Bioversity International

2011 ANNUAL REPORT

Sustainable agriculture for food and nutrition security

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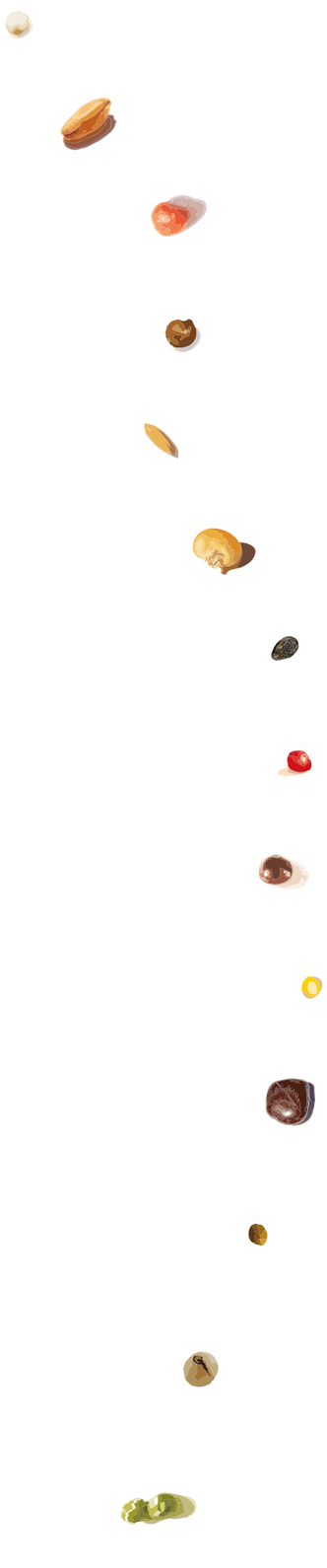

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OUR OFFICES AROUND THE WORLD

- Major programme and regional offices
- Other regional offices

This past year represented a turning point for agricultural biodiversity, with increasing recognition of its value to help provide a food secure future in a sustainable way.

Following the International Year of Biodiversity in 2010, we celebrated the launch of the UN Decade on Biodiversity (2011-2021). This year also saw the initiation of the preparation for the Rio+20 UN Conference on Sustainable Development, a key step in laying the foundation for the next set of Sustainable Development Goals.

In addition, CGIAR, a global partnership that unites organizations engaged in research for a food secure future, completed its reform process in 2011 and formulated 15 CGIAR Research Programs to implement its Strategy and Results Framework. Our organization played an active role in the formulation of nine programmes and contributed its expertise and long experience to ensure that the role of agricultural biodiversity in achieving the CGIAR system-level outcomes was appropriately reflected in these new research programs.

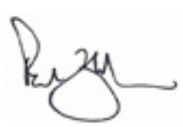
These key influencing events in 2011, along with the increasing realization worldwide that past models of agricultural intensification are not sustainable, have prompted us to revisit our own mission and develop a more sharply focused strategy that will guide us during the decade to come. Working with our partners and donors, we have developed a new set of strategic priorities and a new research agenda to help achieve our vision of a world in which smallholder farming communities in developing countries are thriving and sustainable. As a result, we also revisited our structure and created five distinct and innovative research programmes. These ensure that Bioversity International is an excellent investment and world-class partner for supporters and users of our knowledge and research.

While our strategy development was in progress, we continued to make important research strides in using and conserving agricultural biodiversity for livelihoods, sustainability and nutrition. Working with smallholder farmers and partners, our scientists provide novel research ideas and practical solutions. Throughout the pages of this report, you will find examples of Bioversity International's work with partners and stakeholders from Africa to Asia to the Americas.

As we reflect on the year and what lies ahead, it is clear that biodiversity is a critical entry point to a host of issues that need solutions. Agricultural biodiversity has the potential to benefit millions and complement other approaches to agriculture. It can play a central role in meeting global challenges and transform agricultural systems, but it has too often and for too long been neglected by research and development agendas. This must change, as agricultural biodiversity is a powerful resource to help our world.

We encourage you to read this report and to share it widely. With your help and engagement, we can make a lasting impact in research to achieve better nutrition, improve smallholders' livelihoods and enhance agricultural sustainability while conserving the plant genetic diversity upon which they depend. Thank you for your continued support of our efforts.

Emile Frison
Director General



Paul Zuckerman
Board Chair

SUSTAINABILITY

A new approach is required to reduce, or reverse, the negative impacts of our food production systems on the environment, which are contributing to land degradation, pollution and the loss of biodiversity and ecosystem services on which we all depend.

Many of the 2 billion smallholders who live in developing countries are adversely affected by climate change—drought, erratic weather and increased outbreaks of crop pests and diseases. Through our work with these farmers, research partners and conservation agencies, Bioversity International contributes to global understanding about the use and conservation of agricultural biodiversity. This resource can increase the productivity, resilience and sustainability of small-scale food production systems and has potential for development.

Highlights from 2011 include a global effort to support scaled-up approaches to sustainability, research on using agricultural biodiversity to minimize pest and disease damage, and work with local communities in the forests of Mozambique.

Landscapes for People, Food & Nature

"A landscape is a human construct. It is not nature as it was handed to us but the result of interaction between people and nature. We have worked on many individual crops, looking at how they contribute traits and resilience to agriculture, but increasingly we see that a lot of the value comes when these elements of biodiversity are inserted into a landscape," says Bioversity International Senior Scientist Pablo Eyzaguirre.

Finding solutions that simultaneously meet the challenges of biodiversity conservation, sustainable development, food security and poverty reduction is no easy task. A clear example is trying to find synergies between conservation and food production needs. A landscape approach is one that tries to address these different types of demands at the same time.

Smallholder farmers, policymakers, food companies, conservation agencies and grassroots organizations are already adopting innovative integrated approaches, although on a small scale. So far these have received little recognition from policymakers or investors, but a 3-year multi-stakeholder collaboration to scale up sustainable rural development, launched in 2011, hopes to change this.

The **'Landscapes for People, Food and Nature Initiative'** will support the scaling up of sustainable landscape management approaches in over 60 biodiversity hotspots. Partners representing over 120 organizations, including policymakers, donors, NGOs, farmers, research centres and conservation agencies, are tasked with gathering evidence and making this knowledge widely accessible to policymakers. Bioversity International is a co-organizer of this initiative led by Ecoagriculture Partners.

Multidisciplinary teams have already started work to synthesize current evidence as part of the partnership's global review: a set of key questions whose answers are critical for setting the standards for agriculture in the 21st century. For example, what is the contribution ▶

of ecologically intensifying agricultural systems to food and ecosystem service production? Can we produce more food with less, by focusing on intensifying ecological processes rather than relying largely on external inputs, such as chemicals and excessive water use? Can we make agricultural systems multifunctional—producing both food and ecosystem services?

Traditional Diversity to Reduce Pest and Disease Damage

Pests and diseases cause an estimated 27% worldwide loss to annual harvests, a loss that can have devastating impacts on income and food for poor smallholder farming households.

One resource available to smallholder farmers to minimize the risk of pest and disease damage is the use of different varieties of a crop, planted together. Funded by the Global Environment Facility (GEF), a **3-year Bioversity International project** in China, Ecuador, Morocco and Uganda shows that growing a mix of varieties of a crop can decrease farmers' chances of losing entire harvests. This is because different varieties offer different resistance levels to outbreaks, rather than relying on a few high-yielding yet more genetically uniform modern varieties. It is also a sustainable and affordable alternative to expensive chemical inputs.

Two of the six crops studied in the global project, banana and the common bean, were evaluated in terms of the number of varieties grown and the area planted with each variety. These two crops are significant to Ugandan farmers—banana and the common bean are the most important sources of carbohydrates in Uganda, with more than 7 million people depending on them for daily meals.

"The project showed that using diversity can help minimize risk. For example, farmers in Uganda who grow diverse sets of varieties of bananas and common beans lose less of their harvest when the incidence of the pest or disease is high. But, having enough diversity in a farmer's production system is not enough on its own. Success depends on farmers and the farming community having the knowledge and leadership capacity to evaluate the benefits that using this diversity gives to them. This, in turn, means that local, national and international agencies take an active role in strengthening local institutions to enable farmers to take a greater role in the management of their genetic resources," says Devra Jarvis, Senior Scientist at Bioversity International.

Sustaining Resources in African Forests

The Niassa National Reserve extends over 42,000 km^2 along the Mozambique border with Tanzania, and includes one of the least disturbed areas of Africa's deciduous Miombo woodlands. It was established to protect wildlife and also includes populations of a number of the world's threatened tree species.

A Bioversity International project, **'Sustaining forest resources for people and the environment in the Niassa National Reserve in Mozambique'** is studying the relationship between the people living in the reserve and the tree species that are important to them, to see if the use of the trees is placing them under threat and if sustainable alternatives are needed.

About 40,000 people live in the reserve using trees for many purposes: fuel wood for home cooking and charcoal production for sale, food, medicine, timber for construction and sale, material for carving cultural objects, fishing rods, and talismans. People here live in poverty—on average they earn about US$ 35 per year—and depend on the trees for food and income, especially at times of food shortage when they eat the fruit and edible leaves. Trees are also a source of honey, the sale of which is the main source of income for many people. Yet the practices that people use, for example, cutting trees for honey collection, are placing the resources that they need under threat.

The first year's fieldwork consisted of conducting interviews in communities in the reserve to understand people's dependence on and their use of forest resources.

"The second year of the project saw more focus on ecological studies following up on the previous year's surveys of how people used the forests. We saw the impacts of honey hunting and illegal logging, and that current practices are unsustainable. The next step will focus on honey hunting, working with people in the communities to identify and test more sustainable collection methods," says Judy Loo, Senior Scientist at Bioversity International.

The final stage of the project will be to work with the people living in the reserve to help them develop more sustainable practices, to produce recommendations for reserve managers that will help them balance the need for wildlife habitat conservation with those of the local people, and to share this model widely. ■

NUTRITION

Hunger is a worldwide problem, which, together with nutrient deficiencies known as 'hidden hunger', undermines the growth, development, health and productivity of over 2 billion people. Our agricultural systems collectively produce enough staple food for everyone at the moment, in aggregate, but access to nutritious food remains a challenge for many. The predicted world population increase to 9 billion by 2050 is set to increase demand on these systems which are already being pushed to the boundaries of sustainability and placing our ecosystems under extreme pressure.

Bioversity International's Nutrition Strategy was launched in 2011 to further understand how using agricultural biodiversity within smallholder farming systems can contribute to food security and nutrition. During the year, Bioversity International started two nutrition initiatives to gather robust evidence of the value of agricultural biodiversity for nutrition and health and further explore its links to livelihoods.

Grand Challenges Explorations

The Grand Challenges Explorations is an initiative funded by the Bill & Melinda Gates Foundation to enable researchers worldwide to test unorthodox ideas that address persistent global health and development challenges.

Bioversity International, in collaboration with Save the Children UK, is undertaking an innovative global health project through this initiative: 'The role of wild and underutilized foods in daily costs of diets in Baringo, Kenya'.

This project focuses on reaching "a clearer understanding of the role of wild and underutilized foods in helping to deliver a nutritionally adequate diet—at the same time reducing its cost. This will enable researchers and policymakers to develop accessible and local food-based solutions to malnutrition in mothers and 6 to 24-month-old children," says Federico Mattei, Research Support Officer, Nutrition and Marketing Diversity Programme, who will be involved in carrying out the research with local partners.

The use of a 'Cost of Diet' tool, which calculates the minimum amount of money a household will have to spend to meet their full nutritional requirements using locally available foods, means "we will be able to model the impact these foods could have on the affordability of a nutritious diet," explains Alex Rees, Head of Hunger Reduction, Save the Children UK.

As a part of this project, diets with and without foods from wild species and Neglected and Underutilized Species (NUS), will be modelled to determine the nutritional and cost benefits of these foods to assist in the design of programme interventions aimed at improving diet quality and contributing to a reduction in child stunting. NUS are plant and animal species that are used traditionally for food, fibre, fodder, oil or medicinal properties, but have not yet been adopted by large-scale agriculture.

Biodiversity for Food and Nutrition

In 2011, a new 5-year global project, **'Biodiversity for food and nutrition'** was successfully approved to start in 2012.

Funded by the Global Environment Facility (GEF), the US$ 35-million project will provide evidence of the nutritional value of agricultural biodiversity and its role in promoting healthy diets and strengthening livelihoods in the four countries leading the project: Brazil, Kenya, Sri Lanka and Turkey. Bioversity International is coordinating the project with implementation support from the UN Environment Programme (UNEP), the Food and Agriculture Organization of the UN (FAO) and a significant number of international partners.

The project aims to use this evidence to influence policies, development programmes and markets that support the conservation and sustainable use of agricultural biodiversity. Part of the project will be to develop tools, knowledge and best practices to mobilize and mainstream the use of nutritionally-rich biodiversity and scale up its use for food and nutrition in development, value chains and local community initiatives.

"It is increasingly recognized at an international level that there are important links between biodiversity, food and nutrition, yet research in this area remains fragmented and uncoordinated. Bioversity International's involvement in a project of this nature is critical as the world's foremost research-for-development organization working in the field of mobilizing biodiversity for food and nutrition," says Danny Hunter, Bioversity International Project Leader.

2011-2021 Nutrition Strategy Launched

"Good nutrition must be one of the major goals of agriculture and production systems, requiring a combination of agricultural, health, fortification and supplementation strategies. While promoting household production, Bioversity International is concentrating its efforts to understand and promote access to and availability of nutritious and diverse foods," says Bruce Cogill, Programme Leader, Nutrition and Marketing Diversity.

This year, Bioversity **launched a 10-year nutrition strategy** which promotes the use of agricultural biodiversity within food production systems to provide nutritionally-rich food sources that contribute to dietary diversity and to better nutrition and health. This builds on research of the past few years that has focused on the role and impact of traditional foods on dietary diversity and livelihoods.

The Nutrition and Marketing Diversity Programme will build evidence about how the benefits derived from growing and using agriculturally biodiverse foods can benefit people's livelihoods and ecosystems. Bioversity International is focusing its work on smallholder farming communities—comprising 70% of the world's poorest 1.4 billion people—in low and middle income countries in sub-Saharan Africa, Central America and South Asia. Within these countries, like in many other countries around the world, people's diets have changed, moving away from traditional, local and diverse foods to eating more cereal-based staples and energy-dense fats and sugars. Some of these changes are adversely affecting people's health and nutrition, as well as the environment, and are not sustainable in the long term.

The strategy has four objectives that fall into two broader categories: research and evidence, and development and policy.

Objective 1: To strengthen the empirical evidence of agricultural biodiversity's role for nutrition and health.

Objective 2: To ensure that the production of more nutritious foods through commercial pathways reflects agriculturally biodiverse practices and cultural and consumer practices.

Objective 3: To determine best practices and delivery systems of agricultural biodiversity in nutrition and health development programmes.

Objective 4: To mainstream the role of agricultural biodiversity into public health and nutrition policy and practice by sharing evidence and providing local solutions. ■

LIVELIHOODS

For smallholder farmers and rural communities, agricultural biodiversity is a resource within reach that can help increase income and income stability. Diversified farming systems and sustainable small-scale forestry offer opportunities to provide a more regular income and enhanced food security across seasons and between years. Within these communities, women play an important but often unrecognized role in producing, gathering, processing and marketing food.

Bioversity International is working to make markets accessible to the rural poor by expanding the focus beyond main commodity crops and developing innovative 'farm to fork' interventions. Bioversity International works in partnership with agencies, community groups and the private sector to improve the livelihoods of smallholder farmers. Our research in 2011 addressed production, marketing technologies and policies needed to ensure the equitable participation of the poor in new markets of diverse products. Here are some highlights.

Traditional Crops
Back to Market

2011 marks the end of a **10-year research effort** funded by the International Fund for Agricultural Development (IFAD), to empower poor rural communities in Asia and Latin America by strengthening their identity, income opportunities and nutritional security through the improved use and marketing of Neglected and Underutilized Species (NUS). NUS are traditional crops that are often better adapted to grow in marginal areas, with little need for irrigation, pesticides and fertilizers, but have fallen outside mainstream agricultural research and development.

"Thanks to this project, we now have the evidence that these species are a key asset to support poor farming communities," says Stefano Padulosi, Senior Scientist at Bioversity International.

In India, Bioversity International and partners worked with 200 farming families to revive the cultivation of minor millets. As a result, Indian small millet growers increased their yields by 70% and their income by 30%. Women farmers integrated millets into innovative snack foods, which have reached urban markets and are now consumed in schools. Selling those foods to boost household incomes and the entrepreneurial skills acquired were also key for the empowerment and self-esteem of the women involved.

In Bolivia, Peru and Ecuador, the cultivation of traditional grains, such as cañihua, amaranth and some neglected varieties of quinoa, was being abandoned because of poor economic competitiveness in markets. The interventions varied from developing new varieties of cañihua to providing prototypes of machines that drastically reduce processing times—from 6 hours to 7 minutes to process 12 kg of quinoa. By improving production, processing and marketing, these crops are now back in the farmers' fields offering new income opportunities.

"We have to act at different levels. We have to conserve these species, create networks and infrastructure and build capacity so that farmers and communities can take advantage of cultivating NUS. Creating an enabling policy environment, both at a national and international level, is necessary to deploy the economic potential of these species for the poor. Last but not least we need champions, people spreading the message," added Padulosi.

Building on this experience, Bioversity International is beginning a new project funded by IFAD to investigate the use of NUS in increasing the adaptation and resilience of production systems in the face of climate change.

A taste of success for Cocoa

Cocoa is a vital source of income for some 6 million smallholder farmers in West Africa, Latin America and Asia. Compared with coffee, wine or tobacco, cocoa is still a low-value industrial commodity, but demand for fine-flavour, added-value cocoa is steadily increasing.

Bioversity International is one of the lead organizations behind **'Cocoa of Excellence'**, an initiative funded by the Common Fund for Commodities (CFC), via the International Cocoa Organisation (ICCO), Mars Inc., the World Cocoa Foundation and Barry Callebaut. The project aims to link cocoa growers with chocolate makers and in the process give recognition to the contribution made by smallholder farmers through the diversity of beans cultivated, to the skill of the farmers, and to the differences in taste produced from different growing conditions.

In 2011, 'Cocoa of Excellence' received and analyzed 119 samples of cocoa beans from 22 countries—50 of which were selected and processed into chocolate—to be evaluated by a jury of professionals and connoisseurs who then assigned 12 'Cocoa of Excellence' awards. In addition, a second jury met during the Salon du Chocolat, Paris and gave four awards to farmers from Malaysia, Costa Rica, Ecuador and Cameroon.

These events provide opportunities to establish links between cocoa growers and professionals in the chocolate industry. For example, at the Salon du Chocolat, one chocolate manufacturer met with the country representative of a farmer that had provided a nominated cocoa sample resulting in a business link between the farmer and the manufacturer.

Cocoa is starting to get more attention in countries that produce it. In Peru, national competitions are now organized every year and there are trained specialists in the sensory evaluation of cocoa beans, liqueurs and chocolates. Brazil is organizing its first Chocolate and Cocoa Show in Salvador, Bahia, in 2012.

"The development of cocoa as a high-value crop and commodity has great potential for smallholder farmers, particularly in West Africa, Latin America and Asia," says Stephan Weise, Deputy Director General of Research at Bioversity International. "We are looking at ways to expand those possibilities."

Improving Livelihoods on Farm

"Our research shows that properly designed interventions for conserving diversity on farms can benefit both biodiversity and the farmers who conserve it," says Elisabetta Gotor, Impact Assessment Specialist at Bioversity International. Supported by the McKnight Foundation, **'Assessing the success of on-farm conservation projects in delivering conservation and livelihood outcomes: identifying best practices and decision support tools'** is a research project that analyses six on-farm conservation projects carried out by research organizations, NGOs and development agencies in Peru, Ecuador and Bolivia.

Many projects have been, and continue to be, implemented worldwide to support on-farm conservation of agricultural biodiversity. The challenge of these projects is to identify, design and implement interventions that make the conservation of crop diversity compatible with improved livelihoods and well-being among the farmers who conserve it. The aim is to maintain diversity while also reducing poverty.

"One of the aims of this study is to fill the gap of systematic evaluation of the success of on-farm conservation projects in producing outcomes that maintain crop diversity on farm and at the same time create livelihood benefits for farmers," says Mauricio Bellon, Senior Scientist at Bioversity International.

This research is also a very important tool for donors, policymakers and practitioners who need to have the conceptual and methodological tools to assess the success of their projects and the lessons learned, and hence their investments. ■

CONSERVATION

The increasing loss of plant genetic resources, including those of crops, their wild relatives, and trees, has irreversible global implications. Genetic resources are critical to ensure the ability of future generations to adapt and enhance agriculture as needed. For almost 40 years, Bioversity International has been at the forefront of global efforts to collect, conserve and use agricultural biodiversity. Our new strategy includes two complementary conservation approaches: *ex situ* (conservation of seeds in long-term storage facilities) and *in situ* (conservation of plants on farms and in the wild), with greater emphasis on the less researched area, *in situ* conservation.

In 2011, we marked many conservation milestones, including the 10-year anniversary of the International Treaty on Plant Genetic Resources for Food and Agriculture, a new atlas of crop wild relatives and new research on forest genetic resources.

Guatemalan Atlas of Crop Wild Relatives

The Atlas of Guatemalan Crop Wild Relatives (Atlas Guatemalteco de Parientes Silvestres de las Plantas Cultivadas) is a new web resource to facilitate the conservation and use of wild plant species that are related to cultivated crops.

Crop wild relatives are increasingly important to agriculture because they contain beneficial traits needed for breeding improved varieties that can be hardier, more productive, more nutritious, more disease and drought resistant, and better adapted to climate change.

Guatemala, in the heart of Mesoamerica, is one of the world's most important centres of plant domestication and agricultural origin and, consequently, an area with an abundance of crop wild relatives.

Launched in 2011, the atlas is the result of nearly a decade of extensive collaboration between Bioversity International and partners. It provides detailed information about 105 species or subspecies of wild Guatemalan plants, chosen for this study because of their economic, cultural and nutritional importance.

Through an interactive Google Earth® interface, users can consult maps that show the known distribution and potential range of each plant included in the study, based on climate and the locations where they were collected. Additional maps display areas of high species richness and diversity to assist conservation efforts. The maps draw upon a database of 2,593 records of scientific specimens conserved in numerous national and international institutions.

"We are pleased that the Ministry of the Environment of Guatemala has made plans to immediately use the atlas to document the presence of crop wild relatives within their system of protected areas," says Marleni Ramirez, Regional Director, Bioversity International Americas Office.

The atlas, and supporting database, is a resource for those who want to learn ▶

about and promote the conservation and use of the many unique and often threatened crop wild relatives in Guatemala, including plant breeders, conservationists, students and teachers.

Marking 10 years of the International Treaty

An international event marked 10 years of the **International Treaty on Plant Genetic Resources for Food and Agriculture**, a powerful legal instrument that defines the legal status and conditions for pooling, exchanging and conserving plant genetic resources for food and agriculture between countries. Without it, the costs and negotiations on a case-by-case basis to access plant genetic resources would be extremely difficult, and in many cases, impossible.

Plant genetic resources are important, as they are the raw materials needed by farmers, scientists and breeders to help achieve food security in the face of climate change, land and water scarcity, and an increasing population. Since its adoption, the Treaty has been ratified by 127 countries and includes at least 1.5 million plant samples of 64 crops and forages.

At the 2011 anniversary event, Bioversity International Director General Emile Frison called for greater collaboration between countries and international organizations to ensure that as much plant genetic diversity as possible is conserved and equitably used by the global community in pursuit of food security and environmental sustainability.

CGIAR has played an important role throughout the negotiations of the Treaty, providing technical input and acting as one of the key resources for accessing genetic biodiversity. CGIAR genebanks host around 50% of the materials currently in the multilateral system of access and benefit sharing, including a wide diversity of local and traditional varieties, crop wild relatives, as well as neglected and underutilized crops. These materials are available through the Treaty's Standard Material Transfer Agreement (SMTA), and more than 8,000 samples are exchanged every week.

The Treaty was adopted by the Food and Agriculture Organization of the UN (FAO) Conference in November 2001 and came into force in 2004.

Slash-and-burn Effects on Diversity

Slash-and-burn agriculture is a traditional way to prepare agricultural fields by felling trees which are then allowed to dry before being burned. This practice is often perceived as an enemy of forests, but according to Laura Snook, Programme Leader, Forest Genetic Resources, Bioversity International, it can favour the regeneration of dozens of valuable tropical timber tree species.

"Banning the use of fire, which many governments are doing in the name of protecting the environment, can reduce options for maintaining a diverse, valuable and sustainable resource," says Snook. This conclusion is based on **many years of work** in Quintana Roo, Mexico, where over 100 local communities manage 800,000 ha of the largest tropical forest in Mesoamerica for harvesting timber.

The research began in 1996, when 24 half-hectare clearances were created in the forest using three different methods: eight were clear-felled which means all the trees were cut down and left on site with their stumps remaining in the ground; eight were cleared by bulldozers that uprooted the trees and pushed them to the side; while eight were cleared by slash and burn. The researchers then planted seeds and seedlings of mahogany, the most valuable timber species, to see how they would fare.

"Slash and burn was best for mahogany," says Snook, "but what was really interesting, when we went back more than a decade later, was to find that more than 100 tree species had regenerated in the plots—many of them commercially valuable."

The study revealed clear differences between treatments. In clear-felled plots, valuable hardwoods occupied less than 30% of the plots, while on plots cleared by machine or by slash and burn, 60% of the trees were commercially valuable. Between the machined and burned plots, the largest 10% of trees were significantly bigger on the slash and burn plots.

The differences were not hard to explain. Trees on clear-felled plots sprouted from the trunks and roots left behind, quickly resulting in a closed canopy, favouring species that can tolerate shade. Trees that result from resprouting stumps or roots are typically multi-stemmed, so even timber species are unlikely to provide quality logs.

"Many valuable timber trees require sunlight to regenerate—they don't survive in the small gaps produced by timber harvesting or in the clear-felled plots because they are quickly overshadowed," says Snook. "Slash-and-burn treatments mimic the effects of hurricanes and lightning strikes. Burning not only controls competition, but releases nutrients that stimulate plant growth." ■

TOOLS & CAPACITY BUILDING highlights

Bioversity International's work results in knowledge that can shift policies, transform agricultural practices and open possibilities for income, improved nutrition and sustainable farming practices for poor rural communities. We develop knowledge products, tools, capacity and good practices with farmers, local and national governments, development workers, trainers and academia.

UNDERSTANDING THE INTERNATIONAL TREATY

'Plant Genetic Resources and Food Security—Stakeholders' Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture' is an essential guide to understand the way international policy affects food security.

The book, jointly published by the Food and Agricultural Organization of the UN (FAO), Bioversity International and Earthscan, gives a comprehensive overview of the negotiations and implementation of the Treaty and explains the different interests and views at stake between all players in the global food chain.

This is the latest in the Earthscan-Bioversity International book series 'Issues in Agricultural Biodiversity', which reviews current knowledge around topical issues in agricultural biodiversity, identifying gaps in our knowledge base, synthesizing lessons learned and proposing future research and development actions.

2ND GLOBAL AGRIKNOWLEDGE SHAREFAIR

Bioversity International was one of the co-organizers of a 4-day **agricultural knowledge sharefair** in Rome in September 2011. This event was a forum to share success stories, knowledge, experience and innovations on information and communication technologies and processes relating to agriculture, climate change, food security and rural development.

Over 160 presenters from 70 countries took part in the sharefair and many more followed events live online. In addition to live webcasts of many sessions, which were watched by around 4,500 people, there was a very successful social media campaign with a strong focus on Twitter—tweets using the event hashtag #SFROME reached over 200,000 people. Participants examined how to ensure better communication to share knowledge and found innovative ways to bring that knowledge to farmers.

Bioversity International participated in several sessions including a demonstration of an e-learning course for pre-breeding, a look at the GENESYS Gateway to Genetic Resources, a talk on using traditional crops for sustainable livelihoods and an opportunity to taste quinoa cake, as well as contributing articles to the sharefair social reporting blog and daily event newsletter. Emile Frison gave an opening speech with the President of the International Fund for Agricultural Development (IFAD), Kanayo F. Nwanze.

NEW PRE-BREEDING E-LEARNING COURSE

'Pre-breeding for effective use of plant genetic resources', an online learning course, was released this year to strengthen capacity at the interface between germplasm conservation and its use in plant breeding.

Pre-breeding is a necessary first step in using biodiversity arising from crop wild relatives and other unimproved materials to broaden the range of heritable genetic variations available to generate new crop varieties that have increased yields yet rely less on external inputs.

This free online course, jointly sponsored by Bioversity International, the Food and Agriculture Organization of the UN (FAO), and the Global Crop Diversity Trust, using the platform of the Global Partnership Initiative for Plant Breeding Capacity Building, was designed to strengthen skills among plant breeders, germplasm curators, university staff and students, field technicians and extension agents.

By the end of 2011, over 5,000 people had registered for the course, with more requesting the free CD.

A CURRICULUM GUIDE FOR HIGHER EDUCATION

In recent years, research has yielded a rapidly growing knowledge base on how agricultural biodiversity is linked to food security, nutrition, livelihoods, environmental sustainability and climate change. Yet according to consultations with universities in 2009 and 2010, agricultural biodiversity education courses are rare or non-existent and there is a need to integrate such knowledge into curricula.

The new guide, ***Teaching Agrobiodiversity: A Curriculum Guide for Higher Education***, is a tool to support this integration, designed to be flexible to fit into a range of institutional settings. It also suggests suitable entry points for quickly integrating aspects of agricultural biodiversity into existing courses. The guide discusses key issues in agricultural biodiversity education and presents a curriculum framework with 14 topics central to agricultural biodiversity processes, conservation and management. Each topic is briefly introduced along with key learning points, suggested contents, a bibliography and a list of internet resources.

A free PDF was made available this year, with distribution of hard copies to key stakeholders including university partners planned for early 2012.

CROP TRAITS TOOL GOES ONLINE

The **Crop Ontology Tool** is an online resource that enables anyone to browse and download information regarding crop traits.

This online tool is very useful for breeders, farmers and scientists when searching for crop trait information. It can be used to search for information regarding specific ▶

TOOLS & CAPACITY BUILDING highlights

plant traits. For example, when researching the trait 'height' of cassava, the tool provides not only a detailed explanation that relates to the specific query, but also any other relevant information that relates to the trait. The Crop Ontology Tool was developed as a collective activity between CGIAR members and their partners, with Bioversity International leading the project. By the end of 2011, 49 users, who also act as curators, were already registered and regularly uploading content. Further development is planned for 2012.

MANAGING PLANT GENETIC RESOURCE INFORMATION

'GRIN-Global' is a project that provides the world's crop genebanks with a powerful, flexible, easy-to-use global plant genetic resource information management system.

Improving the capability of genebanks to provide data to a global accession-level information system will make it easier to assess the status of the world's plant genetic resources and to identify priority needs for their conservation. It will also allow genebanks to make use of a generic web portal, GENESYS, which offers users online access to collections and an online ordering system, compliant with the International Treaty's Multilateral System (MLS) and Standard Material Transfer Agreement (SMTA).

During 2011, GRIN-Global training was delivered to people from more than 35 genebanks around the world.

CONTRIBUTING TO FOOD SECURITY AND SUSTAINABILITY IN A CHANGING WORLD

In July 2011, the Platform for Agrobiodiversity Research (PAR) facilitated an expert workshop on climate change and genetic resources for food and agriculture. 'Contributing to food security and sustainability in a changing world' was organized by the Food and Agricultural Organization of the UN (FAO) Commission on Genetic Resources for Food and Agriculture. The workshop explored different challenges that confront agriculture and the options that exist or could be developed to help feed the world, cope with climate change and improve the impact of agriculture on the environment.

The event took place prior to the 13th Session of the Commission, in which PAR also participated. PAR is hosted by Bioversity International, which also provides the secretariat, and is made possible with support from the Christensen Fund.

SPATIAL ANALYSIS OF PLANT DIVERSITY AND DISTRIBUTION

Spatial analysis helps to gather information about plant diversity in specific geographical locations around the world. This information about the status of plant species and their patterns of distribution enables the setting of priority areas for conservation by identifying which species are most at risk and where there are gaps in collections. This vital information helps us tackle global challenges such as food security and climate change.

The *Training Manual On Spatial Analysis Of Plant Diversity and Distribution* which was published in 2010, has so far been downloaded by over 2,000 people, and was made available in Spanish this year. A French version will also be published in 2012.

MUSANET—A COMMUNITY OF EXPERTS

The Global Musa Genetic Resources Network, or 'MusaNet' for short, was launched in 2011. MusaNet, coordinated by Bioversity International, is a global collaborative framework and a partnership of key stakeholders, to safeguard *Musa* genetic resources and promote their use around the world.

Membership is based on expertise, with 62 members already having joined, representing the scientific research community, government representatives, educational institutions and development agencies. Regional research networks and other key initiatives such as ProMusa and the Global Musa Genomic Consortium (GMGC) are also represented in the expert committee.

MusaNet is an online resource with member discussion forums and workspaces for the different critical thematic areas, e.g. evaluation, diversity, information and conservation, the latest *Musa* news and publications on genetic resources, and links to the Musa Germplasm Information System (MGIS) which includes accessions data and climatic maps.

A HOT PROSPECT FOR SMALLHOLDER FARMERS

In 2011, Bioversity International and partners reached the half-way point on a project, 'Rescuing and promoting native chilies in their centre of origin'. This project is looking at how to increase the incomes of smallholders through the use of chili (*Capsicum*) diversity. Chili is a crop cultivated by farmers for thousands of years in the Americas, used as a spice, a vegetable and for medicinal purposes.

Highlights of the project so far include new technologies, manuals and guidelines regarding the harvest and post-harvest operations of *Capsicum*, as well as increases in the number of accessions held in genebanks in Peru and Bolivia, making up the largest and most diverse national collections ever assembled. The huge variation in biochemical attributes mirrors the accession level diversity—and has led to interest from chili processors and exporters in those countries. ■

PROJECT highlights

USING TRADITIONAL VARIETIES ON FARM

"There are good reasons to embed the continued use of traditional varieties into development and improvement strategies designed to improve the well-being of some of the world's poorest communities," concluded a newly published paper. **'An Heuristic Framework for Identifying Multiple Ways of Supporting the Conservation and Use of Traditional Crop Varieties within the Agricultural Production System'** brings together available knowledge about the conservation and use of traditional crop varieties on farm.

This comprehensive analysis is packaged in a way to better understand how traditional varieties can support the production strategies of rural communities and small-scale farming. Areas covered include on-farm traditional crop diversity and access to that diversity, ways to improve the use of diversity, as well as benefits derived from its use including market and non-market based actions and incentives.

TRADITIONAL SEED SYSTEMS TACKLE CLIMATE CHANGE

A pioneering study by Bioversity International and partners has introduced a new approach to finding solutions for climate change adaptation by integrating the predicted climatic shifts of a region with its traditional seed systems.

The study investigated how climate change might affect the environments of Mexican maize farmers in four different agroecological zones, and then analysed where farmers currently source their seeds. It was discovered that over 90% of seeds in the study groups came from within a 10km radius of farmers' communities and from areas of less than 50m of difference in altitude.

These results showed that farmers already have access to predicted novel maize environments within the traditional spatial scope of their seed systems, suggesting that these systems may be able to provide farmers with landraces suitable to agroecological conditions under predicted climate change, with the exception of farmers in the highlands, who might need help in coping with more extreme climatic changes.

This approach has great potential to be applied in other countries in need of customized solutions for climate change adaptation.

SEEDS FOR NEEDS GIVING OPTIONS TO FARMERS

'Seeds for Needs', a project currently being carried out in Ethiopia and Papua New Guinea, has made significant steps towards empowering local women and increasing their options for climate change adaptation. The project combines modern GIS technologies and the preferences of local farmers, to identify seed solutions that will help these farmers cope in the future.

In its first year, Bioversity International worked mostly with women's farmer groups, extension workers and local genebank managers on growing locally available seeds in different test sites and getting feedback from farmers on crop performance. In Ethiopia, more than 100 women farmers took part in selecting 25 out of 100 shortlisted varieties of durum wheat, varieties that were then distributed among communities to be sown for a second year of evaluation.

The next phase will look into better understanding local seed systems and improving policies to ensure farmer access to seeds held in genebanks.

VALUING AGRICULTURAL BIODIVERSITY

'Agricultural biodiversity is essential for a sustainable improvement in food and nutrition security', a paper published in 2011 by Bioversity International Director General Emile Frison and co-authors in the open-access journal *Sustainability*, asserts the essential role of agricultural biodiversity in sustainably improving food and nutrition security.

Previously viewed as being useful solely for trait selection in scientific breeding programmes, the paper reveals evidence that suggests diversity not only increases farm productivity, but also increases the resistance of farming systems to shocks. Agricultural biodiversity has been proven to help maintain and increase soil fertility, mitigate the impacts of pests and diseases, deal better with unpredictable weather patterns, and stimulate diverse diets that deliver better nutrition and health.

Moreover, the paper puts special emphasis on adopting a cross-sectoral approach to reassessing the role of agricultural biodiversity in sustainable food production.

PAYMENT FOR AGROBIODIVERSITY CONSERVATION SERVICES (PACS)

The PACS project conducted pilot studies in Bolivia, Peru and India to better understand the effectiveness of rewarding farmers for the provision of conservation services that benefit broader society.

Many of the ecological services provided by agricultural biodiversity are not well reflected in market prices, which may result in farmers favouring more commercially-oriented, less diverse production systems. As part of an exploration of incentive mechanisms, Bioversity International developed and tested Payment for Ecosystem Services (PES) schemes focused on agricultural biodiversity. Assessment of different types of rewards (e.g. in-kind rewards paid at community levels) and of competitive tenders was carried out to determine the most cost-efficient strategies to conserve priority endangered species while also improving farmer livelihoods. ■

FINANCE REPORT 2011

MESSAGE FROM

Gerard O'Donoghue
Director, Corporate Services

Bioversity International faced the past year of global financial insecurity with confidence, launching its new strategy and research agenda in the midst of this situation and continuing to manage its finances carefully. As a result, our organization remains strong and in solid financial condition. Revenue in 2011 amounted to US$ 36.9 million against expenditures of US$ 36.2 million resulting in an operating surplus of US$ 0.7 million.

We have taken many steps to secure our financial future, including increasing our reserves, reducing expenditures, reorganizing our staff and increasing our private donor fundraising efforts. But we continue to need support in order to meet the goals we have set to help improve the lives of smallholder farmers in developing countries.

Fortunately, new attention at the highest levels is being given to issues that affect smallholder farmers. Food security is at the top of the global agenda. But the growing concern is to find sustainable solutions—not just feeding an expected 9 billion people over the next decades, but feeding them sustainably. There is hope for the future, and agricultural biodiversity holds great promise if it can be scaled up and out. Our work can significantly expand with your support.

As a CGIAR Consortium member, Bioversity International is part of the largest international publicly funded research group. This year, CGIAR has redeveloped its research portfolio into 15 distinct CGIAR Research Programs with stronger emphasis on research results and outcomes. Our organization is an integral part and partner of nine of these research programs. By involving us in a majority of CGIAR research, our partners have placed high value on our work. This collaboration bodes well for the future and it means that we have our finger on the pulse of a wide array of issues.

As we move through 2012, our organization has a clear sense of direction for the future. We invite you to get involved with us.

TOP 20 DONORS IN THE YEAR 2011

CGIAR Fund[1]	13,492
Belgium	3,550
European Commission	3,370
UNEP-GEF[2]	1,912
Germany	1,715
Netherlands	1,619
European Countries	980
CFC[3]	955
Australia	869
IFAD[4]	866
Global Crop Diversity Trust	865
Austria	669
Uganda	580
World Bank	543
Ireland	528
The Christensen Fund	424
FAO[5]	263
The McKnight Foundation	253
The Bill & Melinda Gates Foundation	188
Japan	163
Total (US$ '000)	**33,804**

[1] The CGIAR Multidonor Fund (World Bank as Trustee)

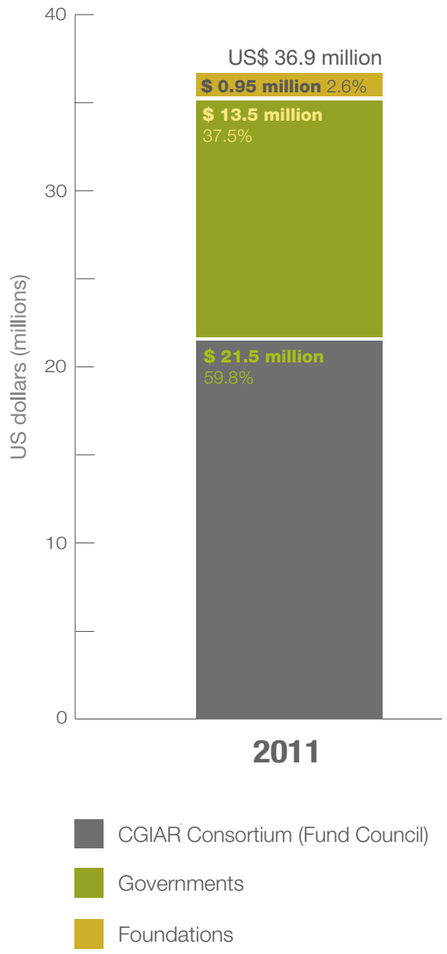
[2] United Nations Environment Programme-Global Environment Facility

[3] Common Fund for Commodities

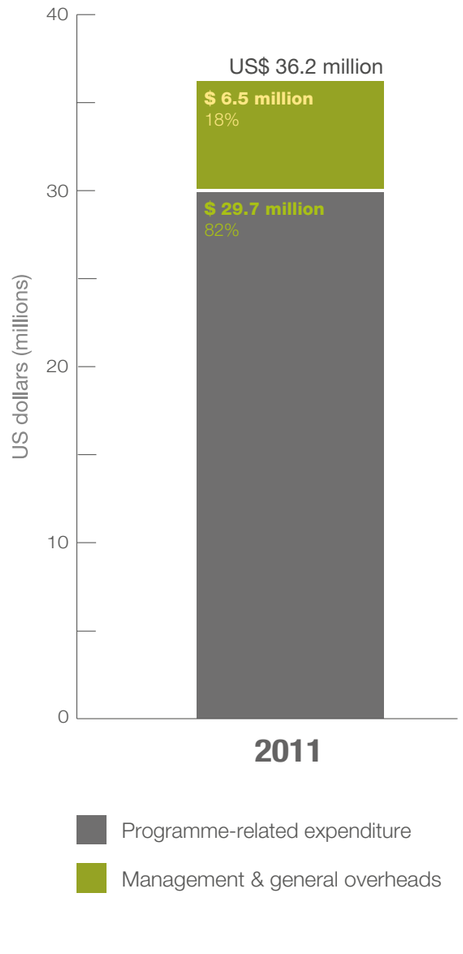
[4] International Fund for Agricultural Development

[5] The Food and Agriculture Organization of the UN

BREAKDOWN OF DONOR REVENUE



BREAKDOWN OF TOTAL EXPENDITURE



RISK MANAGEMENT

Bioversity International's Board of Trustees has responsibility for ensuring that an appropriate risk management system is in place that enables management to identify and take steps to mitigate significant risks to the achievement of the organization's objectives.

Risk mitigation strategies are ongoing at Bioversity International and include the implementation of systems of internal control which, by their nature, are designed to manage rather than eliminate risk. The organization also endeavours to manage risk by ensuring that the appropriate infrastructure, controls, systems and people are in place throughout Bioversity International.

The Board has adopted a risk management policy that has been communicated to all staff together with a detailed management guideline. The policy includes a framework by which Bioversity International's management identifies, evaluates and prioritizes risks and opportunities across the organization; develops risk mitigation strategies that balance benefits with costs; monitors the implementation of these strategies; and reports on results, in conjunction with finance and administration staff and internal audit, semi-annually to a Task Group of the Board and annually to the full Board.

The Board is satisfied that Bioversity International has adopted and implements a comprehensive risk management system.

PARTNERSHIPS FOR CHANGE

WORKING WITH PARTNERS

One distinct key contribution from partnerships is bringing together actors who would not usually find ways to work together, to deliver science and create new knowledge about the use and conservation of agricultural biodiversity. Another contribution to partners is the leveraging capacity we have—connecting knowledge and science of global scope to local action, and vice versa. We are able to see the big picture of sustainability, food security and poverty and, by working with rural communities, we are able to use this knowledge to find solutions and to ensure they can be scaled up and out.

Another indicator of our value is the positive feedback we receive from our partners and donors—a wide range of stakeholders with whom we develop long-term associations. We learn from partners, depend upon their insights and knowledge, and work as equals with them to create lasting change.

Most importantly, the value Bioversity International brings to initiatives is demonstrated through the rural communities and smallholder farmers around the world who are providing for their families in innovative ways, becoming community leaders and advocates, and using their knowledge from farm to fork. These are the true champions of agricultural biodiversity.

AN INVESTMENT IN THE FUTURE

Bioversity International relies entirely on support from donors to undertake and champion world-class research with and for poor farming communities. We are proud to use that support in the most effective way possible. In all our work, our aim is to ensure that investment establishes knowledge that leads to approaches and tools that are self-sustaining, and that influence and shape the decisions of policymakers.

- All our work is funded through voluntary contributions by donors.
- 82% of our expenditure was allocated to research-for-development and critical services that directly support that research agenda.
- Bioversity International is a member of the CGIAR Consortium, the world's largest publicly funded research body.
- For every US$ 1 invested in CGIAR, at least US$ 9 worth of additional food is produced in developing countries.
- Spending on agricultural research offers rates of return of about 40% higher than any other development investment.
- We do not run our own laboratories; instead, we work through national and regional partners, building up capacity and making donor investment work harder.
- We create dynamic coalitions of donors to leverage funds, expertise and networks across different disciplines.

STRONG FINANCIAL MANAGEMENT

Financial and administrative management for Bioversity International is governed by the CGIAR Financial Guideline Series, a series of financial management and policy practices issued out of the World Bank and approved by all of the members of CGIAR.

Bioversity International has a strong system of internal controls which are regularly reviewed and audited. We have designed a Risk Management Framework which enables Bioversity International's Board of Trustees to put in place firm controls for managing key risks.

LOOKING AHEAD

Over the next 10 years, Bioversity International aims to increase its real-term investment in research-for-development by more than 50% to US$ 62 million per annum by 2021. This will enable us to direct and support research efforts to potentially improve the lives of 320 million people who live in the regions where we plan to work.

This ambition will only be realized with donor support; as a non-profit organization we want to engage more donors than ever before in a critically important agenda—and ensure a food and nutrition secure future for millions of poor smallholder farmers, and an environmentally sustainable future for us all.

Our commitment is to work with donors as partners in change, together making significant contributions to global goals on sustainable food security and development and the conservation of agricultural biodiversity. ■

Bioversity International is registered as a 501(c)(3) non-profit organization in the US. Bioversity International (UK) is a Registered UK Charity No. 1131854.

SUPPORTERS

We sincerely thank all of our supporters and partners. This list represents a sample of the many supporters involved with the projects highlighted in this annual report. We have made an effort to recognize as many as possible on these pages and regret we have not been able to mention every supporter in the space allowed.

SUSTAINABILITY

LANDSCAPES FOR PEOPLE, FOOD & NATURE

Partners

Conservation International
Dutch Ministry of Economic Affairs, Agriculture and Innovation
Ecoagriculture Partners
Food and Agriculture Organization of the UN (FAO)
International Fund for Agricultural Development (IFAD)
UN Environment Programme (UNEP)
UN University Institute of Advanced Studies (UNU-IAS)
World Agroforestry Centre
World Resources Institute

Donors

Aid for Africa
Climate Change, Agriculture and Food Security (CCAFS), a CGIAR Research Program
Conservation International
EcoAgriculture partners
Gordon and Betty Moore Foundation
Hitz Family Foundation
International Fund for Agricultural Development (IFAD)
TerrAfrica
The Food and Agriculture Organization of the UN (FAO)
The Global Environment Facility (GEF)
The Rockefeller Foundation
UN Environment Programme (UNEP)
World Agroforestry Centre
World Food Programme (WFP)
World Resources Institute

TRADITIONAL DIVERSITY TO REDUCE PEST AND DISEASE DAMAGE

Partners

National Agricultural Research Organization, (NARO), Entebbe, Uganda

Donors

UN Environment Programme (UNEP)
The Global Environment Facility (GEF)
Food and Agriculture Organization of the UN (FAO)
Swiss Agency for Development and Cooperation

SUSTAINING RESOURCES IN AFRICAN FORESTS

Partners

The National Agricultural Research Institute
The University Eduardo Mondlane and the Reserve management
The Society for the Management and Development of the Niassa Reserve
The University of Natural Resources and Applied Life Sciences, Vienna

Donors

Austrian Development Agency

NUTRITION

GRAND CHALLENGES EXPLORATIONS

Partners

Save the Children UK

Donors

Bill & Melinda Gates Foundation

BIODIVERSITY FOR FOOD AND NUTRITION

Partners/Donors

The Global Environment Facility (GEF)
Brazil
Kenya
Sri Lanka
Turkey
UN Environment Programme (UNEP)
Food and Agriculture Organization of the UN (FAO)
CGIAR Research Program on Agriculture for Nutrition and Health
Crops for the Future (CFF)
Earth Institute (Columbia University)
World Agroforestry Centre (ICRAF)
World Food Programme (WFP)
World Vegetable Center (AVRDC)

LIVELIHOODS

TRADITIONAL CROPS BACK TO MARKET

Implementing agencies (2001-2006)

Bolivia—PROINPA; Ecuador—INIAP (Ministry of Agriculture); Peru—CIRNMA (Ministry of Agriculture); Egypt—DRC (Ministry of Agriculture and Land Reclamation); Yemen—AREA (Ministry of Agriculture and Irrigation); India —MS Swaminathan Research Foundation; Nepal—NARC (Nepal Agricultural Research Council).

National partners (2001-2006)

Bolivia—Centro de Investigaciones Fitoecogenéticas Pairumani (CIFP); SUKA Sumaj Kausay (Vida Buena); Unidad Académica Campesina de Tiahunacu (UACT); Facultad de Agronomía de la Universidad Mayor de San Andrés (UMSA); Empresa Procesadora de Productos Naturales 4 Arroyos; Laboratorio de Análisis y Servicios de Asesoramiento en Alimentos (LAYSAA); Empresa Procesadora de Cereales Andina s.r.l.

Ecuador—Centro Experimental y de Producción Salache (CEYPSA); Disco Compacto (CD); Centro de Investigación Agrícola Local (CIAL); Estación Experimental Santa Catalina (EESC); GTZ: Cooperación Alemana; Instituto Superior Agropecuario Simón Rodríguez (ITSASR); Proyecto de Resistencia Duradera de la Zona Andina (PREDUZA); Empresa de Exportaciones (PROVEFRUT); Sistema de Información Geográfica (SIG); Associazione per la Solidarietà e la Cooperazione Internazionale (UCODEP); Unión de Organizaciones Campesinas de Cotacachi (UNORCAC); Universidad Técnica de Cotopaxi (UTC); Universidad Técnica del Norte (UTN); Unidad de Validación y Transferencia de Tecnología (UVTT).

Peru—Asociación Especializada para el Desarrollo Sostenible; Arequipa (AEDES); Asociación de Agroindustriales de Granos Andinos de la Región Puno (ASAIGA); Instituto Nacional de Investigación Agraria Estación Experimental Andenes; Cusco (INIA-Cusco); Instituto Nacional de Investigación Agraria Estación Experimental Illpa; Puno (INIA-Puno); Instituto de Innovación Tecnológica y Promoción del Desarrollo (PIWANDES); Universidad Nacional del Altiplano-Puno (UNA); Universidad Nacional de San Agustín-Arequipa (UNAS).

India—University of Agricultural Sciences Bangalore; University of Agricultural Sciences Dharwad.

Nepal—Local Initiative for Biodiversity; Research and Development (LI-BIRD).

Implementing agencies (2007-2010)

Bolivia—PROINPA; Ecuador—INIAP (Ministry of Agriculture); Peru—CIRNMA (Ministry of Agriculture); Yemen—AREA (Ministry of Agriculture and Irrigation); India—MS Swaminathan Research Foundation.

National Partners (2007-2010)

Bolivia—CACH-OECAS; La Paz on Foot; ITA-UMRPSX; Laboratorio de Análisis y Servicios de Asesoramiento en Alimentos (LAYSAA).

Peru—Instituto Nacional de Investigación Agraria Estación Experimental Andenes, Cusco (INIA-Cusco); Instituto Nacional de Investigación Agraria Estación Experimental Illpa, Puno (INIA-Puno).

India—GBPUA&T; Ranichauri; University of Agricultural Sciences Bangalore; University of Agricultural Sciences Dharwad.

Italy—Associazione per la Solidarietà e la Cooperazione Internazionale (UCODEP); Movimondo.

Yemen—Sana'a University Faculty of Agriculture; Aden University Faculty of Agriculture; Al-Rahamah farmers charity association; Al-Hidayah Farmer cooperative.

Donors

International Fund for Agricultural Development (IFAD)
Peru (STC-CGIAR Grant); McGill University Canada; GIZ (CIM Programme); Alianza Cambio Andino Programme; ALTAGRO Project; Karnataka State; India; IFAD Dhamar Development Project; Yemen; Yemeni Government; McKnight Foundation Bolivia; Tourism Company Visozial; Bolivia; SDC-Switzerland.

A TASTE OF SUCCESS FOR COCOA

Partners

Cocoa Research Unit (Trinidad and Tobago)
Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)
Event International
Barry Callebaut
Belcolade
Cocoa Producers Alliance (COPAL)
World Cocoa Foundation (WCF)
Atlanta Chocolates

Donors

Common Fund for Commodities (CFC)
International Cocoa Organization (ICCO)
Mars Inc
Barry Callebaut
Belcolade
Atlanta Chocolates

IMPROVING LIVELIHOODS ON FARM

Partners

Instituto Nacional de Investigaciones Agropecuarias (INIAP)
Union de Organizaciones Campesinas de Cotacachi (UNORCAC)
Practical Action (ITDG) Peru

Donors

McKnight Foundation

CONSERVATION

GUATEMALAN ATLAS OF CROP WILD RELATIVES

Partners

United States Department of Agriculture/ Agricultural Research Service (USDA/ ARS)
International Center for Tropical Agriculture (CIAT)
University of San Carlos in Guatemala (FAUSAC)

Donors

United States Department of Agriculture/ Agricultural Research Service (USDA/ARS).

SLASH-AND-BURN EFFECTS ON DIVERSITY

Partners

Raimondo Capitanio
Patricia Negreros-Castillo
Organizacion de Ejidos Productores Forestales de la Zona Maya (OEPFZM)
Ejidos of Cafetal/Limones, Naranjal Poniente and Xpichil
The owners of Rancho Grande, formerly the late Don Antonio Uh and his family, now Alfonso Arguelles and Felipe Sanchez

Donors

United States Department of Agriculture (USDA)
Biodiversity Support Program (World Wildlife Fund, The Nature Conservancy and the World Resources Institute, with funding from the US Agency for International Development)
US Department of Education
Duke University
The Rockefeller Foundation Mexico
Iowa State University
Center for International Forestry Research (CIFOR)
Caterpillar Inc

BIOVERSITY INTERNATIONAL

BOARD OF TRUSTEES

Paul Zuckerman (BOARD CHAIR) retired from full-time investment banking in 1998. His expertise is in finance and agricultural economics and he spent 6 years as a Senior Economist at the World Bank. Before that he was a Research Associate at the International Institute of Tropical Agriculture (IITA) in Nigeria. He is presently on the board of a number of international companies including ArcelorMittal Ltd in Brazil and Mexico; JM Financial Ltd and TechMahindra Ltd in India; and a number of BlackRock Hedge Funds. He was Chairman of the Intermediate Technology Group (1990-95) and is presently Treasurer of The Art Fund in the UK.

Peter Hazell (VICE CHAIR) has devoted most of his career to research and advisory work on policy issues related to agricultural development. Initially trained as an agriculturalist in the UK, he completed his PhD in agricultural economics at Cornell University in 1970 and then followed a distinguished research career in international agricultural development at the World Bank and the International Food Policy Research Institute (IFPRI). His widely cited publications include works on the impact of technological change on growth and poverty reduction; the appropriate role of agricultural insurance in developing countries; and the role of agriculture and small farms in economic development.

Jeremy Burdon is an evolutionary biologist whose research encompasses problems involving pathogens of agricultural crops, using fungi as biological control agents for controlling invasive weeds and understanding the complexities of the interplay of parasitic and symbiotic interactions in natural systems. He has been Chief of the Division of Plant Industry of the CSIRO, Australia's national science agency, since 2003, and serves on the Executive Committee of the Borlaug Global Rust Initiative.

Emile Frison became Director General of Bioversity International, and an *ex officio* member of the Board, in 2003. He first joined Bioversity International in 1987 to coordinate research on aspects of plant health in genebank collections; he was responsible for guidelines on the safe movement of living samples that are still widely used today. Before becoming Director General of Bioversity International he served as Regional Director for Europe and Director of the International Network for the Improvement of Banana and Plantain (INIBAP), where he gave added impetus to research on this neglected crop.

Phindile Lukhele-Olorunju is currently the Director of Research at the University at the Africa Institute of South Africa in Pretoria. She understands first hand the importance of Bioversity International's work. She trained in Nigeria in plant breeding, plant pathology, virology and agronomy. As a researcher in Nigeria, she bred improved groundnut varieties for West Africa before moving into research management with international organizations, including USAID and other CGIAR centres. From 2002 to 2008 she was responsible for three research institutions at the Agricultural Research Council of South Africa before moving to the University of Venda as Director of Research.

Lady Malloch-Brown is an independent humanitarian affairs consultant based in London, active on the Boards of many organizations. She was Vice Chair of the Refugees International Board for 12 years and has been an active supporter since 1986, when she worked at the Sawyer Miller Group, a New York-based strategic and political consulting firm. She is also a co-founder of the Washington Circle, an outreach group targeted at women who are interested in humanitarian affairs, with groups in Washington DC, New York, Wyoming, Illinois and Massachusetts. Lady Malloch-Brown holds a BA in Political Science from Denison University and a Masters in International Affairs from the School of International and Public Affairs at Columbia University in New York.

Shivaji Pandey was born and raised in India, and gained his MS and PhD in Plant Breeding and Plant Genetics from the University of Wisconsin, USA. He is familiar with the CGIAR, having been Director of the Maize Program and Director of the African Livelihoods Program at the International Maize and Wheat Improvement Center (CIMMYT) in Mexico, and has been at FAO in Rome since 2005. He is currently Director of the Plant Production and Protection Division at FAO. The division works on crop production and quality to enhance food security and livelihoods, especially among the rural poor. It is also the focus for participation in international treaties and agreements to do with agricultural biodiversity and food security. In January 2012, Pandey retires from FAO.

Cristián Samper is the Director of the National Museum of Natural History of the Smithsonian Institution in Washington DC. He is responsible for managing the largest natural history collection in the world (126 million specimens and artefacts), overseeing scientific staff who produce more than 500 research publications each year and hosting more than 6 million visitors annually. He chaired the scientific advisory body of the UN Convention on Biological Diversity, leading the Millennium Ecosystem Assessment study. He has published and lectured extensively around the world on conservation biology and science policy, and is a Fellow of the National Academy of Sciences of Colombia and the Academy of Sciences for the Developing World. In August 2012, Samper will become the president and CEO of the Wildlife Conservation Society.

Luis Téllez holds a BA in Economics from the Instituto Tecnológico Autónomo de Mexico (ITAM) and a PhD in Economics from the Massachusetts Institute of Technology (MIT). He is currently Chairman of the Board and CEO of the Mexican Stock Exchange and has served at the highest levels in the Mexican government, including a period as Deputy Secretary of Agriculture. Téllez drafted the law that allows communal land holders to turn their ownership to full property rights, which also clearly defined full propriety rights to Mexican rural lands, and was responsible for negotiating the agricultural sector in NAFTA.

Luigi Monti was the Government of Italy's representative on Bioversity International's Board. Monti left the Bioversity International Board of Trustees in March 2011.

UK BOARD OF TRUSTEES

Bioversity International created a UK registered charity in October 2008 to increase awareness and support for its research agenda and activities. One of its principal objectives is the advancement and promotion of research into the conservation and use of agricultural biodiversity. Bioversity International (UK) is governed by an independent Board of Trustees:

- **Lady Malloch-Brown** (CHAIR), Independent Humanitarian Affairs Consultant
- **Jacqueline de Chollet**, Founder/Director, Veerni Project
- **Emile Frison**, Director General, Bioversity International
- **Judith Portrait**, Partner, Portrait Solicitors in Association with SNR Denton UK LLP (until March 2012)
- **Simon Weil**, Partner of Bircham Dyson Bell LLP
- **Paul Zuckerman**, CEO, Zuckerman and Associates LLC

SCIENTIFIC ARTICLES

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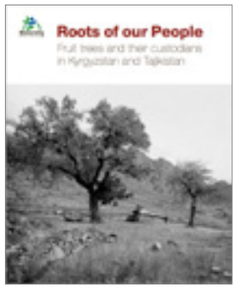

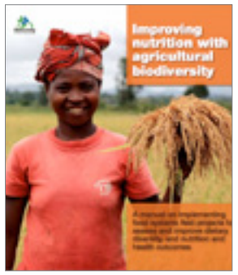

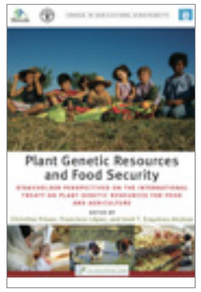

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THE YEAR AHEAD

2012 GOALS

Bioversity International has many goals to expand research in agricultural and tree biodiversity in the next 12 months including:

- Appointments of Programme Leaders
- Launch of 10-year Strategic Priorities and Research Agenda
- Collaboration with CGIAR centers in nine of the new CGIAR Research Programs
- Collaboration with the new CGIAR CEO, to be announced in 2012
- Participation in the International Forum for Landscapes for People, Food and Nature, Nairobi, March 2012
- Participation in the World Nutrition Congress in Rio and launch of new funded project
- Release of research tools, books, and papers from Bioversity Interntaional experts
- Increased partnerships and collaboration
- Significant collaboration with Rome-based UN agencies FAO, IFAD and WFP on project and initiatives
- Launch of Bioversity International Fellows website
- Research output from newly funded research projects
- Celebration of the International Day for Biological Diversity
- Continued initiatives celebrating the UN Decade on Biodiversity
- Preparation for the International Year of Quinoa in 2013

FIND BIOVERSITY INTERNATIONAL AT THESE 2012 EVENTS

- International Day for Biological Diversity—22 May
- Rio+20: UN Conference on Sustainable Development—20-22 June in Rio, Brazil
- IUCN World Conservation Congress—6-15 September in Jeju, Korea
- Sustainable diets—a dicussion and debate hosted by Bioversity UK Board of Trustees, 8 October, London
- Convention on Biological Diversity, 11th meeting of the Conference of the Parties—8-19 October in Hyderabad, India
- Committee on Food Security—15-20 October in Rome
- World Food Day—16 October in Rome
- Global Conference on Agricultural Research for Development—29 October-1 November in Punta del Este, Uruguay
- Feeding the World (The Economist)—15-16 November in Johannesburg, South Africa
- Premio Daniel Carasso Award Ceremony—26-27 November in Madrid
- Doha Climate Change Conference—26 November-7 December in Doha, Qatar

ESTABLISHMENT AGREEMENT

The international status of Bioversity International is conferred under an Establishment Agreement which, by December 2011, had been signed by the Governments of:

Algeria, Australia, Belgium, Benin, Bolivia, Brazil, Burkina Faso, Burundi, Cameroon, Chile, China, Congo, Costa Rica, Côte d'Ivoire, Cyprus, Cuba, Czech Republic, Denmark, Ecuador, Egypt, Ethiopia, Ghana, Greece, Guinea, Hungary, India, Indonesia, Iran, Israel, Italy, Jordan, Kenya, Malaysia, Mali, Mauritania, Mauritius, Morocco, Nepal, Norway, Oman, Pakistan, Panama, Peru, Poland, Portugal, Romania, Russia, Senegal, Slovakia, Sudan, Switzerland, Syria, Tunisia, Turkey, Uganda and Ukraine.

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