No. 12 December 1999

For Sub-Saharan Africa

Director’s message

Sub-Saharan Africa is faced with many challenges. Economic growth over the last decade has been slow, limited in part by slow agricultural growth, a rapidly increasing population, and a degrading natural resource base. It is now projected that to support future generations agricultural production in Africa must register a 6% annual growth rate in production through 2020, while improving the natural resource base.

Agricultural research is important in identifying ways of eliminating constraints to agricultural development and in providing a steady flow of technologies adapted to local conditions. Such technologies are necessary to transform and raise agricultural productivity and improve food security for the poor in Africa.

In the last 25 years, the CGIAR has contributed to the needs of the region through agricultural research. Its contributions have led to significant improvements in key areas. However, in order for the CGIAR to contribute significantly to the goal of 6% annual growth, a strategy for the CGIAR in sub-Saharan Africa is being developed with focus on partnerships. This equally applies to IPGRI in sub-Saharan Africa.

IPGRI’s new strategy outlines 8 strategic choices, all relevant to sub-Saharan Africa. (See page 2 for details). In order to achieve impact on these choices, we must develop a clear vision for the future - a vision that embraces initiatives. Open-mindedness, creative and strategic ways of thinking, and a desire to do things well must be actively cultivated.

It is true that sub-Saharan Africa is faced with a myriad of challenges, but it is also true that for every adversity there is an equal or even greater opportunity. With a positive and proactive attitude, and together with our partners, we can seize these opportunities and turn them to the advantage of the region. The great diversity that exists in sub-Saharan Africa - in culture, language, political systems and levels of economic growth - can be harnessed to provide a rich and unparalleled fount of creative approaches towards solving the problems we face.

IPGRI in sub-Saharan Africa works through partnerships, as it does anywhere else in the world. Many of these partnerships already exist and more will be formed. We value and appreciate our collaboration with sub-regional organizations such as SACCAR/SPG, ASA RECA/EA PG REN and CORAF/GRENEWECA, as well as CILSS/INSAH. IPGRI must continue to nurture its partnerships, provide leadership, and at all times offer professional products and services of quality. IPGRI must be responsive to the varied and evolving needs of its partners and collaborators. IPGRI in sub-Saharan Africa is committed to working in close collaboration with our partners and to effectively drawing on the synergy that stems from such collaboration.

Survey of genetic erosion in Mozambique

Towards the end of 1998, the genebank of Mozambique, with support and technical assistance from IPGRI, conducted a survey to assess the loss of germplasm caused by civil strife in Inhambane Province. Interviews were conducted with 120 families at two levels: the individual household and groups of households. Group household results indicate that 26 out of 209 species have been lost. Individual household interviews reveal a loss of 122 varieties out of 392.

The most commonly cited cause of loss was drought; next were civil war, hunger and migration. Often the losses were due to a combination of these factors.

Varieties lost in one village were often found in other villages. Others may be found in genebanks around the world. The survey identified a number of the lost varieties that farmers were particularly keen on getting back. Special effort will be made to locate these varieties and provide for their return to farmers of the region.

by Torbjörn Kerje
GIS in PGR programmes

Geographical information systems (GIS) are tools used to capture, manipulate, process and display georeferenced data. The basic concept in GIS is of location, spatial distribution and relationships. Plant genetic resources (PGR) involve diversity: the number of species, the different combinations of species within an ecosystem, and the different combinations of genes within a species-and all necessarily have a spatial component. The link between GIS technology and plant genetic resources is, therefore, powerful and offers potential for new and exciting work.

Research scientists and their partners in PGR programmes collect germplasm, but often they must also take multiple other measurements and make related observations. Depending on the complexity of the phenomena being studied, the investigator may be required to collect data on many different variables. The need to understand the relationship among these variables makes multivariate analysis extremely interesting-but at the same time, inherently difficult. One reason for the difficulty is that the human mind is often overwhelmed by the sheer volume of data to be analysed. Geographical information systems provide elegant capability to handle and visualize relationships involving such variables. This technology is now helping to address complex and multidisciplinary environmental and resource management and can monitor issues at global, regional, national and subnational scales. Plant genetic resources work, by its nature, involves planning, decision-making, inventoring, research and monitoring. These functions are purposeful because they relate to results and how to achieve them. The work synthesizes data from many factors to yield information for good management of the resources.

In recent years, there has been an upsurge in the use of GIS in environmental and resource management. The 1997 Environmental Information and Assessment Technical Report of UN EP recognizes the role of GIS within CGIAR centres. The report uses case studies to create awareness of the various application domains, many relevant to plant genetic resources, that can be enhanced using GIS. More information can be found at www.grida.no/

IPGRI in SSA is collecting and assembling a comprehensive geographically referenced database that our partners in the region will be able to have easy access to. This is in respect of climate data, vegetation types, soil types, socio-economic and demographic data, topography and other environmental parameters that are of relevance to plant genetic resources.

Increasingly, general modelling capabilities are being included in GIS. Most of these systems allow for inclusion of user-specified models. Ultimately, a model is judged by a single, quite pragmatic criterion: its usefulness. Criteria such as realism, elegance, validity and reproducibility are important in evaluating a model insofar as they bear on its usefulness. By including modelling capabilities, domain experts can readily include their knowledge in GIS in the form of useful models.

There are many developers and vendors in the GIS world. However, not all hold specific resources work. For useful information about GIS, pay a visit to the following sites: www.brc.tamus.edu/char/; www.esri.com; www.clarklabs.org/

by Isaiah Mukema

As programmes mature

When should a national PGR programme be considered mature? This question is subjective and open to different interpretations. Fortunately, the milestones towards maturity such as collecting, multiplication and characterization standards, and the development and adoption of a common documentation system, are clearly visible. These are evident in several countries in sub-Saharan Africa, especially among the SADC Plant Genetic Resources Centre (SPGRC) network members.

Under SPGRC coordination and with the technical support of NGB and funding from SIDA, the national PGR programmes from the 12 member countries have in the past few years upped the level of scientific standards in the PGR activities that they carry out.

To illustrate their commitment, scientists from the national PGR programmes have been meeting once a year to present results of their individual country activities and exchange ideas on areas that need improvement. They also present proposed activities for the coming year and invite comments from the other members. In the last meeting held in Lusaka Zambia between 18th and 20th October 34 scientists from 12 countries met for five days and presented their countries’ accomplishments in germplasm...
Djibouti
With financial support from the Global Environmental Facility (GEF) and technical support from the International Union of Conservation and Nature (IUCN) and IPGRI, the Djibouti national programme compiled a report on agrobiodiversity. The report, part of the National Biodiversity Strategy and Action Plan, assesses the status of agrobiodiversity and proposes elements for inclusion in the strategy.

Ethiopia
At the invitation of the Ethiopian national programme, IPGRI participated in the mid-term review of a project funded by the Global Environmental Facility (GEF) and the United National Development Programme (UNDP), ‘A dynamic farmer-based approach to the conservation of Ethiopia plant genetic resources’. Recommendations were made on streamlining procedures for implementing the project’s activities and on institutional arrangements for collaborating with other stakeholders.

Kenya
The Kenya national PGR programme got assistance in developing policy guidelines for gaining access to genetic resources, and in organizing a national workshop on intellectual property rights, access to plant genetic resources and benefit sharing. Four computers were supplied by IPGRI to the national genebank to enhance its capacity to handle information and PGR documentation.

Sudan
The Sudan national programme was supplied with 5000 pollination bags for regenerating sorghum accessions.

Uganda
Following the national PGR policy workshop in Uganda, which received technical and financial support from IPGRI, the PGR programme is now fully integrated and recognized as a programme of the National Agricultural Research Organization (NARO). This will increase efficiency.

Cape Verde and Sao Tome and Principle
The Portuguese national programme and IPGRI, with national partners, carried out a PGR status and needs assessment both in Cape Verde and in Sao Tome and Principle. The programme identified priorities and agreed upon activity schedules. As one of the priorities, the procurement of basic conservation equipment for the two countries is well under way.

Mauritius
Following an IPGRI technical mission to the national programme in Mauritius, a PGR unit is being set up within the Ministry of Agriculture. IPGRI provided information on genebank operations, a list of genebank equipment and suppliers, documents on the legal aspects for developing PGR legislation, and IPGRI publications and collecting forms.

Western Africa
National steering committee meetings were organized in Benin, Senegal and Togo to discuss the implementation of the regional project on strengthening national programmes in West and Central Africa. Progress reports on activities carried out by these national programmes were reviewed in the meetings.

IPGRI presented the activities of the Genetic Resources Network of Western and Central Africa (GRENEWECA) and the sub-Saharan Africa Forest Genetic Resources Network (SAFORGEN) to the participants. Benin and Togo have made progress in building their capacity for implementing national plant genetic resources activities. Each country has nominated a full-time scientist to work on PGR. The national research institutions are

National programme updates

Djibouti
With financial support from the Global Environmental Facility (GEF) and technical support from the International Union of Conservation and Nature (IUCN) and IPGRI, the Djibouti national programme compiled a report on agrobiodiversity. The report, part of the National Biodiversity Strategy and Action Plan, assesses the status of agrobiodiversity and proposes elements for inclusion in the strategy.

Ethiopia
At the invitation of the Ethiopian national programme, IPGRI participated in the mid-term review of a project funded by the Global Environmental Facility (GEF) and the United National Development Programme (UNDP), ‘A dynamic farmer-based approach to the conservation of Ethiopia plant genetic resources’. Recommendations were made on streamlining procedures for implementing the project’s activities and on institutional arrangements for collaborating with other stakeholders.

Kenya
The Kenya national PGR programme got assistance in developing policy guidelines for gaining access to genetic resources, and in organizing a national workshop on intellectual property rights, access to plant genetic resources and benefit sharing. Four computers were supplied by IPGRI to the national genebank to enhance its capacity to handle information and PGR documentation.

Sudan
The Sudan national programme was supplied with 5000 pollination bags for regenerating sorghum accessions.

Uganda
Following the national PGR policy workshop in Uganda, which received technical and financial support from IPGRI, the PGR programme is now fully integrated and recognized as a programme of the National Agricultural Research Organization (NARO). This will increase efficiency.

Cape Verde and Sao Tome and Principle
The Portuguese national programme and IPGRI, with national partners, carried out a PGR status and needs assessment both in Cape Verde and in Sao Tome and Principle. The programme identified priorities and agreed upon activity schedules. As one of the priorities, the procurement of basic conservation equipment for the two countries is well under way.

Mauritius
Following an IPGRI technical mission to the national programme in Mauritius, a PGR unit is being set up within the Ministry of Agriculture. IPGRI provided information on genebank operations, a list of genebank equipment and suppliers, documents on the legal aspects for developing PGR legislation, and IPGRI publications and collecting forms.

Western Africa
National steering committee meetings were organized in Benin, Senegal and Togo to discuss the implementation of the regional project on strengthening national programmes in West and Central Africa. Progress reports on activities carried out by these national programmes were reviewed in the meetings.

IPGRI presented the activities of the Genetic Resources Network of Western and Central Africa (GRENEWECA) and the sub-Saharan Africa Forest Genetic Resources Network (SAFORGEN) to the participants. Benin and Togo have made progress in building their capacity for implementing national plant genetic resources activities. Each country has nominated a full-time scientist to work on PGR. The national research institutions are

The Director
SPGRC
Private Bag CH 6
ZA-15302, Lusaka, Zambia
tel: 260 1 233815/16
fax: 260 1 133746
email; spgrc@zamnet.zm

If you would like to know more about the SPGRC Network, contact-

by Henry Kamau

The annual meetings also provide a forum for discussing scientific and technical issues affecting research in the network, and initiatives of an individual country that are not common throughout the network, such as on-farm conservation, field genebanks and rescue collection.
Neglected no more!

Many crops in sub-Saharan Africa with potential for greater utilization have been neglected by research. These crops supply food before the main harvest and provide nutrients like vitamin A, iron or iodine that are lacking in the staples. They are important as cash crops for small-scale farmers within local markets, and sometimes subregionally or even regionally. These crops are neglected because of their limited distribution outside a region, and because the research capacity of institutions in sub-Saharan Africa to address them is limited.

As a result, in sub-Sahara Africa IPGRI is targeting research on conserving and using these crops, aiding farming communities and development institutions to improve management of their genetic resources.

Cucurbits

In West Africa, germplasm collected in 1998 during surveys on the genetic diversity of ‘egusi’ in Benin and Togo was evaluated in Sekou, Benin. Sixty-three accessions belonging to four species were screened: *Citrullus lanatus* (32), *Lagenaria* sp. (17), *Cucumeropsis edulis* (8) and *Telfairia occidentalis* (6). Observations were made on germination, seedling growth, type of leaf and stem, flowering date, male and female flower type, type of fruit and seed, number of fruits per plant, number of seeds per fruit, weed and insect infestations. Initial results indicated a wide variation between and within *Lagenaria* varieties in the shape, colour and size of the fruit. This indicates that there is a lot of diversity with potential for more adaptive and high-yielding varieties.

Egusi attracts many insects. In collaboration with IITA’s Insect Museum, researchers identified eight insect species belonging to five families. Five species were specific to *Lagenaria*, two were common to *Lagenaria* and *Citrullus*. *Apis mellifera* was present mainly on *Cucumeropsis edulis*. *Lagenaria* sp. showed very good ability to suppress weeds, and it provided more organic matter to the soil than *Citrullus*, which has a shorter growth cycle and smaller leaf area. A report of a survey conducted in Nigeria on egusi production in 1998 is ready. It shows the importance of *Citrullus lanatus* and *Cucumeropsis manii* and the areas of their production in Nigeria.

The research activity was jointly conducted by the National Agricultural Institute of Benin, the Faculty of Sciences and Technics of the University of Benin and IPGRI.

An extensive literature study on the Cucurbitaceae in Africa has been carried out, with particular emphasis on *Cucumis melo*. A herbarium study has been started, and cucurbit specimens at the East African Herbarium at the National Museums of Kenya in Nairobi have been reviewed.
Tubers

A survey on the cultivation of the ‘frafra’ potato was conducted in the upper east and west regions of Ghana. Five districts in each region were selected. In each district, four villages were randomly sampled from the list of villages and communities provided by the Ministry of Agriculture. Five farmers from each village were interviewed. Scientists and agricultural extension agents from the ministry assisted in identifying villages and farmers, and in translating from local dialects. Scientists at the Savanna Agricultural Research Institute at Nyankpala undertook a survey in two districts of Northern Region using the same methodology.

The data are now being analysed and farmers’ strategies for on-farm conservation of the frafra potato in northern Ghana will be presented. Samples are being regenerated at the Plant Genetic Resources Centre at Bunso, Ghana, and stem cuttings have been harvested for introduction in tissue culture.

Studies are ongoing to determine the optimal conditions for dehydration and freezing tolerance for cryopreservation of root and tubers from West Africa. As part of the studies, experiments on the standard moisture content, pregrowth and desiccation on Dioscorea rotundata and Solenostemon rotundifolius have been initiated in collaboration with the University of Ghana. A series of experiments has also been set up to determine the optimal slow growth conditions for D. rotundata (four genotypes), S. rotundifolius and Xanthosoma sagittifolium.

Wild rice

IPGRI in collaboration with national programmes in East and southern Africa carried out an ecogeographic survey to map the distribution of five wild rice species using GIS tools. Species diversity on the basis of ecogeographic location has been determined using the Shannon-Wiener diversity index. A modelling software (FloraMap) that synthesizes georeferenced and climatic data of collecting points has been used to develop maps that predict the distribution of each species. These maps are useful in planning future exploration and collection missions.

Molecular diversity in wild rice species has been assessed using amplified fragment length polymorphism with Oryza longistaminata as a case study. This method is being used to locate diversity and to analyse how the rice is distributed and partitioned within and between populations collected from different geographic locations in the study. The study will give a better understanding of how latitude, longitude, elevation, ecological and climatic factors affect and influence this distribution. It will also help in identifying areas with high or unique diversity, in collecting gaps and in making recommendations that may be used in developing conservation strategies of wild rice in the region.

Publications of interest


Dr Abdou Salam Ouedraogo officially took up his position as Regional Director for sub-Saharan Africa on 7th October 1999. Dr Ouedraogo obtained his PhD in conservation biology and genetics from the Agricultural University of Wageningen in 1995. He has over 16 years of experience in rural development and conservation management. He first worked in Burkina Faso, where he was the founder and director of the Centre national de semences forestières. Later he worked as regional coordinator for the FAO/ CILSS/ IGAD regional programme on Forest Genetic Resources for West, Central and Eastern Africa, where he was responsible for facilitating the development of the network and enhancing partnerships with national programmes in more than 20 countries. He joined IPGRI in February 1993 as a senior scientist responsible for IPGRI global programme in forest genetic resources and was based in Rome. Abdou Salam is a national of Burkina Faso. He is married to Catherine, and they have two children, Ebenezer and Esther.

Ms Mary Memia was appointed as senior secretary and took up her new duties in July 1999. Ms Memia has a diploma in office administration from Algonquin College, Ottawa, Canada, and Pitman secretarial certificates from Valley Secretarial College in Nairobi, Kenya. She worked for ICRAF in Nairobi as a training secretary and assisted in the preparation of donor and course reports and project proposals. She helped organize and coordinate in-house arrangements for visitors, including arranging schedules and venues and providing information kits. She also assisted in preparing the regular ICRAF Friday seminar series. She is fluent in English, Italian and Kiswahili and has a working knowledge of Spanish and French. Ms Memia is married to Michael and they have three children, Harris, Vanessa and Karen.

### Calendar

#### Recent events

**3-9 October**
SPGRC technical planning meeting in Lusaka, Zambia

**4-8 October**
Steering Committee meeting for the project on situ conservation in desert prone areas for Africa

**7 October**
New regional director, Dr Abdou Salam Ouedraogo, arrives in Nairobi

**14-16 October**
IPGRI in sub-Saharan Africa Group meeting in Nairobi, Kenya

**18-20 October**
SPGRC Board meeting in Lusaka, Zambia

**25 Oct. - 12 Nov.**
Darwin Initiative course on in situ conservation in Limbe, Cameroon

#### Upcoming events

**January 2000**
Workshop at SPGRC regarding coffee berry disease and other policy issues in Lusaka, Zambia

**February 2000**
GFAR/ FARA meeting, Conakry, Guinea

**19-23 March**
Cucurbitaceae 2000, the 7th Eucarpia meeting on curcubit genetics and breeding in Israel

**May 2000**
DSE/ IPGRI meeting on national proposal development in collaboration with COAF/ GREN EW ECA

**12-16 June**
International conference on science and technology for managing plant genetic diversity in the 21st century, Kuala Lumpur, Malaysia

### Staff changes at the IPGRI sub-Saharan Africa office

**Dr Abdou Salam Ouedraogo** officially took up his position as Regional Director for sub-Saharan Africa on 7th October 1999. Dr Ouedraogo obtained his PhD in conservation biology and genetics from the Agricultural University of Wageningen in 1995. He has over 16 years of experience in rural development and conservation management. He first worked in Burkina Faso, where he was the founder and director of the Centre national de semences forestières. Later he worked as regional coordinator for the FAO/ CILSS/ IGAD regional programme on Forest Genetic Resources for West, Central and Eastern Africa, where he was responsible for facilitating the development of the network and enhancing partnerships with national programmes in more than 20 countries. He joined IPGRI in February 1993 as a senior scientist responsible for IPGRI global programme in forest genetic resources and was based in Rome. Abdou Salam is a national of Burkina Faso. He is married to Catherine, and they have two children, Ebenezer and Esther.

**Ms Mary Memia** was appointed as senior secretary and took up her new duties in July 1999. Ms Memia has a diploma in office administration from Algonquin College, Ottawa, Canada, and Pitman secretarial certificates from Valley Secretarial College in Nairobi, Kenya. She worked for ICRAF in Nairobi as a training secretary and assisted in the preparation of donor and course reports and project proposals. She helped organize and coordinate in-house arrangements for visitors, including arranging schedules and venues and providing information kits. She also assisted in preparing the regular ICRAF Friday seminar series. She is fluent in English, Italian and Kiswahili and has a working knowledge of Spanish and French. Ms Memia is married to Michael and they have three children, Harris, Vanessa and Karen.
IPGRI has begun collaborating with Operation Lifeline Sudan (OLS)-a consortium of UN and non-governmental agencies working with the people of southern Sudan – to restore the genetic diversity in the region. War and famine have displaced many people, and seed reserves have been lost or eaten when people lacked other food. Restoring the genetic diversity that stabilized agricultural production is a major focus of the efforts of the OLS Household Food Security Programme to re-establish and enhance production in farming systems.

IPGRI will facilitate the search for plant genetic resources suitable for cultivation in the region and help acquire it. National and international institutions had earlier collected germplasm from the region. Some of this material may no longer be available in the region, but it could be reintroduced from institutions where it is now being held. Other institutions have bred varieties for climates similar to that of southern Sudan.

At a review workshop for agricultural coordinators from southern Sudan held in Lokichoggio, Kenya, procedures were designed for a preliminary survey to assess what farmers need to restore the plant genetic diversity they have lost, and a trial run has been initiated. This ongoing needs assessment will help the seed relief efforts determine what varieties best meet the needs of farmers in the region.

by Mikkel Grum

Yam in West Africa -
Domestication on a uniquely large scale

Approximately 93% of the world’s yams are produced in the ‘yam belt’ of West and Central Africa that stretches from Guinea through Ghana, Togo, Benin and Nigeria, down to western Cameroon, Central Africa and the Congo Basin. A considerable amount of the crop is cultivated by small- to medium-scale farmers. Most of the community depends on yam – vital for food security and to generate income. Cultivated yams constitute a multispecies crop: Dioscorea bulbifera, D. dorietorum, the traditional varieties of the Dioscorea rotundata-cayenensis complex, and introduced species such as D. alata and D. esculenta. The diversity in the traditional landraces, principally in D. rotundata-cayenensis, has been attributed to the availability of wild yams with cropping potential, different selection pressures, successive domestication, culture-derived modifications and somatic mutations. Wild species believed to have produced cultivated forms in West Africa include D. burkilliana, D. abyssinica and D. praehensilis.

Farmers in Benin regularly domesticate wild species of yams. They take the wild species D. abyssinica and D. praehensilis through a technique that they have developed themselves. The process transforms the material physiologically to produce cultivated varieties similar to those in the D. rotundata-cayenensis complex. The material they produce provides them with the basis for selecting promising...
new varieties. Nowhere else in the world are farmers reported to be domesticating on a scale that is even remotely similar-or are known to have done so in the past. What motivates the farmers, the techniques they use, and the impact this breeding effort has on yam growing in the wider community are not clearly understood. IPGRI and IITA (International Institute of Tropical Agriculture, Nigeria) have joined hands with a number of partners to better understand farmers’ yam domestication practices and what contribution the process makes to yam improvement and production. Partners in the project include selected Bariba, Nago and Fon farmers, the Université national du Benin in collaboration with ORSTOM (Institut français de recherche scientifique pour le développement en coopération, France), the Institut national des recherches agricoles du Benin, the Yam Research Coordination Unit of CIARAD (Centre de coopération international de recherche agronomique pour de développement, France) and IITA. The domestication process itself is being studied with the domesticating farmers. The study includes issues like motivation, selection criteria and methods, and quantification of gene flows. The project will look at what happens morphologically and genetically during the domestication process. The CIARAD-IITA Yam Research Coordination Unit, which was already studying the process before this project began, has conducted a baseline survey in the Nago and Fon regions of Benin to document the percentage and list of farmers domesticating yams. IITA and the Université national du Benin have visited some of the villages surveyed in the baseline study and have selected a number for analysis. Communities in the region are generally organized in ‘Groupement Villageois’, and these groups will represent the communities in the project.

The Université national du Benin, together with farmers, has begun a study to understand what motivates the farmers to undertake the domestication process, their selection criteria, and the methods and techniques that farmers in a selected region use. The study will follow production of seed from domesticated yams and how seed is exchanged among farmers and consumers. It is already clear from this early work that farmers are keen to move beyond the domestication process and get involved in participatory plant breeding. The farmers met so far do not know how to obtain plants from yam seed. The Université national du Benin and IPGRI have held initial discussions with groups of domesticating farmers and several options are emerging. The most widely grown variety in the area is a prolific seed producer, and hybrid plants could form the basis of future clonal selection. Researchers could make controlled crosses where both parents are known, increasing the probability of selecting desirable clones. Tissue culturing existing older clones may produce ‘rejuvenated’ clones with higher yields.

With farmers’ eagerness to move ahead into participatory plant breeding and the emergence of possible approaches, the project is moving into this form of collaboration sooner than planned. A major focus will be to determine which processes farmers can best carry out and which will require the input of researchers.

by Eric Quarcoo, Alexandre Dausi, Mikkel Grum

Publishing Opportunities

The Plant Genetic Resources Newsletter, produced by IPGRI and FAO, is unique in that it accepts and publishes research-level papers in English, French and Spanish. With an international system of peer review, the newsletter is read by over 20,000 scientists worldwide and publishes research reviews, articles and short communications on all aspects of plant genetic resources. The Newsletter is particularly encouraging submissions from regional authors, and makes special efforts to see them published. As the Newsletter has a very wide subject coverage, this is an invaluable opportunity for staff in the National Programmes to expose the results of their research to an international audience.

Send submissions to:

Paul Stapleton
Managing Editor
Plant Genetic Resources Newsletter
IPGRI
Via delle Sette Chiesie 1423
00145 Rome
Italy

Papers may also be submitted by Email to p.stapleton@cgiar.org. See also http://www.cgiar.org/ipgri/publications, where data on the Newsletter are published trilingually.