

The funds from the World Bank helped the Centres deal with some of the immediate and crucial needs facing the genebanks. But maintaining those collections in perpetuity and ensuring the germplasm conserved is kept to international standards and is readily available for use requires reliable, long-term funding.

Following on from the concerns about financing raised by the 1995 review of genebank operations and the needs identified by the 1999 costing study, the SGRP had been discussing the possibility of establishing an endowment fund as a means of providing such long-term support. In 2000, the CGIAR Finance Committee’s Working Group on Long-term Resource Mobilization weighed in behind this idea.

Extensive consultations with FAO and many other partners and potential contributors in the first half of 2000 were followed by a formal study of the feasibility of setting up an endowment fund for the genebanks. These efforts suggested that it would be possible to raise such an endowment, and the SGRP provided seed money and ramped up a campaign to support the establishment of this novel funding mechanism. In particular, IFPRI led a series of SGRP-commissioned studies on the costs of genebank operations at the CGIAR Centres (*SGRP Annual Report 2002*, pp. 14–16), building on the 1999 study and the ICWG-GR brought...
its extensive expertise and experience to suggest aims and operational procedures for the fund. These were instrumental in the 2002 launch of the campaign, led by IPGRI and FAO, to establish the Global Crop Diversity Trust. The Trust was established as an independent entity in 2004. The SGRP and Centre staff continued to be closely involved with the Trust in numerous ways, in particular contributing to the development of the Trust-supported crop conservation strategies. This was the beginning of a relationship between the Centres and the Trust to contribute to the purposes the Trust was created for—setting priorities for the global system through a strategy development process, supporting collections and developing projects to put in place the elements of a global system.

**Information**

Information management, exchange and dissemination are key to the effective management and use of genetic resources for food and agriculture. The 1994 Stripe Review of genetic resources activities in the CGIAR system specifically recommended the creation of a standardized system of information management for genetic resources. This would bring together information held in the autonomous databases maintained by the individual Centres in a common format that would allow data exchange within the CGIAR and ready access for users.

The foundations for the System-wide Information Network for Genetic Resources—SINGER—were laid in 1994, when funding was obtained from Switzerland and Sweden to start development of the system. And what a challenge! SINGER was an early entry into the field of such integrated information systems, and was working at the cutting edge of genetic resources information management and sharing.

**SINGER**

Development of SINGER was rapid: although design and planning work started only in 1995, by the end of 1996 data on almost half of the Centres’ *ex situ* collections were in SINGER and could be accessed via the Internet. By the end of the following year, only one Centre’s genebank was not linked to the system.

The SGRP channelled funding for the hardware and software needed to link the Centres’ genetic resources information systems to SINGER, and provided training on using the system. The Programme also provided funds to help the Centres prepare their data for inclusion in SINGER, including improving data quality and expanding its coverage.

In the early days of SINGER, many users of the system did not have access to high-speed Internet connections, so the system was designed to receive data via the CGIAR’s integrated voice and data network (IVDN) system or on disk, and also to be delivered as a stand-alone version on CD-ROM.
The SGRP brings together members from the very diverse CGIAR family. Eleven CGIAR Centres hold germplasm collections and are responsible for their conservation. They often have perspectives as different as the crops they conserve, the context in which these collections were established and their institutional cultures. All this makes for a wide diversity of opinions in the group. For the SGRP the main challenge has probably always been to engage the Centres in effective joint activities to achieve common objectives.

In the field of genebank documentation, the Centres have traditionally used a variety of information systems and approaches. In 1994 the Stripe Study of Genetic Resources in the CGIAR emphasized the global importance of the genetic resources collections held by the CGIAR as a whole. The development of the Internet provided an opportunity for the Centres to make the information on their genebank collections more readily available. From 1995 SGRP’s System-wide Information Network for Genetic Resources (SINGER) set out to help the Centres to do just that. Its objective was to create an information portal on the Internet that would provide a public window on all germplasm held by the CGIAR genebanks. The project involved all partners in the discussions and the development of specific work plans to ensure the greatest possible commitment to the process and outcomes. The SINGER project helped the Centres to organize the flow of data from their information systems to SINGER and developed the portal to publish the collective data on the Internet—something that most Centres could not do at the time. Besides offering this general assistance the project also helped participating Centres with some Centre-specific issues, such as training of staff, implementation of new information technology and the improvement or standardization of selected data items to facilitate system-wide data queries. This combination of strong participation, sharing of decision-making and targeted support seemed to work well and made it possible to move forward as a group and make significant progress in a relatively short period of time. Besides succeeding in highlighting the importance of the germplasm collections held by the CGIAR, the SINGER project has been an important showcase of what the Centres are capable of achieving together.

Tom Hazekamp was Scientist, Germplasm Documentation, and SINGER focal-point for IPGRI from 1995 to 2000.
The second phase of SINGER’s development started in late 1997, with funding from Switzerland, Japan and the Netherlands. This second phase sought to expand the coverage of the system to include data from crop collections outside the CGIAR, as well as CGIAR databases related to forest, livestock and aquatic genetic resources, and to broaden the kinds of information available through the system, such as characterization and evaluation data, including links with the International Crop Information System. Already, SINGER was seen as a key component of the global genetic resources information system envisaged in the International Undertaking (later International Treaty) on Plant Genetic Resources for Food and Agriculture.

One of the biggest ‘public’ changes in SINGER was the remodelling of the user interface in 1999. The new interface expanded users’ options for searching and displaying data, including summaries by Centre, by crop, by species and by country. In 2000, geographic information system (GIS) tools were integrated with SINGER, in collaboration with CIP, CIAT and IPGRI. The location from which accessions came, or of requesters of accessions, could now be plotted on world, region or country maps. Statistical analysis tools were added to allow data to be presented as statistics, charts or scatter plots, and data could even be downloaded for further analysis using other software.

These features assisted the user in targeting searches. For example, mapping allows users to identify accessions from areas with particular climatic, soil or other characteristics and display their correlation on-line. With these improvements, the user-friendliness of SINGER and its ability to respond to the requirements of a wide range of users were greatly enhanced. And the value of the changes was reflected in use of the system—the number of queries on the SINGER system more than doubled by the end of 2000.

In 1999 and 2000 the SINGER project developed a software package—the SINGER tool kit—that facilitated creation of new features in response to user needs, without having to have specialist skills or knowledge of database manipulation. The tool kit also allowed Centres to publish their own databases on the Internet and on CD-ROM, independently or through SINGER. This allowed SINGER to provide access to Centre databases related to forest, aquatic and livestock genetic resources.

As part of its ongoing efforts to ensure access to high-quality information, the SGRP, through SINGER, continually supported Centre efforts to enhance the amount and accuracy of information held on their genebank collections and to enable them to upgrade their database management capacities. It did this through providing funds for upgrading information systems and gathering and inputting data and through providing training for genebank curators and others involved in genebank
information management systems.

SINGER was also instrumental in developing and promoting data standards in genebank information systems. Early in the development of SINGER, participants developed a dictionary of data to be included, with agreed standards for recording these. These built on various crop ‘descriptors’ developed by IPGRI and its partners. The participants also adopted an agreed taxonomy and geographical designations for describing accessions and their points of origin.

In 2000, the European Cooperative Programme on Crop Genetic Resources (ECP/GR) adopted the SINGER model for developing the European Plant Genetic Resources InfraStructure (EPGRIS)—the first of several projects to pick up the SINGER model and apply it to their own needs. These collaborations facilitate data sharing among the partners, providing the growing foundations for a global system for information exchange.

In 2002, work started to transform SINGER into an information portal, expanding the information available from genebank databases to encompass a wider range of sources of information relating to the crops. SINGER also started building links to other genetic resources information systems, including those based around specific crops, such as wheat and barley, and those with a regional basis, such as the European Plant Genetic Resources Search Catalogue, EURISCO.

EURISCO is a ‘window’ to national inventories of *ex situ* collections of plant genetic resources in more than 40 countries in Europe that were established using the EPGRIS platform. SINGER provided the technical infrastructure for EURISCO, as well as training national focal points in the tools and approaches needed to operate the system.

In 2006, SINGER signed a memorandum of understanding with the Global Biodiversity Information Facility (GBIF) to provide data included in SINGER to the GBIF data portal. This combines the information on the accessions held by the genebanks of the CGIAR Centres with data from information systems and genebanks around the world, including EURISCO and the United States Department of Agriculture’s Germplasm Resources Information Network (GRIN). Together, SINGER, EURISCO and GRIN hold data on more than 2 million genebank accessions, nearly one-third of the world’s total.

**Policy review and formulation**

A key task for the SGRP is to review and recommend genetic resources policies for system-wide adoption that are in harmony with international agreements. This involves formulating draft policy instruments, guidelines and best practices concerning the Centres’ acquisition and distribution of genetic resources.

Many of the world’s genebanks were established
in the 1970s and 1980s, when the world’s plant scientists woke up to the rapid loss of crop varieties and their wild relatives in the face of the spread of modern cultivars, changes in land use, destruction of habitats and shifts in ecosystems. The CGIAR Centres played a major role in collecting and conserving plant genetic resources for food and agriculture over the past 30 years or more, collecting, storing, studying and sharing genetic resources with researchers and breeders all over the world.

The Nairobi Final Act that adopted the text of the CBD in 1992 highlighted that the international community had yet to address the legal status of ex situ collections of plant genetic resources for food and agriculture (PGRFA). This led to increased anxiety over the status of the collections hosted by the Centres. To help ease tensions, and head-off any possible negative outcomes, the Centres worked with FAO to develop agreements whereby their collections were deemed to be held in trust, for the benefit of the international community, and subject to the ultimate policy guidance of the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA). Those agreements were signed in 1994.

In the following years, the Centres worked hard to develop system-wide policies to implement their responsibilities under the in-trust agreements, including developing germplasm acquisition agreements, guidelines for designating material as ‘in trust’ and a material transfer agreement (MTA) for distributing materials in accordance with the agreements. In 1994 and 1998, to capture and summarize maturing understandings of the Centres relative to the agreements, the Centres and FAO released joint interpretative statements highlighting how the Centres would respond in cases of suspected violations of the MTA and setting limits to the Centres’ ability to respond to extremely broad requests (e.g., for samples of everything in their collections).

The 1998 statement followed some high-profile cases of alleged violations of existing MTAs, in which recipients of germplasm from the in-trust collections had attempted to acquire intellectual property rights over the material.

**Implementing the agreements between the Governing Body of the Treaty and the CGIAR Centres**

Article 15 of the Treaty encourages the CGIAR Centres to sign agreements with the Governing Body of the Treaty, to place their in-trust collections under the Treaty’s framework. The text of the agreements with the Governing Body was the subject of negotiations that took place over several meetings. The SGRP coordinated representation of the Centres at those meetings, making technical contributions. It also reported back to the Centres about the negotiations, highlighting issues of concern and
The Nairobi Final Act that adopted the text of the CBD in 1992 created the impetus for renegotiating the International Undertaking on Plant Genetic Resources for Food and Agriculture so as to be in line with the CBD. The FAO Council requested the CGRFA to host the negotiations, which started in 1994. The SGRP coordinated representation of the Centres throughout the negotiations of the Treaty. They concluded seven years later, in 2001, with the adoption of the text of the Treaty. The Treaty came into force in 2004.

The Treaty provides the legal framework for the conservation and sustainable use of plant genetic resources and the fair and equitable sharing of benefits arising from their use, in harmony with the CBD. It aims to ensure that the plant genetic resources developed over millennia are conserved and continue to provide the foundation upon which food security and sustainable development are built.

The Treaty covers all plant genetic resources relevant to food and agriculture. It creates the so-called multilateral system of access and benefit-sharing for an agreed list of 35 crops and 29 forages listed in Annex 1 of the Treaty. These crops and forages account for more than 80% of the world’s intake of calories. The multilateral system is a virtual pool of PGRFA distributed around the world that countries and international organizations agree to make available on standard terms and conditions for the purposes of research, training and breeding for food and agriculture. Financial benefits derived from the commercial exploitation of materials in the multilateral system are also shared on a multilateral basis. If a recipient uses such materials to develop a new product, commercializes it and restricts others from using it for research and breeding, they must pay 1.1% of gross sales to an international benefit-sharing fund under the Treaty. Those funds are dispersed to support conservation and use in developing countries. The Treaty also encourages voluntary financial contributions to the benefit-sharing fund.

Benefits from the Treaty go beyond the purely financial and include information exchange, access to technology and transfer of technology. The Treaty encourages countries to support the realization of farmers’ rights, including through the protection of relevant traditional knowledge and participation in national decision-making about the conservation and use of plant genetic resources for food and agriculture.

The Treaty calls for the development of a funding strategy to help mobilize funds for priority activities, plans and programmes, taking into account the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture adopted in Leipzig in 1996. Developing countries and countries with economies in transition will be favoured in any such funding.
Major milestones prior to 2007

providing background contextual information to help guide the Centres’ Boards of Trustees, which had to approve each of the agreements.

In the lead up to the agreements with the Governing Body coming into force, the SGRP coordinated the final round of ‘designation’ and documenting of materials held in trust by the Centres. This was essential to clear up potential ambiguity about what materials were being brought into the multilateral system by the Centres by virtue of their agreements with the Governing Body.

The SGRP coordinated a joint signing ceremony for all of the Centres with FAO, on behalf of the Governing Body. The SGRP also developed an interpretative statement concerning ‘grey areas’ in the agreements with the Governing Body that was approved by all the Centres and read out on the occasion of the signing of the agreements. The agreements came into force in January 2007.

After the Treaty was signed, it was still necessary to negotiate the terms and conditions of the SMTA to be used for all transfers of materials in the multilateral system, including those hosted by the CGIAR centres. It took a total of five international meetings to conclude negotiations of the SMTA, which was adopted by the first meeting of the Governing Body in 2006. Again, the SGRP coordinated representation of the Centres at those meetings.

Over the years, the SGRP has been instrumental in gathering experiences, documenting challenges and coordinating the development of draft policies and best practices for the Centres to follow under the Treaty. As a means of documenting issues raised and their resolution, and to promote system-wide adherence to best practices and policies, the SGRP developed the Guide for the CGIAR Centres’ Use of the Standard Material Transfer Agreement. The Guide is updated on a regular basis to capture ongoing developments.

Broadening the scope—
policies and guidelines for forest, animal, aquatic and microbial genetic resources

Although there is no equivalent in-trust agreement for animal, fish, forest or microbial genetic resources, over the years, CGIAR Centres have become increasingly involved in handling and distributing animal, fish and microbial germplasm. Recognizing this, in 1999 the SGRP prepared guidelines to help Centre staff in preparing agreements relating to the acquisition and transfer of these genetic resources.

The guidelines ensure that the procedures for obtaining and distributing animal, aquatic and microbial germplasm conform to international and CGIAR policies and are applied consistently across the system. In accordance with CGIAR policy, they aim to provide for the unrestricted availability of germplasm for research or breeding where granted by the providing country or otherwise legally
Major milestones prior to 2007

Curt Carnemark/World Bank

possible, as in the case of Centre-developed material. A standard MTA was also formulated. The guidelines and MTA were recommended for system-wide adoption in 2000.

Capacity building

Capacity building has been one of the cornerstones of the SGRP programme since its inception. In 1997, for example, SGRP funds supported a training course on the conservation and use of plant genetic resources in Central Asia, held in Tashkent, Uzbekistan.

In 1998, the SGRP initiated a project to improve national plant genetic resources programmes by strengthening the capacity of national programme leaders to manage their programmes and by conducting research and related training. The initiative was led by the International Service for National Agricultural Research (ISNAR), now a division of IFPRI. A survey of existing training opportunities and resources and past training needs assessments showed a number of gaps, including in provision of training related to genetic resources policy and management. Yet a follow-up survey in 1999 among 200 national programme managers from 121 countries found that issues related to formulation of national policy and law were the highest priority for capacity building.

Based on the findings of the 1999 survey, ISNAR developed a draft course on Managing Programmes for Genetic Resources Conservation and Management, including modules on policy development and leadership and management.

After extensive development and testing, in 2003 the SGRP, IPGRI and ISNAR released a learning module on Law and Policy of Relevance to the Management of Plant Genetic Resources. This introduces the most significant policy and legal agreements relevant to plant genetic resources and covers the impact of these conventions and treaties on the conservation and use of plant genetic resources. Its purpose is to help users to ensure that their governments and institutions are meeting legal requirements and are taking actions appropriate for the implementation of the agreements. Following further testing and revision, a second edition was released in 2005, and is now available in English, French and Spanish.

Setting the agenda

Although much of the SGRP programme focused on
I have lots of great memories of the SGRP. It was the first CGIAR system-wide programme and, I think, the best. I am sad to hear that it might be coming to a close. The SGRP provided well for the CGIAR to make highly significant contributions on genetic resources to meetings of the Convention on Biological Diversity (CBD), including its Conferences of the Parties and sessions of its Subsidiary Body on Scientific, Technical and Technological Advice. The SGRP leaders covered contributions on genetic resources in general, and genetic resources experts from individual Centres were co-opted when their work matched specific types of genetic resources on the CBD meeting agendas. We were all very active as CBD ‘corridor pests’. The SGRP also allowed the aquatic genetic resources agenda to be brought to the same table as the agendas for plant, livestock and forest genetic resources. This was very encouraging for my ICLARM (now the WorldFish Center) colleagues in our Biodiversity and Genetic Resources Program and for many of our research partners around the world. For two years (1996–97), I was a ‘fish person’, chairing the plant-, livestock- and forest-folk in the Inter-Centre Working Group on Genetic Resources (ICWG-GR). This was widely noted and welcomed in ‘fishdom’. During that period, ICLARM was a recipient of some of the small project SGRP funds, which we used for activities of system-wide relevance. The most memorable was when the ICLARM FishBase team undertook to use its links throughout the world of biological databases and taxonomy to check the correctness of the scientific nomenclature of all taxa in CGIAR genetic resources activities, including those listed in SINGER. Many non-fish errors were discovered and (I hope!) corrected. If not, the report is on SGRP files, though some nomenclature will have changed.

The high point of this period for me was the 1996 SGRP Consultation on Fish Genetic Resources, hosted by IPGRI (now Bioversity International) in Rome. Its proceedings were used and cited widely. They provided foundational material for the subsequent ICLARM-FAO Bellagio Conference on aquatic genetic resources policy. Despite all this, moving forward an international agenda for the conservation and sustainable use of aquatic genetic resources was an uphill task and has remained so. Work is underway to remedy this, mainly through the FAO Commission on Genetic Resources for Food and Agriculture, which is now giving to aquatic genetic resources, including aquatic plants, the attention that they merit and that has been long overdue.

As the SGRP closes, I hope that new mechanisms will enable the CGIAR to be a major player in activities for the conservation and sustainable use of all genetic resources for food and agriculture. The SGRP has been a fine foundation.
plant genetic resources, the Programme also addressed issues in forest, livestock, aquatic and microbial genetic resources.

**Farm animal genetic resources**

In 2005, the SGRP, together with FAO, Agropolis and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), convened a workshop to review and analyse options and strategies for conserving farm animal genetic resources. The workshop identified a framework to guide decision-making on the conservation strategy for a given farm animal genetic resource, based on the severity and speed of the threats to which it is exposed, the nature of the value of the resource and the capacity to take action to conserve it. Thirteen priorities were identified needing action, including aspects of conservation, research and information needs.

The outcomes of the workshop contributed to the preparation of the first *Report on the State of the World’s Animal Genetic Resources* and were also presented at a side event at the Eighth Meeting of the Conference of the Parties to the CBD in 2006.

**Valuing genetic resources**

Over the years, the SGRP promoted and sponsored numerous studies on the costs involved in conserving and using genetic resources, as well as the benefits derived from use of those resources. For example, between 1997 and 2001 IFPRI conducted a series of studies of the costs of conserving accessions in the genebanks of CIAT, CIMMYT, ICARDA, ICRISAT and IRRI (see SGRP Annual Report 2002, pp. 14–16). Collectively, these five Centres accounted for nearly 90% of material held in trust by the CGIAR Centres. These studies, published in the book entitled *Saving Seeds: The Economics of Conserving Crop Genetic Resources ex situ in the Future Harvest Centres of the CGIAR* (B. Koo, P.G. Pardey, B.D. Wright and others, CABI, 2004), indicated that the Centres
would need some US$5.7 million a year (2002 prices) to maintain their in-trust collections in perpetuity—a finding that contributed to the setting up of the Global Crop Diversity Trust (see ‘Conserving germplasm in perpetuity requires long-term funding’, pp. 13–14).

In 2005 IFPRI, Bioversity and ILRI published a review of literature on valuation methodology applied to crop and livestock genetic resources on behalf of the SGRP. The report, Valuation and Sustainable Management of Crop and Livestock Biodiversity: A Review of Applied Economics Literature was accompanied by an annotated bibliography on CD-ROM (ECOGENLIT—Economics Literature on Crop and Livestock Genetic Resources: see http://www.ifpri.org/book-637/node/5347). These highlighted a number of issues that need to be addressed before much progress can be made in valuing the contribution of agricultural biodiversity, particularly in the context of smallholder agriculture. The issues identified include the need to generate data on values of crop and livestock diversity as integral components of agricultural systems, to quantify the benefits as well as the costs of conservation, and to identify optimal conservation strategies and policies.

This review was followed up by a workshop in 2005 on Valuing Crop, Tree, Livestock and Aquatic Genetic Resources. Based on the valuation study and literature review, participants identified the key research questions that would assist a better understanding of how to value agricultural biodiversity. These focused on developing methods and research tools to:

- prioritize taxa for conservation at pilot sites
- assess optimal combinations of genetic resource management approaches
- evaluate the contribution of genetic resources to ecosystem services
- estimate the public goods value of diversity and design mechanisms that will enable farmers to appropriate those values, thereby creating incentives for conservation
- develop action plans for sustainable management of diversity at the pilot sites

Platform for Agrobiodiversity Research

The SGRP was a key mover in the establishment in 2006 of the Platform for Agrobiodiversity Research (PAR). First proposed at an SGRP workshop on managing agricultural biodiversity in 2003, the Platform was welcomed by the Parties to the CBD at COP-7 in 2004. The SGRP, in collaboration with Bioversity, FAO and stakeholders, collaborated in setting up this new mechanism aimed at promoting research and integrating, mobilizing and sharing research findings on the sustainable management of agrobiodiversity.

PAR was formally established in 2006 at a consultative meeting which involved a wide range of different stakeholders. The SGRP played a leading role both in discussions on the
need for a Platform and in its actual establishment. The Platform’s objectives are:

- to collate and synthesize agrobiodiversity data and information and disseminate knowledge
- to identify ways in which the use of agrobiodiversity can contribute to addressing major global challenges
- to identify and facilitate relevant new and innovative research partnerships that strengthen cross-cutting, multidisciplinary and participatory research

The Platform’s current activities can be seen at http://agrobiodiversityplatform.org/.

Public awareness and representation

Aside from contributing to the research, policy and capacity-building agendas within the CGIAR, the SGRP also provided the collective external ‘voice’ of the Centres, representing the CGIAR genetic resources community in numerous international scientific, technical and policy forums.

Representation on behalf of the CGIAR genetic resources community included strategic partnerships with key intergovernmental agencies such as FAO (see box) and global frameworks such as the International Treaty on Plant Genetic Resources for Food and Agriculture and the CBD. Among the most noteworthy of these representational activities was the SGRP’s involvement in the landmark FAO International Technical Conference on Plant Genetic Resources, held at Leipzig in 1996, where the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (GPA) was adopted by 150 countries. The SGRP represented the CGIAR Centres at the preparatory meetings and made numerous technical contributions to both the programme and the substance of the GPA. The SGRP’s involvement resulted in international recognition of the important contribution of the CGIAR to many of the priority activities identified in the GPA and acknowledgement of the CGIAR’s role in the global system for the conservation and use of plant genetic resources.

Since the Leipzig conference, the SGRP has continued to work closely with the FAO CGRFA, including reports of activities in the CGIAR Centres relating to plant, animal and aquatic genetic resources, as well as contributing to other FAO committees on forestry and agriculture. In 1998, for example, the SGRP co-sponsored a series of regional meetings to assess the status of implementation of the GPA and to identify strategies to strengthen implementation activities.

The SGRP also made crucial inputs to the process of developing the International Undertaking, and its later transformation into the International Treaty on Plant Genetic Resources for Food and Agriculture. For example, FAO’s invitation to the SGRP to study options for access
Major milestones prior to 2007

The SGRP has had a long-standing strategic partnership with FAO, and particularly the Commission on Genetic Resources for Food and Agriculture (CGRFA). FAO was represented on the ICWG-GR from its inception in 1987, and was involved in the 1995 review of the CGIAR Centre genebanks. It also sponsored early SGRP activities, such as the planning and technical consultations in 1995 and 1996.

Key interactions from the SGRP include:

- coordinating the CGIAR Centres’ input at the International Technical Conference on Plant Genetic Resources held in Leipzig in 1996, including technical contributions to the development of the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture
- interactions on the management of the in-trust germplasm collections
- serving on Expert Panels and providing technical support and assistance, including inputs to the Expert Working Group on the terms of the Standard Material Transfer Agreement under the Treaty in 2004 and the Contact Group developing the SMTA in 2005
- coordinating Centres’ feedback on the Multi-year Programme of Work strategic plan and indicating Centres’ contributions to its implementation over the coming years, solidifying the CGIAR’s role in this global plan of work in the field of agriculturally significant genetic resources conservation and use
- coordinating development of a background paper analysing the expected impact of climate change on global interdependence on genetic resources
- preparing fact sheets and organizing side events at the regular meetings of the Commission
- coordinating reporting from Centres to the CGRFA on CGIAR-wide activities on the transfer of materials to and from the in-trust collections
- contributing to the strategic planning of the International Technical Conference on Animal Genetic Resources for Food and Agriculture, held in Interlaken, Switzerland, in 2007
Major milestones prior to 2007

The CGIAR Secretariat brochure, Safeguarding the World’s Agricultural Legacy, was published in 2006 and updated in 2008 by the SGRP. This publication contributed to genetic resources and equitable sharing of benefits from their use, providing the CGIAR Centres with an opportunity to inform the policy debate on this key issue. In 2006, the Secretary of the CGRFA formally acknowledged the “excellent support and crucial inputs” of the SGRP to the negotiations of the Treaty.

Since the Treaty’s entry into force in 2004, the SGRP has maintained a close working relationship with the Treaty Secretariat to ensure that the CGIAR Centres comply with the Treaty and facilitate Centre inputs into the development and implementation of the SMTA under which all materials covered by the Treaty are distributed. The SGRP assumed responsibility for preparing and submitting system-wide reports on the transfer of materials from the in-trust germplasm collections held by the Centres under the fledgling SMTA. These were presented at the second and third meetings of the Treaty’s Governing Body. Side events highlighting various aspects of the CGIAR’s role in Treaty implementation were organized at the first three meetings of the Governing Body.

Other important forums at which the SGRP represented the CGIAR Centres include:
- meetings of the Conference of the Parties to the CBD
- meetings of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the CBD
- meetings of WIPO
- international and regional scientific meetings, congresses and symposia

The SGRP has also been actively involved in various other fora:
- CGIAR Secretariat public awareness brochure on genetic resources, Safeguarding the World’s Agricultural Legacy, first produced in 2006, and updated by SGRP in 2008.
- meetings of the FAO Inter-Governmental Technical Working Groups on Animal Genetic Resources and on Plant Genetic Resources for Food and Agriculture

CGIAR Science Award for Outstanding Partnership

In recognition of their efforts to conserve and manage the in-trust collections as global public goods, the ‘CGIAR Genebank Community’ received the prestigious CGIAR Science Award for Outstanding Partnership in 2006. The award was presented to the SGRP on behalf of the recipients—the 11 Centres hosting genebanks plus IFPRI, FAO and the SGRP Secretariat. The SGRP was acknowledged for bringing coherence, effectiveness and efficiency to the genetic resources activities of the CGIAR system. The award consisted of a certificate from the CGIAR Secretariat and a check for US$10,000 in prize money.
Programme activities, 2007–2010

Governance and coordination

The past four years were marked by several staffing changes in the SGRP Secretariat. Following the departures in early 2007 of Jane Toll (SGRP Coordinator) and Layla Daoud (Communications Assistant), Daniel Debouck served as interim SGRP Coordinator for the remainder of that year. The positions of SGRP Coordinator and Communications Assistant were refilled on a full-time basis in January 2008 and October 2007 when David Williams and Nicole Demers assumed those roles, respectively. The GPG2 project initiated its activities in 2007 with Michael Bolton as the Project Coordinator for the first six months of its start up. Brigitte Laliberté was recruited as the GPG2 Project Coordinator in September of that year, a position she held until her departure in December 2009, when she was replaced by Alexandre Jorge, who oversaw the successful conclusion of that project in 2010. Samy Gaiji, the SINGER Coordinator since 1998, resigned in early 2008 and was replaced in a part-time capacity by Elizabeth Arnaud. Raj Sood, the SINGER Information and Documentation Specialist, resigned in 2009 and his position was not refilled. In March 2010, Tamara Bruce, the SGRP Programme Assistant, departed and Nicole Browne was recruited to fill that position.

ICWG-GR meetings

The 2007 meeting of the ICWG-GR, held at ILRI, Addis Ababa, Ethiopia, focused largely on processes and timeline for developing the final report of GPG1 and on planning for the second phase of the project (GPG2). This highlighted the need for the Centres to develop a sustainability plan for the Centres’ genetic resources activities by the middle of 2008. An FAO representative also briefed the group on processes being implemented for monitoring activities under the GPA and for developing the second report on The State of the World’s Plant Genetic Resources for Food and Agriculture. The Group agreed that the SGRP should coordinate the CGIAR’s inputs to the GPA monitoring system and submissions to the State of the World Report.

Participants at the ICWG-GR meeting, Bioversity International, November 2008. Nicole Demers/Bioversity International
The 2008 meeting of the ICWG-GR was held at Bioversity’s headquarters at Maccaresi, Italy, in February 2008. Taking advantage of the proximity to Rome, the agenda included extensive participation, presentations and discussions with colleagues from the Global Crop Diversity Trust, FAO and the Secretariat of the Treaty, as well as a day spent at FAO attending a workshop on climate change and agrobiodiversity. The meeting included a workshop on ‘Looking to the future: the role of SGRP and CGIAR in the global system’. This examined two key questions: What are the strengths of the SGRP and the CGIAR that would allow them to contribute to the global system? And what are their weaknesses that might prevent them from contributing? The strengths identified include the collections held by the Centres, technical capacity and capabilities in networking, policy expertise, capacity building, information systems and innovation. Weaknesses identified include the vague definition and poor understanding of the global system, variable and uncertain support for PGRFA within CGIAR Centres, lack of wide recognition of and appreciation for the SGRP, and poor interaction between breeders and genebanks both inside and outside CGIAR Centres. Further discussions of changes the SGRP and CGIAR would need to make to increase their ability to contribute to the global system highlighted the need for a more inclusive approach to genetic resources in the CGIAR, embracing livestock, forest, aquatic, microbial and invertebrate—as well as crop—genetic resources. They also stressed the need to raise awareness of the value of the genetic resources activities, and to engage more proactively with users, especially breeders.

At the 2008 meeting it was also decided to formally invite the Secretariat of the Treaty to nominate a representative to join the Group. The Secretary of the Governing Body of the Treaty, Dr Shakeel Bhatti, accepted the invitation, indicating that he would personally represent the Treaty on the ICWG-GR.

The 2009 meeting of the ICWG-GR in Mombasa, Kenya, was largely devoted to a workshop to develop a collective vision of the future of genetic resources work in the new CGIAR. In addition to the regular ICWG-GR members, experts on plant, animal, aquatic, tree and microbial genetic resources, including representatives from key partner institutions, were also invited to the workshop. After four days of animated discussion and lively debate, a broad consensus was reached and captured in a position paper outlining the best way forward for the CGIAR. The paper, entitled An integrated approach to genetic resources in support of the CGIAR’s mission, calls for an integrated, system-wide approach to genetic resources that recognizes the commonalities across all sectors of agricultural biodiversity and takes advantage of the many synergies and efficiencies offered by working together.
The position paper defines a number of cross-cutting areas on which the CGIAR could focus its attention:

- understanding diversity
- promoting the use of diversity through applied research
- conservation technologies and strategies
- information and documentation
- capacity building, awareness and advocacy
- economic analysis
- science-based policy

Milestones for the coming decade have been identified in the different focal areas. The examples listed in the box (p. 31) give a flavour of the integrated approach with its mix of biodiversity-wide thrusts and needs-based sector-specific elements.

The position paper argues that an integrated approach to the conservation and use of all GRFA would enable the CGIAR to have a significantly greater impact on the food security and overall livelihoods of the world’s poor. This would be achieved through harnessing the high genetic and functional diversity of production systems for enhanced delivery of superior primary products in environments that are cleaner, healthier and more productive. The approach would mitigate risks, maintain or increase ecosystem resilience and increase external input efficiency through enhanced ecosystem services. It would promote the sustainability of the impact by ensuring that future generations have access to diversity to address as-yet-unknown development challenges presented by changed climates, pests and diseases and markets.

The position paper was initially sent to the Alliance Executive and has since been provided to numerous partners and stakeholders for their endorsement and support. The position paper has also been provided to the Scoping Study team that is currently evaluating the needs for cross-cutting initiatives on genetic resources within the CGIAR, in the hopes that the SGRP’s vision for an integrated approach will find resonance and be adopted in some form within the restructured programme of the new CGIAR.

The 2010 meeting of the ICWG-GR, held at Bioversity International’s headquarters at Maccarese, Italy, was marked by a sense of uncertainty about the impending transition within the CGIAR and particularly its effect on the SGRP. The intense activity of the previous three years under the GPG2 project was drawing to a close and the future of all the system-wide programmes was in doubt as it had been announced that the World Bank would no longer be providing them with coordination funds after 2010. No cross-cutting genetic resources activities had been incorporated in the new mega-programme portfolio, and the future of the SGRP was anything but clear. The meeting began with a report on the outcome of the recently concluded GPG2 Final External Review. The assessment was quite positive overall, but included a number of insightful observations and constructive recommendations for
**Programme activities, 2007–2010**

**Understanding, conserving and using diversity**
- Diversity characterized at the ecosystem level using molecular techniques
- Biobanks of genomic resources for all agricultural biodiversity sectors including DNA, BAC libraries and genetic stocks
- On-farm management strategies implemented for model crop, tree, fish and livestock species
- Services providing germplasm for crops and some trees, with a brokering provision for other trees and livestock

**Knowledge and information sharing**
- A CGIAR-wide comprehensive information platform and global portal
- Knowledge bases for e-learning
- Capacity built among a wide range of stakeholders through training, collaborative research, backstopping and mentoring
- Strategies for effective public awareness and advocacy developed and implemented, partnering with others to advance global agendas

**Policies and economics**
- System-wide adoption of policies and related legal instruments that support the Centres’ scientific work and performance as participants in evolving global systems of conservation and use of GRFA
- Influence on the development of international and national policies, laws and administrative practices relating to GRFA
- Influence on the design of economic policies in support of sustainable agriculture and livelihoods

**Examples of ten-year milestones identified in the SGRP Position Paper**

**The cassava collection is stored** in vitro at CIAT’s Genetic Resources Unit, Colombia. Neil Palmer/CIAT.

improving and sustaining future collective actions among the Centres’ genebanks, particularly with regard to their current and potential role in the global system. The group then discussed the review panel’s recommendations and agreed on the elements of what would become the SGRP’s formal response to the review.

The group discussed at length the future of the SGRP and agreed on what activities should be finalized in 2010 should the SGRP cease to exist in its present form in December. It also examined options for future collaboration on genetic resources within the CGIAR.

Priority actions for 2010 included adequate policy representation at the access and benefit-sharing (ABS) negotiations leading up to COP-10, loading of updated accession and distribution data into the SINGER data warehouse, peer-review and finalization of all unfinished GPG2 products and development of a revised draft of the Sustainability Plan using the new costing tool at all Centres.

**Animal genetic resources**

2007 saw three key events in the field of animal genetic resources: the publication of *The State of the World’s...*
Programme activities, 2007–2010

Animal Genetic Resources for Food and Agriculture, the holding of the International Technical Conference on Animal Genetic Resources for Food and Agriculture at Interlaken, Switzerland, and the adoption of the Global Plan of Action for Animal Genetic Resources. SGRP coordinated the CGIAR’s inputs to all three, ensuring that the views of the CGIAR were well represented and reflected in the outcomes of the Conference, The State of the World report and the GPA.

**Collaboration with the Global Crop Diversity Trust**

In 2007, the relationship between the SGRP and the Trust changed greatly. The Trust began awarding long-term grants and initiated several projects with the SGRP, such as the development of regeneration guidelines, GENESYS (see p. 48) and data standards, in addition to the continuing development of the crop conservation strategies.

Beginning in 2007, in cooperation with the Trust, the SGRP Secretariat helped coordinate a series of scheduled shipments of germplasm from the CGIAR Centres to the Svalbard Global Seed Vault, and several ICWG-GR members were present at the inauguration of the Vault in Longyearbyen, Norway, in February 2008. In 2009, seven Centres (AfricaRice, CIAT, CIMMYT, CIP, ICARDA, ICRISAT and IITA) deposited a total of 122,895 accessions, and further deposits continued in 2010.

In 2008, the Trust provided funds for the preparation and shipment of a safety back-up of the CIAT in-trust rice collection to IRRI, together with the compilation of the corresponding passport information in the format of the Global Crop Register for Rice. IRRI agreed to regenerate and characterize the CIAT material and to make it available for distribution under the multilateral system using the SMTA. The SGRP Coordinator made two visits to CIAT to expedite the

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*Tom Payne, head of CIMMYT’s Genetic Resources Center, at the Svalbard Global Seed Vault, Norway, during the opening ceremonies in February 2008. Thomas Lumpkin/CIMMYT.*
Programme activities, 2007–2010

transfer of these materials, many of which are unique to Latin America. In October, 1635 accessions from the CIAT rice collection were shipped to IRRI with their accompanying passport data for long-term storage and safety duplication.

**Centre commitments under the Treaty, 2007–2010**

The Centres have continued to be among the most active proponents and participants in the Treaty’s multilateral system of access and benefit-sharing (MLS).

The SGRP has acted as a repository of Centres’ questions concerning operations under their agreements with the Governing Body, and has worked in concert with experts both inside and outside the CGIAR to provide advice on how to address challenges. In 2009, the Governing Body of the Treaty created the Ad Hoc Technical Advisory Committee on the SMTA and MLS and SGRP policy experts were invited by the Secretariat to attend the two meetings of the committee held so far.

Examples of questions that have arisen in recent years that the SGRP has attempted to coordinate advice on include:

- What can and should Centres do when they receive requests for material hosted by the Centre to be used for purposes other than those specified in the Treaty (e.g., biofuel research, industrial applications, ‘direct use’ by farmers)?
- What terms and conditions can Centres add when using the SMTA to distribute PGRFA under Development (i.e., materials improved by the Centres themselves)?
- How should Centres report activities to the Governing Body to meet our commitment under the Treaty?
- What should Centres do when a party who should be providing material under the Treaty insists on conditions that are in grey zones as far as the Treaty is concerned?
- What are the legal terms and conditions for establishment and operation of web-based genetic resources data bases and information services?

The CGIAR Centres started using the SMTA for Annex 1 crops in January 2007, but the Treaty states that the Governing Body would consider amending the MTA used by the Centres for non-Annex 1 materials at its second session. In the lead-
up to that meeting, the SGRP coordinated development of an opinion for submission to the Governing Body, stating that the Centres’ preferred outcome would be to be allowed to use the SMTA for non-Annex 1 crops. In the end, the Governing Body took exactly that decision, directing the Centres to use the SMTA for all the in-trust materials they hold. The Treaty Secretariat developed a footnote to the SMTA stating that references to Annex 1 and the MLS should not be interpreted as prohibiting the use of the SMTA by Centres for non-Annex 1 materials. This was subsequently inserted in the SMTA in six official languages and distributed to the Centres. The Centres started using this SMTA for all materials as of February 2008.

One of the SGRP’s flagship contributions to the ongoing implementation of the Treaty has been reports to the Governing Body of syntheses of all Centres’ data on their acquisition and distribution of PGRFA. So far, the SGRP has submitted two such reports to the Governing Body and is currently preparing a third such report for the fourth session of the Governing Body in March 2011. These reports give the most accurate picture of what is actually happening in the MLS. No other organization or party reports anything close to the same level of detail or quantity of transfers. Related papers include: analyses of policy-related causes for the dramatic drop in acquisitions of new PGRFA by the Centres collectively since the mid to late 1990s; country-specific case studies of PGRFA going into and out of countries as facilitated by the CGIAR Centres; and studies of means by which the Centres can work together with national programmes to assist in the implementation of the MLS. These studies are extremely useful in demonstrating the importance of international efforts to pool and conserve PGRFA and the need for countries and organizations to make further efforts to shore up and implement the Treaty. They also, coincidentally, demonstrate the very significant contributions that the CGIAR makes in the areas of research and development, technology diffusion, conservation and benefit-sharing.

The SGRP has been invited to send policy experts to meetings of various other committees established under the Treaty, including the Ad Hoc Third Party Beneficiary Committee and the Legal Focus Group on Information Tools to Support Implementation of the MLS.

To keep track of the issues raised and their resolution, the SGRP developed a number of tools.
Programme activities, 2007–2010

The Booklet of CGIAR Centre Policy Instruments, Guidelines and Statements on Genetic Resources, Biotechnology and Intellectual Property Rights was updated by the SGRP and the CGIAR Genetic Resources Policy Committee in 2010.

of different tools, including the Guide for the CGIAR Centres’ Use of the Standard Material Transfer Agreement, the Booklet of CGIAR Centre Policy Instruments, Guidelines, and Statements on Genetic Resources, Biotechnology and Intellectual Property Rights.

In 2010, with support from the Generation Challenge Programme, the SGRP developed a ‘stand alone’ training module on the Treaty.

Other areas in which the SGRP coordinated Centres’ commitment to the Treaty include: coordinating submissions from all of the Centres concerning their activities relevant to sustainable use of PGRFA, pursuant to Article 6 of the Treaty; SINGER’s involvement in technical consultations convened by the Governing Body on information technology underpinning the MLS; and enhancements to SINGER to provide a central germplasm ordering gateway and other features to facilitate and enhance access to information about the germplasm held at the Centres (see ‘SINGER,’ pp. 46–50, for more details).

Between 2007 and 2010, the SGRP coordinated the representation of the CGIAR Centres at 28 intergovernmental policy-making meetings under the auspices of the Convention on Biological Diversity (CBD), FAO’s Commission on Genetic Resources for Food and Agriculture (CGRFA), the World Intellectual Property Organization and the Governing Body of the Treaty. In all cases, the SGRP made contributions on behalf of all the Centres to promote the development of policies that support the conservation and sustainable use of genetic resources. In total the SGRP developed and submitted 18 technical papers and reports and 4 policy briefs. It also organized seven side events at those meetings.

Another particularly important international process in which the SGRP was very much engaged was the negotiation of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (the Nagoya Protocol), which was adopted by the Parties to the CBD on 29 October 2010. The SGRP developed a series of policy briefs targeted at the Nagoya Protocol negotiators, highlighting issues of particular concern to the Centres and to public agricultural research generally. The Centres also organized side events...
with panel presentations to facilitate discussion between the negotiators and representatives from national agricultural research organizations, universities and CGIAR Centres.

Ultimately, the Nagoya Protocol appears to deal in acceptable ways with issues that the SGRP was addressing. First, it recognizes and works around the pre-existing access and benefit-sharing norms established by the Treaty, including the Centres’ agreements with the Governing Body of the Treaty. Second, it explicitly creates space for the development of future specialized access and benefit-sharing regimes that are consistent with the objectives of the CBD and the Nagoya Protocol. This is good news because it seems likely that, in the future, it will be important for the international community to agree to multilateral access and benefit-sharing norms for other genetic resources used in agriculture, such as agricultural microbial genetic resources or farm animal genetic resources, which are not covered by the Treaty. It will be important for the Centres to monitor, and participate in, the upcoming meetings of the parties to the Nagoya Protocol to ensure that it is indeed implemented in ways that are clearly complementary to the Treaty, and to exploit opportunities to develop nuanced approaches to access and benefit-sharing for GRFA beyond the Treaty.

The SGRP also closely monitored the development and adoption of the CGRFA’s multi-year programme of work (MYPOW), developing a report concerning synergies between activities of the Centres and areas of focus of the MYPOW. During the Eleventh Regular Session of the CGRFA, the SGRP made eight statements on behalf of the CGIAR Centres, covering the Global Plan of Action for Animal Genetic Resources, the programme of work on plant genetic resources for food and agriculture, the guiding principles for the CGIAR Centres’ policies to address the possibility of unintentional presence of transgenes in ex situ collections, the status of forest genetic resources and needs for action, micro-organisms and insects, international cross-sectoral policy matters on genetic resources, aquatic genetic resources and reports from Centres on their policies, programmes and activities on agricultural biological diversity.

In 2009, at the request of the CGRFA, the SGRP solicited comments from the Centres on the draft strategic plan for the implementation of the MYPOW and
submitted these to the Twelfth Regular Session of the CGRFA (CGRFA-12). The SGRP participated actively in CGRFA-12, including helping prepare CGIAR statements that were read into the minutes, lobbying delegates to make supporting statements, and organizing a side event that highlighted some of the main outputs of GPG2 and the CGIAR’s role in the implementation of MYPOW.

Among other things, as part of the MYPOW, the CGRFA has also started considering ABS issues as they relate to food and agriculture. To make the most of this opportunity to further promote informed development of ABS norms for agricultural genetic resources, the SGRP made numerous inputs into CGRFA processes, including helping to develop terms of reference for a set of background papers on exchange and use of genetic resources and leading the development of a paper for the Commission concerning *The impact of climate change on countries’ interdependence on genetic resources for food and agriculture.*

In other forums in 2008, the SGRP compiled a report on *Biotechnology and biosafety related policies and activities of the Consultative Group on International Agriculture Research (CGIAR)* that was submitted to the Fourth Meeting of the Conference of the Parties serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety, held in Bonn, Germany. Some of the information contained in this report was incorporated in the information document prepared by the CBD Secretariat for the Parties to the Convention.

The SGRP has continued its efforts to raise the profile of the Centres’ genetic resources activities. These included sponsoring the Harlan II Symposium on Biodiversity in Agriculture: Domestication, Evolution and Sustainability, held at the University of California, Davis, in September 2008; organizing a half-day session on the CGIAR at the Thirteenth Latin American Congress of Genetics, held in Lima, Peru, in May 2008; and presentations on the work of the SGRP at the CGIAR Annual General Meeting and a workshop on International Public Goods held in Maputo, Mozambique, in November 2008. In 2009, the SGRP Coordinator participated in the Eighth Meeting of Latin American NARS, held in Antigua, Guatemala, and co-authored a presentation with Bioversity promoting an integrated approach to genetic resources within the CGIAR that was made to this influential group of directors of national
agricultural research institutes from 13 Latin American countries, Spain and Portugal. He also gave an invited keynote presentation at the Seventh Genetic Resources Symposium for Latin America and the Caribbean-SIRGEALC, in Pucón, Chile, describing the CGIAR’s role in the global system of genetic resources conservation and use to a large audience of genetic resources specialists from throughout the region.

**Upgrading genebank activities in the CGIAR: the Global Public Goods projects**

**Completion of phase one**

GPG1 began in April 2003 and was originally slated to end in 2006. Unspent funds remaining at the end of 2006 were carried over to the following year so that the remaining backlogs and some additional upgrading could be completed at six Centres (CIAT, ICRISAT, IITA, ILRI, IRRI and the World Agroforestry Centre). All GPG1 activities were ultimately concluded in December 2007.

The 2007 carry-over funds of the GPG1 project allowed CIAT’s Genetic Resources Unit to respond to the most urgent problems it was facing, such as regeneration of ageing seeds and safety duplications. ICRISAT increased their long-term base collection to cover 87% of their total collection of 118,882 accessions. The inventory of their active collection was also updated and backlogs in seed health testing and germplasm documentation were eliminated. At IITA all the backlogs of *in vitro* introductions, *in vitro* safety duplications, germination testing and seed regeneration were eliminated but the loss of viability in some of the IITA maize accessions prevented the activity from reaching its proposed regeneration target. ILRI was able to make a final shipment of 2000 samples of forage species to CIAT for safety back-up, thereby reaching all of its GPG1 project milestones. All pending tasks were also completed at IRRI, including completion of the statistical analysis of seed viability tests using accumulated data from almost 500,000 germination tests. The taxonomic authentication of wild rice accessions was also completed for all clearly identifiable accessions. At the World Agroforestry Centre, over 50 accessions of 15 tree species were established in the field, while existing field genebank monitoring was maintained. Several tonnes of seed of various species were collected, cleaned, packaged and distributed to farmers. Storage conditions were improved at the World Agroforestry Centre’s central genebank and at its Mali regional genebank. The SGRP
One lasting contribution of the SGRP is a standardized policy for the Centres to use in acquiring, conserving and distributing crop germplasm. From the outside this achievement might appear insignificant, but the Convention on Biological Diversity radically changed perceptions about the biological heritage of this planet, and suddenly legal issues had come to weave relationships with biology and genetics and vice versa. The standardized policy obliged Centres to document all flows of germplasm and their purposes and became a model for exchange of biological materials among countries. But at the beginning of the SGRP, this was far from obvious. At the time, many of us, as scientists and germplasm curators—me included—just saw the activities of the SGRP as another constraint on our research on crop germplasm. But the SGRP provided a forum for raising awareness of the need for and benefits of common policies and shared agreements.

Another important effort of the SGRP was in germplasm documentation, with its flagship product, SINGER. Since the earliest years of its conception, SINGER remained very much linked to policy development. One of the early objectives of SINGER was to help document the movement of materials into and out of the Centres’ genebanks to find out whether unidirectional flows of germplasm were a myth or not. SINGER demonstrated that germplasm was flowing to all countries and continents, with the possible exception of Antarctica! There was thus a rationale for a collective effort in the documentation of the origin and distribution of the in-trust collections kept by the Centres. Since all Centres provided data and maintained their own information systems there was a need to agree on descriptors, standards and many more issues, and much was achieved in this area. SINGER was evolving at a time of rapid technological development in the information field, with novel products appearing on the Internet on a monthly basis. The approach of SINGER evolved too, changing from a monolithic centralized system to a distributed network approach. Some of these efforts were more successful than others, but the seeds for a global information system on plant genetic resources—at the crossroads between genetics, computer technology and intellectual property—have been planted!
Secretariat prepared project progress reports, including the follow-up with the carry-forward funds to the Centres and the preparation of the final report.

GPG1 was highly successful in achieving huge reductions in the regeneration, characterization, health testing and documentation backlogs that had accumulated at the Centre genebanks and in making much-needed improvements to the genebanks’ infrastructure. The progress achieved through GPG1 lifted the CGIAR genebank operations to a new level of performance that would be further enhanced and built upon in Phase 2 of the project—GPG2.

Phase two
In 2007 the World Bank approved a second phase for the Global Public Goods Rehabilitation Project (GPG2), allocating US$10.46 million for 2007–2009. As with the first phase, the project was coordinated by the SGRP on behalf of the CGIAR Centres.

GPG2 had two objectives: achieving effective stewardship of the Centres’ in-trust collections and providing leadership to partners in developing a global crop-based conservation and use system. The overall aim of the project was to ensure that the CGIAR in-trust collections have a financial and technical basis for long-term, sustainable and accessible stewardship of the valuable public goods that they represent, with the CGIAR exercising leadership in a collective effort with other international organizations and NARS to build an effective global system for the conservation and use of crop diversity. It did this by increasing system-wide efficiency and effectiveness in the management and accessibility of the germplasm collections, particularly of those crops-in-common held by more than one Centre, by developing common information systems, identifying duplicates among Centres’ collections and more rational sharing of the tasks associated with conserving and distributing the material.

The project was organized around six outputs:
• Uniform risk management procedures developed and implemented in all CGIAR genebanks
• Best practices for genebank management developed and implemented in the CGIAR Centres and made available to partners
• Unified protocols for locating and delivering germplasm, and for sharing information on common crops in place at all CGIAR genebanks
• Strategies and tools for enhancing knowledge on the diversity held in the in-trust collections
• Recommendations for the wider involvement of the CGIAR genebanks in addressing genetic and genomic stocks, associated biodiversity and underutilized species
• Mechanisms for improved collective action among the CGIAR genebanks in the delivery of global public goods and promotion of international collaboration on conservation

The project was implemented through 28 individual collaborative activities and 10 Centre-own activities, each led by an Activity Coordinator from the staff of participating Centres, in cooperation with Task Forces that involved Centres and external partners, with an overall Project Coordinator. In total about 150 people from 30 countries participated in the project. The project took advantage of opportunities for working with collaborative efforts within and outside the CGIAR, such as the Consortium for Spatial Information, the Generation Challenge Programme, the Central Advisory Service on Intellectual Property, the Internal Auditing Unit, the International Centre for Underutilized Crops, the ICT-KM Program of the CGIAR, and the Global Facilitation Unit for Underutilized Species. The collaborative approach included capacity-building for the benefit of both NARS partners and the maintenance of core expertise within the Centres.

The primary beneficiaries of the project are the CGIAR Centre genebanks, which have enhanced their operations and their capacity to serve their stakeholder communities through more effective, secure and accessible stewardship of the in-trust collections, efficiencies in the management of crops in common, sharing of knowledge and tools, and more effective research planning for collective and individual action. The ultimate beneficiaries of the project, however, are poor farmers and communities in the developing world. Greater access to a wider range of diversity will provide farmers, NARS, public and private plant breeding organizations, and seed producers with options to react to challenges ranging from climate change and new pests and diseases, to emerging consumer preferences, with collateral livelihood benefits through reduced pesticide use and reduced pressure on fragile environments.

This project provides an excellent example of
collective action across Centres that can serve as model for the coming changes within the new CGIAR. More than 150 products were developed within the various activities, covering 20 crops, some non-plant taxa and products that were not crop-specific. Many of these products continue to be improved and updated and can be accessed online in user-friendly formats on the Crop Genebank Knowledge Base website (http://cropgenebank.sgrp.cgiar.org) and on the SGRP website (http://www.sgrp.cgiar.org). The GPG2 project achievements can be categorized into three main areas: improving procedures for managing genetic resources; increasing the value and use of the collections; and planning for the future (see box, p. 44).

The particular strength of the GPG2 project was the way that it built on the strong foundation of the individual Centres’ competence and developed new modalities of collaboration, leading to the integration and sharing of improved genebank standards and methodologies across the whole system. Effective collaboration among the Centres provides a springboard for the CGIAR to take a key role in the promotion of a more effective and efficient global system for conservation and use of genetic resources in which our national and international partners also assume their roles and responsibilities according to their respective strengths, needs and comparative advantage.

Looking to the future
The GPG projects achieved a great deal in a relatively short time—but these achievements are not the end. More still remains to be done to ensure that the gains made are carried forward.

Some of the outputs of the projects have yet to be incorporated into the genebank operations of the individual Centres; this needs to be done if Centres are to gain the full benefits of the projects. Also, some of the GPG2 tasks could not be finished as planned due to
Programme activities, 2007–2010

and viability testing, documentation, and safety-duplication in accordance with the system-wide principles and deposit strategy. By the end of 2009, nearly 1.25 million samples had been processed, 70% more than planned. About 29% of the accessions processed for safety duplication were sent to Svalbard while 71% were sent to various host institutions for conventional safety duplication.

Increasing the value and use of the collections

Major efforts were put into improving access to the collections, particularly including enhancing the quality of passport and ecogeographic data, together with studies of the coverage of the collections and existing patterns of use. Examples of outcomes include:

• A prototype for a central germplasm ordering system was developed for SINGER.
• An analysis protocol for identifying ecogeographic gaps in the collections was developed and applied to wild species from 10 crop genepools.
• Existing phenotypic characterization strategies on chickpea, rice, maize, potato, Musa, pigeonpea and sorghum, and patterns of demand for trait-specific germplasm, were reviewed to determine their potential value and usefulness across Centres.
• Procedures and model agreements for a system-wide strategy for safety duplication of germplasm
• A methodology and a decision-support tool to enhance the cost-effectiveness of collection management for optimal resource allocation
• Reduced backlogs in the processing of accessions into storage. This included regeneration, characterization, health

Planning for the future

A number of activities were designed to put the Centres in a better position to sustain their contributions of global public goods well into the future, and to provide guidance, leadership and technical backstopping to national and international partners within the emerging global system of genetic resources conservation and use. Examples of the products generated include:

• A draft sustainability plan for the Centres’ genebanks to help the Centres’ fulfil their in-trust commitments in the future, including more user-oriented, impact-focused operations
• Strategies for neglected and underutilized plant species in the CGIAR and in national genebanks
• Strategies for conserving genetic resources of non-plant taxa in the CGIAR system and national genebanks, including bacteria, fungi, oomycetes, viruses, arthropods and nematodes
• Guidelines on quality management for genebanks, including a feasibility study on the adoption of ISO standards by genebanks
either lack of time (requiring more time than planned) or due to the interdependency with closely linked activities that were only ready towards the end of the project. Some of these unfinished tasks should be completed in due course. For example, Centres should use the collection data that was made more accessible during GPG2 to verify and expand their databases and perform gap analysis. This will allow them to develop a more precise idea of lost material, gaps in current collections and the need to complement crop collections to achieve a good coverage of diversity.

But it is not just in-house efforts that are needed—there is still a need for commitment to system-wide collective action in the area of genetic resources. This includes continuing to develop the sustainability plan for the CGIAR genebanks as a reference point justifying the sustained support required for the adequate maintenance of the invaluable germplasm collections held in-trust as international public goods for the global community.

Collective action will also be needed to establish a strengthened global system for conservation and use of genetic resources. More effective partnerships among those working in conservation and use efforts worldwide will be needed to enhance the visibility and understanding of the role that plant genetic resources play in development. Currently there are different views of the global system among the diverse players and a lack of clarity on the concept and vision of a global system. The CGIAR needs to articulate more clearly its role in the global system in order to take a more active part in it, and consultations are needed among key stakeholders to develop a shared vision of the nature and function of the global system of genetic resources conservation and use.

The significant successes and cumulative benefits of the GPG1 and GPG2 projects were achieved to a very large extent through a collaborative, system-wide approach to genetic resources. This vibrant community-of-practice in genetic resources should be nurtured, allowing the CGIAR to continue to take advantage of the intellectual capital of this group of specialists to identify and address new areas of work that would benefit from a collective approach to research and strategic thinking.

**SINGER**

Between 2007 and 2009 the SINGER website (http://singer.cgiar.org) was redeveloped under the GPG2 project. The new public interface
But the biggest change over this period was in the area of the genetic resources and biodiversity policies that form the framework in which we operate. These policies had the potential to constrain access to and use of genetic resources from the global public goods collections held by the Centres. While we have collaborated together on many issues it is probably in the area of policies that our collaboration has had the most significant impact at the global level. Working together we were able to have a stronger voice in the international debate on intellectual property and access and benefit-sharing issues surrounding genetic resources for food and agriculture, promoting the idea of a multilateral system and developing common strategies and policies to manage our collections in line with the Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture.

As well as programmatic and policy change, the other changes have been in Centre participation, Centre representation and coordination of the SGRP. People make the Programme, and many staff of the Centres working in plant, fish and livestock genetic resources, listed in this report, have contributed in different roles and ways to the success of the SGRP over the years. This group of dedicated genetic resources specialists has shown the clear benefits of coordination and working together on issues of common interest and concern, making strong inter-Centre collaboration a reality. This collaboration was not without its challenges but resulted in several important achievements, including ensuring the global public goods status of the germplasm in the Centre genebanks, developing a system-wide information network around Centre collections, conceptualizing and launching the Global Crop Diversity Trust, carrying out studies on the costs of conserving biodiversity, developing policies and guidelines for improved germplasm management, sharing knowledge and raising over US$20 million to upgrade Centre genebanks. These are achievements that we realized together and we can all be proud to have contributed to them.

The SGRP has delivered on its aims of maximizing collaboration, strengthening the CGIAR’s ability to contribute to global genetic resources efforts and helping Centres meet their commitments to manage genetic resources. Looking forward to opportunities that will come from the strong collective action approach being developed as part of the implementation of the new CGIAR, I feel sure that system-wide collaboration in genetic resources will continue to be an important part of the agenda of the new CGIAR.

Looking back over the 16 years of inter-Centre collaboration under the System-wide Genetic Resources Programme (SGRP), I was reflecting on change. Over that time we have seen development of new biotechnologies, information and communication technologies and geographic information systems and changes in the funding environment. All of these have provided new opportunities for improving the conservation and use of genetic resources for food and agriculture. We have also seen an increased understanding of the importance of biodiversity for environmental services, livelihoods and food security, raising the profile of our work and its role in agricultural production.
has enhanced functionality, offering users a variety of ways to find information, such as searching using Google Maps, and providing more options for capturing and analysing data about the accessions they are interested in. The new site also has links to external databases, such as the International Rice Information System (IRIS), hosted by IRRI, that provide additional information about accessions.

With initial support from the GPG2 project, a major effort was made to link passport data in SINGER with the original information that was recorded about the sample and the collection site at the time the sample was collected. The original reports and collecting forms from all 558 IBPGR-supported collecting missions—a total of nearly 60 000 pages—were digitally scanned and saved as PDF files. Passport information was then extracted and fed into a sample-level database. This important complementary data will be linked to the SINGER passport data for those accessions originating from the collected samples. Original information recovered from the scanned reports has enabled enhanced passport data to be uploaded for about 130 000 samples. A searchable repository (http://www.central-repository.cgiar.org/) was also developed to provide easy access to the full text of the original collecting mission reports.

In conjunction with the Treaty Secretariat, a ‘shopping cart’ ordering system has been developed for SINGER that allows users to order germplasm samples from any one or several of the CGIAR genebanks with a single request. The system automatically forwards the content of the requester’s email directly to the relevant genebank curators for processing, provides automated acceptance of the SMTA through a choice of shrink-wrap or signed-copy formats, includes a disclaimer for SINGER, and asks that the requester disclose the planned use of the germplasm being ordered.

On 1 November 2010 the SINGER ordering gateway was linked to the Treaty’s permanent identifier (PID) server and became the first live example of a multi-provider germplasm ordering platform compliant with the requirements of the International Treaty. Requesters log in to receive a unique PID from the Treaty’s server. The PID server keeps records of the registration details and allocated PID numbers. The registration process provides access to the full text of the SMTA and the Treaty’s explanations on the purpose of the PID. This feature, developed by the
Programme activities, 2007–2010

SINGER team, is considered a proof of concept for the germplasm ordering system that will eventually be used by GENESYS (see ‘Moving towards a global information system’, below).

All Centres provided fully updated passport data to SINGER in 2010, and these data were used for harmonizing the data storage and management protocols within GENESYS. As of 15 November 2010, a total of 746 711 crop germplasm accessions are reported in SINGER from the 11 CGIAR Centres with in-trust collections. Data on germplasm transfers from all Centres were aggregated and analysed by the SGRP for the CGIAR report that was submitted to the Treaty Secretariat in December in preparation for the fourth meeting of the Treaty’s Governing Body in March 2011. A technical workshop for CGIAR genebank database managers was held in December 2010 to review the lessons learned from the data-upload exercise and to define a sustainable data-sharing mechanism for the SINGER community.

Moving towards a global information system
Since 2008 the Global Information on Germplasm Accessions (GIGA) project, funded by the Global Crop Diversity Trust, has been supporting the development of informatics tools that will underpin the global system of plant genetic resources conservation and use. One of these tools is GENESYS (http://www.genesys-pgr.org)—a global informatics portal that will facilitate access to information on around 2.4 million germplasm accessions conserved in hundreds of genebanks around the world. In essence, GENESYS, which is being developed by Bioversity International on behalf of the SGRP, will take the purpose and functionality of SINGER to the next level by including data from genebanks outside the CGIAR system and will contain environmental, characterization and evaluation data as well as the standard passport data for each accession. GENESYS will help enhance use of the accessions by allowing users to build custom queries across all categories of data and to place orders for accessions of interest online. Aggregated data from SINGER, EURISCO and GRIN are serving as the foundation for GENESYS, and many other genebanks are expected to participate with their data once the portal is officially launched in March 2011.

The metamorphosis of SINGER into GENESYS is seen as a natural progression from a CGIAR-only portal to a global portal that will provide the public with accession-level information on germplasm from the greatest possible number of genebanks. This evolution looks beyond the Centres to our partners outside the CGIAR and is in line with and supportive of the larger vision behind the ongoing CGIAR change process. Expanding our informatics portal into the global arena raises the possibility that GENESYS could form the basis of the global information system envisaged.
by Article 17 of the Treaty—a role that could not be played by SINGER alone.

Another initiative supported by the GIGA project is the renovation of the United States Department of Agriculture’s (USDA) GRIN into a stand-alone genebank management and documentation system—called GRIN-Global. This new software will be made freely available and can be readily implemented by any genebank. Widespread adoption of GRIN-Global will help harmonize and facilitate the management and exchange of germplasm accessions and associated information by genebanks worldwide and enable their seamless participation in GENESYS. Due to be launched in early 2011, several national programmes and some CGIAR Centres are already contemplating the possibility of adopting GRIN-Global for their genebanks.

Looking to the future of SINGER

In August 2009, at the behest of the ICWG-GR, the SGRP convened a meeting to review the status of SINGER and plan its future development in the context of the CGIAR change process and the evolving global informatics landscape for genetic resources. Hosted by the USDA’s Agricultural Research Service at its facilities in Beltsville, Maryland, USA, the meeting highlighted the actions needed to strengthen data management and exchange by the SINGER community, including the need to ensure the quality and completeness of passport data and the need for accurate georeferenced data on accessions.

A number of issues were raised concerning information-sharing and collaboration between Centres and crop registries. The crop registries, such as IRIS, contain data from partners beyond the CGIAR that are not in SINGER but that are critically important for implementing global crop conservation strategies. Many of the partners have concerns about ownership of their information and the benefits of making their information freely available through the crop registries. A key requirement for SINGER/GENESYS and the crop registries will be to enrich the datasets with metadata about the origin of the information to ensure the correct attribution of the source of the information. Enhanced attribution is expected to be a key incentive for contributors to provide high-quality data. Efficient sharing of information between the crop registries and SINGER/GENESYS will also require the adoption of common data standards and structures.

Finally, participants recommended a number of actions that would improve the functioning of the SINGER community, such as establishing a decentralized SINGER team with coordination staff and IT support in each Centre.

Following up on a recommendation from the Beltsville meeting, a SINGER Task Force was convened in June 2010 to re-examine and redefine the role of SINGER in the new landscape of global
genetic resources information systems. While SINGER and GENESYS will share a common database, the future status and role of the SINGER website as a stand-alone entity remains undecided and will require further discussion by the ICWG-GR.

The proposed Phase II of GENESYS development will enable users to view the CGIAR data sets separately or as a group, as SINGER has done in the past, and will include the Centres’ germplasm distribution and site-of-origin data. Once this functionality is achieved by GENESYS, the relevance of keeping a separate SINGER website will be re-assessed.

Other activities

Technical Exchange Fellowship Programme
Genebank staff from AfricaRice, ICARDA, ICRISAT, ICRAF, IITA and IRRI made exchange visits to sister Centres’ genebanks at CIMMYT, ICRISAT, ILRI and IRRI under the Technical Exchange Fellowship Programme in 2009. The exchange programme was designed to enable locally recruited genebank technicians from one Centre to learn from and share their experiences and expertise with their counterparts at another Centre, and promote cross-fertilization between genebanks at the operational level. The programme was funded using the US$10 000 prize money from the Science Award for Outstanding Partnership that was given to the CGIAR genebank community in 2006, and complemented with matching contributions from FAO and the GPG2 project.

The Exchange Fellows spent from four to six weeks at a sister Centre, and had the opportunity to observe firsthand the genebank, laboratory and

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<td>ICRISAT</td>
<td>Hari Upadhyaya</td>
<td>4 weeks</td>
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<td>Ruairidh Sackville Hamilton</td>
<td>4 weeks</td>
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<td>AfricaRice</td>
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<td>Anne Mbora</td>
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<td>OA Oyatomi</td>
<td>IITA</td>
<td>CIMMYT</td>
<td>Suketoshi Taba</td>
<td>6 weeks</td>
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Olaniyi Oyatomi, from IITA, in a biotechnology class during his technical exchange fellowship at CIMMYT, Mexico. Olaniyi Oyatomi/IITA
Programme activities, 2007–2010

field operations at the host Centre and to interact with and work alongside the technical and research staff there. A few Fellows also visited the national genetic resources programme in the host country. For some, it was their first opportunity to visit another genebank. The Fellows made useful observations and recommendations to their counterparts based on their own knowledge. On return to their home Centre they made further recommendations for improving operations at their home genebank based on the experiences and skills acquired during their exchange visit. Without exception, the Fellows felt that the exchange programme provided them with a rewarding experience that increased their technical expertise and overall confidence as genebank professionals. Aside from the Fellows’ exposure to new and alternative techniques and methods, many new personal friendships and strong professional alliances were forged that will facilitate future communication and collaboration between the technical staff across the CGIAR genebanks.

The Platform for Agrobiodiversity Research

Over the past four years the Platform’s website (www.agrobiodiversityplatform.org) has become an increasingly-used site for the exchange of information on agrobiodiversity. It now provides a recognized site for news dissemination and for discussions of such topics as climate change, pest and disease management in crops and agrobiodiversity management by indigenous communities. Much of the Platform’s effort has been concerned with the use of agrobiodiversity by indigenous peoples and rural communities to help cope with climate change. A Synthesis Paper was published in May 2010 based on analysis of over 250 case studies from around the world and a dedicated section of the website provides an interactive map and entry point for information on the use of agrobiodiversity. The Platform has also been active in presenting the case for the importance of agrobiodiversity in coping with climate change to international conferences of the CBD and United Nations Framework Convention on Climate Change through intervening in debates, organizing side events and distributing relevant materials.
Five years before the United Nations Conference on Environment and Development, ten years before the Kyoto Protocol, 13 years before the Millennium Development Goals were set and 17 years before the International Treaty on Plant Genetic Resources for Food and Agriculture, a small group of CGIAR specialists banded together as the Inter-Centre Working Group on Genetic Resources (ICWG-GR).

In 1987, most of the founding members of ICWG-GR could be described by at least one of three adjectival nouns: seed boffins, diversity zealots or germplasm evangelists. They had no budget, no hierarchy and no rules. But they did have lots of vision, lots of leverage and lots of passion. Most importantly, they maintained the largest single collection of global plant genetic diversity of its kind—and they took their responsibilities seriously.

The ICWG-GR, however, was more than just an independent assortment of geneticists. Seven years later, in 1994, this voluntary group evolved into the System-Wide Genetic Resources Programme (SGRP). In genetic terms, if the ICWG-GR was meiosis then the SGRP was the corresponding mitotic stage. The SGRP allowed the recombined ideas of the ICWG-GR to multiply and grow. At its inaugural meeting in Aleppo, Syria, in January 1995 the inception challenge for the SGRP was how to operationalize and achieve the CGIAR’s obligations under the agreements the Centres had signed with FAO in 1994 placing the collections in trust for humanity. This was no small technical task for 11 Centres working on 500,000 accessions of cereals, legumes, roots, tubers and trees. Perhaps the biggest challenge for this group though was the leap from operating under Mendel’s Laws of Inheritance to international laws under the FAO Commission on Genetic Resources for Food and Agriculture and the Convention on Biological Diversity.

Since its first meeting, the SGRP has always sought to add value to the work of individual CGIAR Centres and their partners—and has nearly always succeeded in doing so. SGRP brought a collective approach to genetic resources and helped Centres move from independent actions to an interdependent philosophy. Common language, standards, methods and protocols combined well with bespoke operational programmes for particular taxa that spanned vegetative to sexual reproduction and annuals to perennials. The recognition of the World Bank of this change in behaviours and approaches of the CGIAR was rewarded with two significant new grants to upgrade and reinvigorate CGIAR genebank facilities and operations (the Global Public Goods projects).

The SGRP and its technical steering arm, the ICWG-GR, have maintained interest and investment in genetic resources for food and agriculture for a sustained period. Much of this success is due to the host Centre, Bioversity (formerly IPGRI), and its staff. People are always happy to be associated with impactful achievement but Bioversity has been there unstintingly in interpreting the turgid text of Conventions, bullet-proofing the CGIAR to unfair attacks, cajoling donors to increase allocations and accepting the sometimes hard but true reflections from less-well resourced partners.

As the CGIAR seeks to reform its management and operations let us hope that the collective, inclusive, efficient, impactful and vital example that the SGRP provides is built upon. The new Consortium can usefully transcribe the template of the SGRP and translate that into a new Genetic Resources Platform.

SGRP—a material transfer of responsibility

Tony Simons

Tony Simons is Deputy Director General at the World Agroforestry Centre. He served on the ICWG-GR for many years and was its chair from 2002 to 2003.
We are living in what is undoubtedly the most innovative, rapidly changing and developmentally challenging period in human history. But current scientific knowledge and technological advances also provide us with the capacity to resolve many of the most pressing challenges facing humankind.

As we enter the second decade of the 21st century, the intertwined effects of population growth, economic instability, food crises, climate change, environmental degradation and unprecedented losses of biodiversity are already making themselves felt in our daily lives. It is clear that the effective long-term management of agricultural biodiversity is indispensable for our species’ survival.

For the past 50 years the CGIAR Centres have played a primary role in the conservation, improvement and use of agricultural genetic resources as global public goods. Over the past 16 years, the SGRP has significantly contributed to these efforts and has facilitated and promoted international cooperation in the field of genetic resources. As a result, the global community has come to recognize, appreciate and, increasingly, rely upon the CGIAR Centres’ unique function in sustaining and making available the invaluable global public goods associated with the in-trust germplasm collections they maintain.

The SGRP members—both individually and collectively—are acutely aware of the responsibilities they shoulder and the challenges they face in fulfilling the CGIAR’s important global role in the field of agricultural genetic resources. Conscious of the opportunity afforded by the CGIAR reform to improve the efficiency and effectiveness of the system, the SGRP members assumed a proactive stance and began developing their collective vision of the best way forward. With support from the GPG2 project, important conceptual advances were made regarding the standardized costing of genebank operations, and a comprehensive array of best practices and standards were developed or initiated to improve the way germplasm is managed across the CGIAR system. These efforts also provide the foundation for enhancing collaboration knowledge-sharing with our national partners within the context of a rational global system of genetic resources conservation and use. These products and initiatives will need to be followed up and further developed if the
CGIAR is to accomplish its mission and fulfill its promise to the global community, at least with regard to the in-trust collections.

But the SGRP’s remit extends beyond plant genetic resources to include all sectors of agricultural biodiversity with which the Centers are involved. The work carried out at various Centers includes farm animals, fish, forest trees, microbes and invertebrates, and underutilized as well as commodity crops. It is not only logical but also feasible and effective for Centers to work together on genetic resources at the system level. This has been amply demonstrated by numerous collaborative initiatives successfully undertaken through the SGRP, particularly in the area of the in-trust crop collections. Nevertheless, persistent challenges remain in the crops sector, especially in the areas of underutilized crops and *in situ* conservation. And even greater challenges are presented in the other sectors of genetic resources, many of whose scientists currently work in near-isolation from their colleagues at other Centers.

At its annual meeting in Mombasa in 2009, the SGRP members consolidated their collective vision into a position paper that proposes the system-wide adoption of an integrated research programme that embraces fish, forest trees, livestock, microbes and invertebrates, as well as crop genetic resources—all of which are considered together within an ecosystem context. This holistic research perspective mirrors the role of diversity in nature, where plants, animals and microbes do not live in isolation but are instead co-evolving with one another—a perspective that will facilitate our understanding of, and enable our capacity to utilize, those interactions in the context of sustainable and productive ecosystems. A number of key cross-cutting areas of work were identified that can be better and more effectively addressed through a holistic, system-wide approach (see ‘Examples of ten-year milestones identified in the SGRP Position Paper’, p. 31). This would take advantage of the many complementarities and commonalities that reach across all sectors of genetic resources, while making the most of the significant intellectual, interdisciplinary and infrastructural assets already in place at the various Centers. This integrated multi-sector approach is consistent with that taken by the CGRFA’s MYPOW. The strategic commitment that the Centers have made to support the implementation of
MYPOW strongly favours the adoption of a similar strategy by the CGIAR. There is much work of vital importance that needs to be done by the CGIAR in the ever-changing world of genetic resources for food and agriculture. The FAO Commission’s MYPOW is the research framework and policy roadmap endorsed by FAO’s member nations that the CGIAR can use to good advantage for strengthening the global system and providing relevant global public goods and services to our national partners in a coherent, goal-oriented context. The importance of the Treaty to the CGIAR Centres cannot be overstated. The Centres will need to continue their exemplary collective efforts to promote the implementation of all aspects of the Treaty, including the MLS. The Nagoya Protocol on access and benefit-sharing recently approved at the tenth meeting of the Conference of the Parties to the CBD will need to be further developed and implemented in a way that is supportive of agricultural research and development as well as of agrobiodiversity conservation and use. Efficiency would dictate that these processes be addressed by the Centres on a collective basis. But if the SGRP is no more, how will the CGIAR as a whole be represented at these events? Will we engage these intergovernmental bodies only as individual Centres, and if not, how will we coordinate our actions to achieve a stronger voice?

The genetic resources experts that make up the SGRP community see a clear and crucial role for system-wide collective action to address many aspects of the CGIAR’s work and responsibilities regarding genetic resources for food and agriculture. We trust that this vision, which is based on collective expertise and practical experience, will be carried forward into the programmatic structure of the newly reformed and revitalized CGIAR.
AfricaRice Center (formerly WARDA)
Kayode Sanni
Head, Genetic Resources Unit and INGER-Africa Coordinator
2010

Koichi Futakuchi
Acting Head, Genetic Resources Unit
2009–2010

Ines Sanchez
Head, Genetic Resources Unit
2005–2009

Moussa Sie
Acting Head, Genetic Resources Unit
2005

Eklou Attiogbevi-Somado
Post-doctoral Fellow
2005

Robert Guei
Head, Genetic Resources Unit and INGER Coordinator
1998–2005

Monty Jones
Upland Rice Breeder
Pre-1995–1998

Bioversity International (formerly IPGRI)
Laura Snook
Director, Understanding & Managing Biodiversity Programme
2005–2010

Coosje Hoogendoorn
Deputy Director General–Programme
2000–2005

Masa Iwanaga
Deputy Director General–Programme
Pre-1995–2000

CIAT
Daniel Debouck
Head, Genetic Resources Unit
1996–2010

William Roca
Head, Biotechnology Research Unit
1995–1996

Bill Scowcroft
Deputy Director General–Research
Pre-1995–1995

CIFOR
Doris Capistrano
(Acting) Director of Forests and Governance
2004

John Poulsen
Scientist, Research Division
1998–2003

John Turnbull
1998

Tim Boyle
Project Leader, Biodiversity and Genetic Resources
Pre-1995–1998

CIMMYT
Thomas Payne
Interim Director, Senior Scientist, and Head, International Wheat Improvement Network
2004–2010

Suketoshi Taba
Head, Maize Germplasm Bank
2003–2010

Bent Skovmand
Head, Wheat Germplasm Bank
1996–2003

Roger Rowe
Deputy Director General–Research
1995–1996
Members of the ICWG-GR, 1995–2010

**CIP**

**David Tay**
Leader of the Division of Genetic Resources Conservation and Characterization
2007–2010

**William Roca**
Plant Cell Physiologist, Crop Improvement and Genetic Resources Department
2001–2007

**Wanda Collins**
Deputy Director General–Research
1997–2000

**Ali Golmirzaie**
Head, Genetic Resources Department
Pre-1995–1997

**ICARDA**

**Ahmed Amri**
Agrobiodiversity Project Coordinator (Plant Genetic Resources)
2007–2010

**Ken Street**
Acting Head of Genetic Resources Unit (Plant Genetic Resources) and Coordinator – CAC Projects
2007

**Bonnie Furman**
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2007

**Jan Valkoun**
Head, Genetic Resources Unit (Plant Genetic Resources)
Pre-1995–2006

**Barbara Risckowsky**
Senior Livestock Scientist (Animal Genetic Resources)
2009–2010

**Luis Iniguez**
Senior Small Ruminant Scientist (Animal Genetic Resources)
2003–2008

**ICRISAT**

**Hari Upadhyaya**
Principal Scientist and Genebank Head
2008–2010

**CLL Gowda**
Global Theme Leader, Crop Management and Utilization
2002–2007

**Paula Bramel**
Principal Scientist, Genetic Resources and Enhancement Program
1996–2002

**IFPRI**

**Daniela Horna**
Postdoctoral Fellow, Environment and Production Technology
2008–2010

**Melinda Smale**
Research Fellow, Environment and Production Technology
2003–2007

**Peter Hazell**
Division Director, Environment and Production Technology
2002–2003

**Phil Pardey**
Research Fellow
Pre-1995–2002
IITA

Fen Beed
Plant Pathologist
2010

Dominique Dumet
Genebank Conservation
Consultant
2006–2010

Visvanathan Mahalakshm
Genebank Curator
2003–2006

Rodomiro Ortiz
(Acting) Deputy Director
General–Research and Director, Research-for-Development
2001–2003

Nyat Quat Ng
Head, Genetic Resources Unit
Pre-1995–2001

ILRI

Jean Hanson
Leader, Forage Diversity
Pre-1995–2010

Steve Kemp
Molecular Geneticist
(Animal Genetic Resources)
2009–2010

Olivier Hannotte
Project Leader, Animal Genetic Resources
2004–2009

John Gibson
Director of Genetics and Genomics
(Animal Genetic Resources)
2003–2004

IRRI

Ruaraidh Sackville Hamilton
Head, Genetic Resources Center
2002–2010

Michael Jackson
Head, Genetic Resources Center
(to 2001)/Director for Research Planning and Coordination
(after May 2001)
Pre-1995–2002

ISNAR

Joel Cohen
Program Director, Information and New Technologies
Pre-1995–2004

IWMI

Robert Zomer
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2004–2007

Randolph Barker
Senior Advisor to the Director General
1998–2000

World Agroforestry Centre (formerly ICRAF)

Ramni Jamnadass
Genetic Resources Specialist
2006–2010

Tony Simons
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Pre-1995–2006

WorldFish Center (formerly ICLARM)

Malcolm Beveridge
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2006–2010

Alphis Ponniah
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2001–2006
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Deputy Director General–Programs  
2001

Stewart Grant  
Head, Biodiversity and Genetic Resources Research Program  
2000–2001

Roger Pullin  
Program Leader, Biodiversity and Genetic Resources Program  
Pre-1995–2000

Ex Officio Members

Shakeel Bhatti  
Secretary, International Treaty on Plant Genetic Resources for Food and Agriculture, FAO  
2008–2010

Kakoli Ghosh  
Programme Entity Leader, Plant Production and Protection Division, FAO  
2008–2010

Linda Collette  
Senior Agricultural Officer (Crop Biodiversity), Seed and Plant Genetic Resources Service, Plant Production and Protection Division, FAO  
2004–2008

Murthi Anishetty  
Senior Officer, Seed and Plant Genetic Resources Service, Plant Production and Protection Division, FAO  
Pre-1995–2004

Emile Frison  
SGRP Programme Leader  
Director General  
Bioversity International  
2003–2010

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SGRP Programme Leader  
Director General  
IPGRI  
1995–2003

David Williams  
Coordinator, SGRP  
Bioversity International  
2008–2010

Daniel Debouck  
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CIAT  
2007

Jane Toll  
Coordinator, SGRP  
Bioversity International  
1995–2006

Melak Mengesha  
Interim Coordinator, SGRP  
1995

Executive Committee Members

Fen Beed  
IITA  
2010

Joel Cohen  
ISNAR  

Wanda Collins  
CIP  
1999

Tim Boyle  
CIFOR  
1996, 1998

Paula Bramel  
ICRISAT  
(Chair 2000–2001)

Daniel Debouck  
CIAT  
2007
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<tr>
<td>Ali Golmirzaie</td>
<td>CIP</td>
<td>1995</td>
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<td>CLL Gowda</td>
<td>ICRISAT</td>
<td>2005</td>
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<td>Michael Jackson</td>
<td>IRRI</td>
<td>1995–1996 (Chair 1996)</td>
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<td>Rodomiro Ortiz</td>
<td>IITA</td>
<td>2002</td>
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<td>William Roca</td>
<td>CIP</td>
<td>2002–2004</td>
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<td>Hari Upadhyaya</td>
<td>ICRISAT</td>
<td>2009–2010</td>
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<td>Jan Valkoun</td>
<td>ICARDA</td>
<td>2000</td>
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<td>Jane Toll</td>
<td>SGRP Coordinator, Secretary of the Executive Committee</td>
<td>1995–2006</td>
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<td>2008–2010</td>
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<td>Emile Frison</td>
<td>SGRP Programme Leader, Bioversity International</td>
<td>2003–2010</td>
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ICWG-GR 2010: Bioversity International, Rome, Italy, 3–4 May 2010


ICWG-GR 2006: CIAT, Cali, Colombia, 6–10 March 2006

ICWG-GR 2005: ICRISAT, Patancheru, India, 28 February–5 March 2005

ICWG-GR 2004: WorldFish Center, Penang, Malaysia, 2–5 February 2004

ICWG-GR 2003: CIMMYT, El Batan, Texcoco, Mexico, 3–7 February 2003

ICWG-GR 2002: IPGRI, Rome, Italy, 4–8 February 2002


ICWG-GR 2000: IPGRI, Rome, Italy, 7–11 February 2000

Extra Mtg. 1999: IPGRI, Rome, Italy, 14–17 April 1999


ICWG-GR 1997: CIFOR, Puncak, Indonesia, 28 January–1 February 1997


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Gerald Moore
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Elizabeth Arnaud
SINGER Coordinator

Nicolle Browne
Programme Assistant

Nicole Demers
Communications and Information Assistant

Alexandra Jorge
GPG2 Project Coordinator

Aixa Del Greco
GPG2 Project Management and Communication Assistant
2007

Reports


SGRP. 2007. Report by the Consultative Group on International Agricultural Research (CGIAR) on its activities to support the implementation of the funding strategy of the Treaty. Report presented at the Second Session of the Governing Body of


Publications


2008

Reports


Publications


2009

Reports


SGRP. 2009. Submissions by international organizations: report from the International Agricultural Research Centres of the Consultative Group on International Agricultural Research (CGIAR) on their policies, programmes and activities and potential contributions to the MYPOW implementation. Report presented at the Twelfth

Publications


2010

Reports


Publications


SGRP (forthcoming). Incentives and disincentives for countries to implement the multilateral system of access and benefit-sharing of the International Treaty on Plant Genetic Resources for Food and Agriculture. Compilation of four case studies: Kenya, Morocco, Philippines and Peru.

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*These figures are based on year-end projections and are subject to change as 2010 budget cycle had not been closed when this report was prepared.

**Funds for SGRP and SINGER-related activities in the Generation Challenge Programme.

***Part of the 2006 contribution from Switzerland was carried forward to 2007.

****Part of unrestricted funding contribution to Bioversity International used to support SGRP activities.
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ABBREVIATIONS
AND ACRONYMS

ABS    access and benefit-sharing
BAC    bacteria artificial chromosome
CAC    Central Asia and the Caucasus
CBD    Convention on Biological Diversity
CGIAR  Consultative Group on International Agricultural Research
CGRFA  Commission on Genetic Resources for Food and Agriculture (FAO)
CIAT   International Center for Tropical Agriculture (Centro Internacional de Agricultura Tropical)
CIDA   Canadian International Development Agency
CIFOR  Center for International Forestry Research
CIMMYT International Wheat and Maize Improvement Center (Centro Internacional de Mejoramiento de Maíz y Trigo)
CIP    International Potato Center (Centro Internacional de la Papa)
COP    Conference of the Parties to the Convention on Biological Diversity
DAGRIS Domestic Animal Genetic Resources Information System
DNA    deoxyribonucleic acid
ECP/GR European Cooperative Programme on Crop Genetic Resources
EPGRIS European Plant Genetic Resources InfraStructure
EURISCO European Plant Genetic Resources Search Catalogue
FAO    Food and Agriculture Organization of the United Nations
GBIF   Global Biodiversity Information Facility
GCDT   Global Crop Diversity Trust
GIGA   Global Information on Germplasm Accessions project
GIS    geographic information system
GPA    Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture
GPG    global public goods
GPG1   Rehabilitation of Global Public Goods in the CGIAR Genetic Resources System: Phase 1
GPG2   Rehabilitation of Global Public Goods in the CGIAR Genetic Resources System: Phase 2
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<td>genetic resources for food and agriculture</td>
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<td>GRIN</td>
<td>Germplasm Resources Information Network (USDA)</td>
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<td>GTZ</td>
<td>Deutsche Gesellschaft für Technische Zusammenarbeit</td>
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<td>IBPGR</td>
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<td>International Center for Agricultural Research in the Dry Areas</td>
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<td>ICLARM</td>
<td>International Center for Living Aquatic Resources Management (now WorldFish)</td>
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<td>ICRAF</td>
<td>World Agroforestry Centre (formerly International Centre for Research in Agro-Forestry)</td>
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<td>ICRISAT</td>
<td>International Crops Research Institute for the Semi-Arid Tropics</td>
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<td>ICT-KM</td>
<td>Promotion and support of the use of information and communications technology (ICT) and knowledge management (KM)</td>
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<td>International Food Policy Research Institute</td>
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<td>ISO</td>
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<td>ITPGRFA</td>
<td>International Treaty on Plant Genetic Resources for Food and Agriculture</td>
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<td>IVDN</td>
<td>integrated voice and data network</td>
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<td>IWMI</td>
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<td>multilateral system of access and benefit-sharing (ITPGRFA)</td>
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<td>MYPOW</td>
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<td>SBSTTA</td>
<td>Subsidiary Body on Scientific, Technical and Technological Advice (CBD)</td>
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<td>WARDA</td>
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<td>World Intellectual Property Organization</td>
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