# SADC Plant Genetic Resources Centre (SPGRC)

## Regional Stakeholders' Meeting on Information Exchange of National Strategies on PGRFA, 2014, Lusaka, Zambia


**September 2014**
**Lusaka, Zambia**

## Acronyms

| | |
|---|---|
| **ABCIC** | African Biodiversity Conservation and Innovation Centre |
| **ACP** | Africa Caribbean and Pacific countries |
| **AIMS (SADC)** | Agricultural Information Management System, SADC |
| **APPSA** | Agricultural Productivity Programme for Southern Africa |
| **ARIPO** | African Region Intellectual Property Organization |
| **AVRDC** | Asian Vegetable R4esearch & Development Centre (World Vegetable Centre) |
| **BCA** | Botswana College of Agriculture |
| **BCN** | Biodiversity Community Network, Zambia |
| **CCARDESA** | Centre for Coordination of Agricultural Research and Development for Southern Africa |
| **CESRIK** | Centre for Research in Indigenous Knowledge, Botswana |
| **CGIAR** | Consultative Group for International Agricultural Research |
| **CIP** | International Potato Centre |
| **COMESA** | Common Market for Eastern and Southern Africa |
| **COSTECH** | Commission for Science and Technology, Tanzania |
| **CTDT** | Community Technology Development Trust, Zimbabwe |
| **CWR** | Crop Wild Relative |
| **DAFF** | Department of Agriculture, Forestry and Fisheries, South Africa |
| **DAR** | Department of Agricultural Research |
| **DARSS** | Department of Agricultural Research and Specialist Services |
| **DRC** | Democratic Republic of Congo |
| **EAC** | East African Community |
| **EMBRAPA** | Brazilian Agricultural Research Corporation |
| **FAO** | Food and Agriculture Organisation |
| **GEF** | Global Environment Facility |
| **IIAM** | Instituto de Investigação Agrária de Moçambique (Agricultural Research Institute), Mozambique |
| **IITA** | International Institute of Tropical Agriculture |
| **INERA** | Institut National pour l'Etude et la Recherche Agronomique (National Agricultural Research Institute), DRC |
| **ITPGRFA** | International Treaty on Plant Genetic Resources for Food and Agriculture |
| **JICA** | Japan International Cooperation Agency |
| **MSBP** | Millennium Seed Bank Project |
| **NGO** | Non-Governmental Organisation |
| **NordGen** | Nordic Genebank |
| **NPGRC** | National Plant Genetic Resources Centre |
| **NPGRCom** | National Plant Genetic Resources Committee |
| **NTSYSpc** | Numerical Taxonomy SYStem for personal computer |
| **PGR** | Plant Genetic Resources |
| **PGRFA** | Plant Genetic Resources for Food and Agriculture |
| **RAP** | Regional Agricultural Policy |
| **RBSPC** | Roches Brunes Seed Production Centre, Mauritius |
| **RISDP** | Regional Indicative Strategic Development Plan |
| **RUFORUM** | Regional Universities Forum for Capacity Building in Agriculture |
| **SADC** | Southern African Development Community |
| **SANBI** | South African National Biodiversity Institute |
| **SASSCAL** | Southern African Science Service Centre for Climate Change and Adaptive Land Management |
| **SCCI** | Seed Control and Certification Institute, Zambia |
| **SDIS** | SPGRC Documentation and Information System |
| **SDC** | Swiss Development Cooperation |
| **Sida** | Sweden International Development Agency |
| **SPGRC** | SADC Plant Genetic Resources Centre |
| **TCP** | Technical Cooperation Project |
| **UAN** | Agostinho Neto University |
| **UB** | University of Botswana |
| **UFSC** | Santa catarina Federal University, Brazil |
| **UKZN** | University of KwaZulu Natal |
| **UNZA** | University of Zambia |
| **ZARI** | Zambia Agricultural Research Institute |

# Contents

## 1. Objectives

The SPGRC/NPGRCs Regional Stakeholders' meeting was held in Lusaka, Zambia with the objective to:

- Discuss FAO-TCP project activities with regard to developing national PGR conservation strategies in selected SADC countries
- review the implementation of the technical activities for 2013/2014 cropping season;
- evaluate the technical and budgetary plans for the 2014/2015 cropping season; and
- facilitate information sharing on any other technical and networking issues.

In addition to the routine discussions and deliberations on conventional SPGRC network activities, the meeting also discussed the critical financial and administrative implications in the wake of diminishing donor funding.

## 2. Attendance

In attendance were twenty one (21) participants from NPGRCs and SPGRC. Due to logistics, Botswana, Madagascar and Seychelles did not attend the meeting. At least, Botswana sent in their annual report for the meeting. FAO representative from Head Office Rome could not attend as he was attending another important global meeting.

## 3. Venue

The meeting was held at the Protea Hotel – Cairo Road, Lusaka from 7th to 8th September 2014.

A detailed meeting programme is found in Annex I.

## 4. Opening Ceremony

The meeting started by the Session Chair welcoming all participants to the 2014 regional stakeholders' meeting on information exchange of national strategies on PGRFA, focusing on achievements made over the last year of implementing the FAO-TCP project. Participants were advised to submit their registration and claim forms to the meeting secretariat.

### 4.1 Welcome Address by Head of SPGRC

In his opening remarks, the Head of SPGRC welcomed participants to Lusaka and wished them a pleasant stay. The Head mentioned some notable achievements registered during the year under review, and also listed some of the many challenges the network faced.

The Head reported that the network continued implementing the FAO-funded Technical Cooperation Programme (TCP) on a no-cost extension (up to 31st December 2014) of the project on the development of National Strategies for PGRFA for 6 participating countries, namely, Botswana, Lesotho, Malawi, Mozambique, Tanzania and Zambia. During the year participating countries continued enriching the strategy documents and enhancing the ownership of the documents. The network managed to upgrade some of its PGR conservation equipment at SPGRC and the 6 NPGRCs; notably, procured a brand new 275 KvA standby power generator for the Genebank to guarantee uninterrupted power supply to the freezers in the Genebank.

In its efforts to mobilize resources, SPGRC on behalf of the network secured some funding amounting to US$ 200,000 from the Programme on Climate Change Mitigation and Adaptation in the Eastern and Southern Africa (COMESA-EAC-SADC) Region, 2010-2016. It also initiated some collaborative arrangements with the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) that will see development and implementation of joint research projects as well as training programmes. On same vein, it also initiated collaboration with the University of Zambia, as a pilot activity, to promote the use of materials in our genebanks by making available small grants to graduate students to augment their research budget on the condition that they use materials in our genebanks, especially in terms of characterization

Discussions are underway with the Swiss Development Cooperation Agency (SDC) on possible funding of PGRFA conservation activities, particularly on-farm conservation promotion of local seed systems. SPGRC has also developed a generic project proposal with potentially standalone components that can be funded separately.

The Regional PGRFA Policy Guidelines that were developed with NPGRCs input were printed and circulated. SPGRC and some NPGRCs actively participated in the regional processes of reviewing the RISDP and developing the Regional Agricultural Policy (RAP).

SPGRC in collaboration with SADC-AIMS has continued with redesigning and programming the web-based SPGRC Documentation and Information System, with most working modules in place and the remaining work being to develop a client-platform and transform existing data into the new SDIS.

The Head mentioned that during the year under review, the network also faced numerous challenges mainly due to financial constraints. These included: inability to carry out many activities (collection, multiplication, characterization, regeneration, duplication to base collection and others) at national level due to lack of funds; continued challenge of inadequate germplasm utilization; slowed down or completely stopped activities on domestication of the ITPGRFA; outstanding construction of the biotechnology facility at SPGRC; and inadequate financial resources for new long-term training at Master's and PhD levels, amongst others.

In conclusion, the Head said SPGRC is now a credible, internationally renowned PGR conservation institution. The last 20 years have seen the steady growth of PGR conservation programmes in our region with genebanks established in almost every SADC member state and numerous personnel trained in PGR conservation and utilization. However, many challenges still lie ahead for the network. Without clear prospects of financial sustainability, programmes in some NPGRCs may be negatively affected, as the bilateral donor funding has been phased out. The global economic crisis has not spared out region. The network needs to position itself now to meet the many challenges ahead and take advantage of existing opportunities.

### 4.4 Programme and Logistics Announcements

The Session Chairperson made logistical announcements regarding the filling and submission of registration and claim forms, about the complementary availability of Internet at the hotel.

## 5. Matters Arising from the Last (2013) Meeting

**Action 5.1: Addition of Districts (Municipalities) to SDIS**
The Angolan Genebank asked for assistance regarding the addition of names of districts ("municipalities") which are not yet in the SDIS system. Some materials have been collected from these places but not entered in the system for lack of names.

**Response:** *The Documentation Section concentrated on finalizing the new web-SDIS that covers missing districts which is the case with many other countries such as Tanzania, Zambia which have created new districts and/or provinces. Angola is urged to enter data in an Excel sheet that when web-SDIS is finalized, data will be converted and incorporated in the main database.*

**Action 5.2: Funding Assistance to Establish DRC Genebank**
The established NPGRC for DRC reported of having an office and a faulty desktop computer at INERA in Kinshasa. As a result of joining the network late, DRC has not received any kind of equipment support and was therefore asking for SPGRC to enable it start up activities. DRC has identified a building to house the genebank. In the mean time, NPGRC proposes for SPGRC assistance in funding. It is in dire need for a laptop, desktop computer and database to document conserved germplasm.

**Response:** *Following the ending of funding by traditional donors, SPGRC is not in position to financially assist DRC. However, SPGRC advised DRC to contact prospective donors such as FAO, the Treaty, etc. who can assist financially. As requested last year, SPGRC assisted in drafting a proposal which DRC could use for soliciting assistance.*

**Action 5.3: Establishment of R&D Team on Medicinal Plants**
Participants proposed establishment of a R&D team that can work on developing medicinal plant for commercialization.

**Response:** *SPGRC has developed a generic project proposal "Enhancing Capacities for Conservation and Sustainable Utilization of PGRFA in the SADC Region" and the project is planned to address the entire R&D for 2015-2020 and beyond.*

**Action 5.4: Bridging Gap between "Base" and "Active" Collections**
The meeting was asked to brainstorm on possibility of closing the gap. With funding, multiplication could start as early as 2014 and see how much could be duplicated to SPGRC by end of 2015 (at least 50% of materials deposited at SPGRC by planning meeting of 2015).

**Response:** *SPGRC continued to look for resources for multiplication project to close existing gap. A further review brought to light that "where the gap exists" a sustainable way to manage the gap would be for NPGRCs to prioritize multiplication in their programmes for 1-2 years to bridge the gap before continuing to collect more accessions which in some cases resulted in increasing the gap. The SPGRC's generic proposal has included gap multiplication component that will treat the existing discrepancies.*

**Action 5.5: Equipment/Facilities Replacement Plan**
SPGRC prepared an equipment replacement plan, which is on a 5 year plan. SPGRC will share with NPGRCs. It is investigating within the region and beyond to find the best suppliers of Genebank equipment. This will be shared with Member States.

**Response:** *The SADC Genebank assets and freezers replacement plan were prepared and the network's asset replacement plans are yet to be prepared.*

**Action 5.6: Breeder Discussion Forum on SPGRC Web Space**
A lot of information has been done that breeders wish to share with SPGRC. A platform will be created to enhance this information and experience sharing amongst practitioners and users.

**Response:** *No specific action taken. Our website is undergoing intensive re-branding, especially taking into consideration serious hacking threats that we have gone through during the year. A breeder discussion forum will be created in the course of re-branding.*

## 6. NPGRC PROGRESS REPORTS

# Angola

### A. General

#### (i) Introduction

Angola is a large country with a very wide variety of biomes, physical and climatic diversity which reflect the diversity of its local varieties of food crops, including maize, common bean, cowpea, groundnut, sorghum, pearl millet and others. These crops contain the genetic resources of local varieties of food crops.

Two collecting missions were carried out during this period, one in the Cunene province in May 2014 and in Lunda Norte and Lunda Sul provinces in August of 2014.

Angolan NPGRC organized a seed quality evaluation course for 10 participants from the National Seed Service (SENSE) staff with the objective of giving an overview of the basic methods of seed processing in seed laboratory applicable in germplasm conservation and utilisation.

In April 2014, for the first time, the Angolan PGR centre (which is a research centre of Agostinho Neto University-UAN) began to run an MSc Course in Conservation and Utilisation of Plant Genetic Resources, in collaboration with the UAN Science Faculty and with participation of the post-graduate plant genetic resources department of Santa Catarina Federal University (UFSC) in Brazil.

#### (ii) Staffing

Domingas Tomás left the NPGRC in April of 2014 and is now working for the Extension Service (IDA) at the Ministry of Agriculture, even though she is still collaborating with the Centre.

#### (iii) National Plant Genetic Resources Committee (NPGRCom)

In the period under review, the Angolan NPGRCom met three times to consider issues and make preparations for a multi-institutional workshop to discuss and approve the Genetic Resources bill; to discuss proposals to improve the benefit sharing arrangements of the ITPGRFA and to discuss an appropriate methodology for the preparation of a national report on the present state of biodiversity for food and agriculture in Angola.

#### (iv) Training, Workshops and Meetings

- José Pedro, Evaldina Pedro, Claúdio Marques and Teresa André attended an International Workshop on Plant Biotechnology Development Program held at University Campus on 26 of September 2013.
- Angolan NPGRC organized a training course in Evaluation of Seed Quality from 16 to 20 of December 2013.
- Angola NPGRC staff attended a 4 day Agriculture Fair from 28th November to 01st December of 2013.
- The NPGRC was visited by Mr. Lerotholi Qhobela from 11th to 13th December 2013 to verify the present situation in the genebank and other conservation issues.
- From 6th to 8th February 2014 Evaldina Pedro and Teresa Martins attended a workshop organized by Lubango Herbarium on preparing distribution maps of biological collections.

- Mr. José Pedro and Mr. Claúdio Marques participated in the seed fair organized by SODEPAC Company in Malanje province from 19th to 20th February 2014.
- Doctor Pedro Moçambique attended a meeting in Pretoria, South Africa from 3rd to 5th March of 2014 on Biotechnology and Agricultural Biosafety.
- In May 2014, Elizabeth Matos participated in the first session of the Open-ended Working Group on the Access and Benefit Sharing arrangements of the ITPGRFA Multilateral system.
- Doctor Pedro Moçambique attended a meeting in Rome from 3rd to 6th June of 2014 on the International Treaty and the Nagoya Protocol.
- Angola NPGRC participated from 5th to 8th June 2014 in the Angola Environment Fair held in Luanda.
- Teresa Martins, José Pedro and Mbemba Pedro Massala participated in the Scientific Research Methodology organized by Science and Technology Ministry from 4th to 5th September 2014.
- Mr. José Pedro attended a workshop organized by SODEPAC and made a presentation about on-farm PGR conservation on 23rd September 2014 in Malanje.

**(v) Equipment, Supplies and Facilities**

There was no change of status of equipment and facilities during the year.

**(vii) Requirements**

The Centre is in requirement of 500 large, 1,000 medium and 2,000 small size laminated foil bags, as well as 1000 large pollination bags.

**(vi) Constraints**

The NPGRC is still facing with lack of space and shortage off aluminium foil bags

**B. Technical Report**

**(i) *Ex-Situ* Conservation**

**Conservation**
In 2013/14, Angola NPGRC organized collection missions in three provinces: Cunene (southern part), Lunda Norte and Lunda Sul (eastern part). About 77 accessions of food crops were collected. These include: *Abelmoschus esculentus (2), Amaranthus sp.*(4), *Arachis hypogaea* (4), *Capsicum sp.* (2), *Citrullus vulgaris* (1), *Curcubita sp.* (15), *Hibiscus sabdariffa* (1), *Oryza sativa* (1), *Pennisetum glaucum* (4), *Phaseolus vulgaris* (1), *Sesamum indicum* (1), *Solanum melongena* (2), *Sorghum bicolor* (2), *Vigna subterranea* (5), *Vigna unguiculata* (18), and *Zea mays* (10).

Between 2013 and 2014, the NPGRC sent to SPGRC a total of 55 accessions that include *Zea mays* (9), *Phaseolus vulgaris* (3), *Vigna unguiculata* (13), *Sorghum bicolor* (7), *Arachis hypogaea* (6), *Cucurbita* (4), and *Pennisetum glaucum sp.* (13).

Total accession number at Angola NPGRC now stands at 4,122.

**Regeneration and Multiplication**
In 2013/14, NPGRC multiplied 12 accessions (pumpkin-4, water melon-3, maize-2, rice-2, groundnut-2), characterized 29 accessions (cowpea-15 and common beans-14), and regenerated 7 accessions (common bean-1, maize-2, okra-2, soyabean-1, sorghum-1).

The characterization of fifteen (15) accessions of cowpea and fourteen (14) accessions of common beans particularly aimed to support the two students' work for final thesis in biology course.

**(ii) Field Genebank Maintenance**

There are field genebanks in some Ministry of Agriculture Research Stations:

- Roots and tubers in Malange (Malange province) and Mazozo (Bengo province)
- Mango and banana gene bank at the IIA Benguela, Fruit Research Station
- *Robusta* coffee in Huambo and in national coffee research stations in Kwanza Sul and Uige provinces.

**(iii) Utilisation of Plant Genetic Resources**

The Genebank distributed 15 accessions of cowpea (*Vigna unguiculata*) and 14 accessions of common bean (*Phaseolus vulgaris*)to final year biology course students.

**(iv) Documentation and Information**

The SDIS was reported working very well with back-ups being made very often as soon as new data is added to the system. The database has been valuable for the work at NPGRC as well as for the support of students' theses particularly in producing distribution maps for the location sites.

However, the NPGRC requested for assistance in adding names of districts (municipalities) which are not yet in the SDIS system. There are already some materials from these places but on the list whose localities cannot be found.

**(v) Awareness Seminars**

A National PGR Conference is planned for November 2014 for up to 120 participants including 6 international presenters, as well as national presenters. Participants will include researchers from the public and private universities, including MSc course students and agronomists from research institutions and agriculture extension service.

# Botswana

**A. General**

**(i) Staffing**

Staffing for Botswana NPGRC changed during the 2014 due to departure of Mr Chiyapo Gwafila who is pursuing an MSc in Crop Science at Botswana College of Agriculture (BCA). Ms K. Kgokong joined NPGRC as Technical officer with a Diploma from BCA.

**(ii) National Plant Genetic Resources Committee (NPGRCom)**

No meeting was held. Committee members who left due to transfers or training were never replaced, although a request was made for a replacement. Another challenge is membership of non-government organisation (NGOs) who are working on voluntary basis because of funds challenges.

**(iii) Training, Workshops, Courses and Meetings**

**Ms Mary Kneen Molefe** participated in the following workshops:

- Joint Ministerial Committee meeting: Agreement between South Africa and Botswana on the 12 – 16 May 2014 in Potchefstroom, South Africa.
- Technical committee on Intellectual Property Rights (Registrar of Companies)
- Indigenous Knowledge Consultative workshop on Implementation Plan) - held in Gaborone
- Geographic indicaors workshop
- Intellectual Property Rights workshop in Gaborone

**Tiny Motlhaodi** participated in the following workshops/meetings:
- National Plant Taxonomy Committee - in collaboration with National Museum, Environmental Affairs, Dept of Range Resources, Wildlife and National Parks, UB, BCA, Birdlife Botswana
- National Development Plan 11 Environmental Issues working group.

**(iv) Visits**

- Ms M. Motshegwe and Ms T. Motswasele – Farmers from the Kgatleng District.
- Ms T. Dichaba – Centre for Research on Indigenous Knowledge (CESRIK), University of Botswana (UB)
- Mr Busang - Centre for Research on Indigenous Knowledge (CESRIK), University of Botswana (UB)
- Mr M. Daka (from SPGRC) –to orientate NPGRC staff on the web SDIS.
- Dr Kinya Akashi and team members – Totttori University, Japan
- Mr J. Mathibidi and 12 farmers – Department of Forestry, Farmers from Goodhope, Barolong District from the Southern part of the country
- Mr Aubrey Siane – Farmer from Ramotswa, South East District.

**(v) Equipment, Supplies and Facilities**

***Storage facilities***
The NPGRC has two types of storage facilities which are upright freezers and cold room. There are 10 upright freezers and are all in good working conditions. The cold room is also functioning well at the temperature of –5$^{o}$C.

***Desktop computer***
A new desktop was purchased and SDIS installed in it by SPGRC Documentation Officer.

***Walk-in Drier***
The walk-in drier room is working very well. The limitation in the drier room is lack of shelving so the seeds samples are spread on the floor thus taking larger space.

***Sealer***
The sealer is currently not working.

***Growth chamber***
The growth chamber, seed grinder, moisture analyser and balance were reported to be in good working condition.

**(vi) Requirements**

The NPGRC expressed need for:
- Irrigation facilities
- Stand-by electric generator
- Walk-in drier (current space inadequate)
- Germination trays

**(vii) Constraints**

The NPGRC has continued succumbing to the shortage of qualified staff as well as lack of funds for short and long courses training for genebank staff. It lacks qualified personnel e.g. *in-situ* officer, documentation officer to undertake projects. Transport is a challenge to execution of collection missions resulting in failed collection missions.

## B. Technical Report

### (i) Conservation

About 4,651 accessions of both cultivated and wild species are conserved in the Genebank. The bulk of the accessions are from the cultivated species because initially the centre mandate was to conserve cultivated and their wild relatives. With the change of the Department of Agricultural Research (DAR) mandate, collection of wild plant species stands at 1,090 (23%) accessions while cultivated species and their wild crop relatives is 3,561 (77%) accessions.

No accessions were duplicated to SPGRC during 2013/2014 due to shortage of manpower. The only two technicians for NPGRC left during 2013. One staff member retired while the other left for further studies and there was no immediate replacement, hence the two officers were overwhelmed with other duties.

### (ii) Germplasm Collection

The target was to collect 50 species during 2013/14, but managed to collect 40 species. Most of the planned collection missions failed, mainly due to lack of reliable transport.

### (iii)Regeneration/Multiplication

Regeneration and multiplication of sorghum, pearl millet and tepary bean were undertaken during 2013/14 cropping season. The activities were geared to increase the number of seed per accession as well as well as rejuvenate aging material. The trials were implemented in December 2014 at the DAR station in Sebele.

***Sorghum/Pearl Millet***
Six sorghum accessions and 1pearl millet accession were planted with all the procedures and precaution adhered to maintain the genetic integrity of the accessions was properly undertaken such as covering individual panicles in parchment paper bags before stigma emergence. The plants progressed well until harvest. The seeds have been harvested and processed.

***Bambara/Cowpeas***
52 accessions of bambara were planted in December 2014and germination was 100%. 50 cowpea accessions were planted and only 43 accessions germinated and were all harvested. The 7cowpea accessions which failed to germinate will be replanted.

### (iv) Utilization of Plant Genetic Resources

This year, there were lots of requests for the germplasm maintained by the NPGRC. Most of the requests were from the DAR (Oil Seeds and Legume Programme, Entomology) followed by the academic institutions.

A total of 189 accessions (bambara nuts-77, groundnuts-22, sweet sorghum-6, cowpeas-72, marama bean-1, maize-1, wild water melon-1, indigenous trees-9) were requested by different entities that included DAR, BCA, University of Botswana, farmers for different purposes from research, laboratory experiments/trials, screening for resistance to diseases/pests/drought, to student projects, *etc*.

### (v) *In-situ*/On-farm Conservation

The proposed activities under on-farm conservation i.e. Seed fair in the last was not carried out due to lack of funds. The Permaculture farmers in the Central district where a Seed Fair was conducted in 2011, had proposed another Seed Fair for 2014 to be undertaken in Kgaswe village within the district. The idea is still being discussed and they intend to pursue it even if it goes into 2015.

### (vi) Documentation and Information

A new computer was procured and SDIS was installed, documentation is progressing well.

Through a FAO-TCP project, A groundnut catalogue has been submitted to graphics unit for designing, thereafter it will be taken for printing.

# Democratic Republic of Congo

## A. General

### (i) Introduction

The NPGRC of Democratic Republic of Congo (DRC) is in charge of collecting genotypes and making short, medium and long term support to research work of thematic programmes. The bottleneck remains on conservation of these genetic resources and availability of adequate facilities and equipment.

The National Agricultural Research Institute (INERA) which is an apex institution, under which NPGRC is housed, operates in 32 Centres and Stations where potentially, PGR activities could be handled under the direction of the NPGRC.

### (ii) National Plant Genetic Resources Committee

The National Plant Genetic Resources Committee (NPGRCom) was institutionalized in 2008 with committee members approved from ministries, universities and other institutions involved in genetic resources activities. However, the committee did not hold any meeting during the reporting period.

### (iii) Staffing

The staffing for the newly established NPGRC include Professor Mbikayi Nkonko – Director Scientific Research at INERA, Mr Ramazani Lumbe – Head of Division Management of Genetic Resources, and Programme Chiefs at respective Research Centres across the country.

### (iv) Visitors

The NPGRC had a privilege to be visited by Mr. Lerotholi Qhobela of the SPGRC in between 7th and 11th April 2014 with view to establish a more appropriate research site/station that can host a substantive national centre.

Accompanied by NPGRC staff, he visited M'Vuazi Station and also intended to visit INERA's herbarium located in Kinshasa University, International Institute of Tropical Agriculture (IITA) station which collaborates with INERA, but the responsible experts with whom the Team targeted discussions were not available.

During the visit of Mr. Qhobela, Mvuazi centre offered free office rooms that could be used to set up genebank. They also offered NPGRC a field (> 4ha) for genebank activities.

**(v) Facilities and Equipment**

The established NPGRC for DRC reported of having an office and a faulty desktop computer at INERA in Kinshasa. As a result of joining the network late, DRC has not received any kind of equipment support and was therefore asking for SPGRC to enable it start up activities.

**(vi) Constraints**

The DRC reported to have identified a building to house the genebank (a small store room which needs renovations). In the mean time, NPGRC proposes for SPGRC assistance in funding. It is in dire need for a laptop, desktop computer and database to document conserved germplasm.

**B. Technical Report**

**(i) Germplasm Conservation and Collection**

The NPGRC has in conservation over 9,641 species of germaplasm at Yangambi Research Centre. These include cocoa, coffee, forest trees, oil palm, cassava, maize groundnuts, cowpea, soya, agrostological species, wild fruits, banana, and hevea/para rubber species. It also reported another 723 species in conservation at M'Vuazi Research Centre most of which include cassava, groundnut, cowpea, soya, common beans, banana, forest species, rice, maize, mango, citrus, pawpaw, avocado, agrostological species, lansium, pigeon pea and taro species.

Due to financial and functional difficulties, INERA was obliged to restructure and to reduce the number of Centres and Stations from 32 to 5 Centres and 4 functional active stations. As a result, INERA created 4 regional branches following ecological conditions in DRC:

- M'vuazi (Lower-Congo/from Coast to Kinshasa) and the regions around.
- Yangambi (in the centers/equatorial zone)
- Mulungu (mountain region/temperate zone)
- Gandajika (Savannah'region / Tropicales Zones)

Unfortunately, in the abandoned 23 active stations there were active and some neglected or non-evaluated germplasm materials. It implies that from these there is a problem to evaluate and to transfer to safety collections of food producing and industrial crops (palm oil, cotton, coffee, tea, cocoa, rubber, quinine, medicinal plant, jatropha, *etc.*).

**(ii) Documentation and Information**

DRC is not yet connected in the system. We would wish to be connected in the next season if possible.

**(iii) Conclusion**

According to financial and war situation that DRC pass through, many researchers had to leave the field of PGR and others are near retirement. The DRC would wish to bring up to date his researchers' staff in the field of PGR by training young researchers who need to develop in PGR programme.

The official language in DRC is French which in a way handicaps full interaction with network partners given that English language is in common use. DRC would therefore

wish to train the new staff, with some English knowledge, to Masters and PhD level, in English-speaking country to allow them to master this language.

After, more than twenty years of DRC political instability and war, a lot of trained people have been lost resulting in the loss of a lot of information and plant genetic materials. We hope that this opportunity given by SPGRC will allow to DRC to revive her research programme.

# Lesotho

## A. General

### (i) NPGRC Staff

The staffing level changed with the retirement of one field attendant. As reported last year, the position of the resigned *in-situ* officer remains unfilled.

### (ii) National Plant Genetic Resources Committee (NPGRCom)

The Lesotho NPGR committee did not hold any meeting during the year. However, there were informal and individual meetings between members to discuss matters of interest to the Committee.

### (iii) Training, Workshops, Meetings

- The Curator attended the Biodiversity, traditional knowledge and intellectual property workshop held at Cape Town, in South Africa from November 11-13, 2013
- The Curator attended CCARDESA General Assembly held in Botswana, Gaborone in April 2014
- The Curator attended Agricultural Science and Technology indicators technical review and planning workshop for East and Southern Africa held at Laico lake hotel, Entebbe, Uganda from October 16-17, 2013
- The Curator attended Conservation Agriculture conference held at Drakensville in South Africa from September 01-04, 2014
- The Laboratory Technologist attended a two months workshop on Plant
- Biotechnology and Mutation breeding through use of nuclear energy, in Vienna, Austria
- Documentation Officer is a member of Biodiversity and Protected Areas Working Group
- All staff attended a two-day Stakeholder workshop at 'Melesi Lodge' to revise and validate the Draft National Seed Policy

**Visitors**

- SPGRC Documentation and Information Technical Officer, Mr Mike Daka in November 2013 to conduct induction training to the NPGRC staff about the newly programmed Web-SDIS
- SPGRC *Ex-Situ* Officer, Mr Lerotholi Qhobela in August 2014 to conduct an evaluation of network in Lesotho
- The Honourable Minister of Agriculture and Food Security had an opportunity to tour facilities of the NPGRC during his visit to the Department of Agricultural Research
- Students from local Primary and High schools visited the NPGRC, The purpose of the visits are to tour the NPGRC facilities and familiarize visitors with activities of the NPGRC

### (iv) Equipment and Facilities

With the exception of the faulty photocopier, label printer, and a seed drying cabinet, most of the equipment is in good working condition.

## B. Technical Report

### (i) *Ex-situ* Conservation

It was reported that the active collection holds 1,519 accessions. Out of a total of 17 fridges, 9 freezers hold active material largely comprising cereal and leguminous crops.

No accessions were deposited at SPGRC during the reporting period because no multiplication was done and no collection missions conducted.

### (ii) Multiplication and Characterization:

None of them conducted during the reporting period.

### (iii) Field Genebank Maintenance

The field maintains 64 different species of the indigenous medicinal plants and species of socio-economic importance. The collection is anticipated to increase with material collected from Metolong dam.

### (iv) Germplasm Collection

One day collection trips of wild species were conducted targeting vegetable seeds of *urtica sp.* (bobatsi) and *Rorripa sp.* (Papasane).

### (v) Documentation/SDIS

***Documentation and Information***

About 428 records were entered in the SDIS modules including germplasm Collection Information System and Active Collection Modules.

***Internet Access***
NPGRC has access to the department's internet connectivity, but currently the internet is not accessible due to electricity technical problems at the block where the server is located.

### (vi) Utilization of plant genetic resources

Four accessions of beans, pumpkins, peas and lentils were distributed to an NGO for seed multiplication. The NPGRC also received a request of beans and soyabean seed from a farmers' organization – Growing Nations

### (vii) General Constraints

- Power supply interruptions
- Lack of seed drier
- Inadequate local funding
- Underutilization of materials from the genebank

## 6. Requirements

The NPGRC requests for a germinator, a laptop, colour chart, seed counter, moisture analyzer, aluminium foil bags (large, medium, small), and carton boxes. It also needs a laptop, and a video camera. The genebank is also in need of a computer dedicated for SDIS.

# Malawi

## A. General

Since its inception, the Centre has collected about 4,613 accessions, of which 4,097 are seed samples, and 516 vegetative samples. Samples were collected from 1,001 plant species (32 crop and 969 tree species).

### (i) Staffing

During the reporting period, the Malawian NPGRC Curator, Mr Lawrent Pungulani continued with PhD study programme in New Zealand.

The genebank has four technicians, five research attendants, and 5 part time labourers.

### (ii) Equipment and Facilities

The Centre requested for pollination bags, carton boxes, and aluminium foil bags (medium and large sizes).

## B. Technical Report

### (i) Characterization, Multiplication and Rejuvenation

The NPGRC characterized about 190 accessions of different crop species (sorghum-110, pearl millet-30, and rice-50) and data cleaning was in progress at the time of reporting.

The gene bank regenerated/multiplied a total of 392 accessions of different crop species (ground yams-60, air yams-1, Livingstone potato-13, sorghum-84, pearl millet-48, bambara nuts-26, amaranths-1, okra-2, sesame-11, beans-1, cowpeas-52, green grams-6, cowpeas-5, pigeon peas-6, hyacinth beans-10, lima beans-1, finger millet-8, maize-15, green grams-1, groundnuts-16, pumpkins-28, and Hibiscus-3) at Chitedze, Makoka and Chitala research stations.

### (ii) Germplasm Collection

The Genebank has collected 201 seed samples (maize-95, rice-100 and wild cowpeas-6) all of which are under donor support- APPSA projects and FAO.

### (iii) Safe Duplication

Over 200 samples were ready for duplication to the Base Collection at the time of reporting; whereas, 56 samples of maize had already been shipped to SPGRC.

### (iv) Documentation and Information

The new machine dedicated to hosting SDIS was installed with the database and staffs are able to input and retrieve data.

### (v) *In-situ*/On-Farm Conservation of Landraces

Most on-farm activities are supported by PR219 project under which 20 on-farm conservation sites for sorghum, pearl and finger millet, yams and cowpeas have been established. Through the project, 34 demonstrations and 3 field days in three sites have been conducted. About 400 lead farmers were trained in on-farm conservation and seed production and six (6) seed multiplication groups were formed.

The project has successfully reached out to over 2,000 farmers and as a means of dissemination, has done a documentary (radio and video) for one site.

### (vi) Resource Mobilization

The Malawian NPGRC managed to source US$ 280,000 from Agricultural Productivity Project for Southern Africa (APPSA) of which US$ 80,000 is allocated for rice research and the remainder (US$ 200,000) is for maize research.

The NPGRC has also been invited to submit one full proposal-ITPGRFA.

### (vii) Challenges

- On farm work documentary not done for most of the activities. Assistance needed.
- Management (few staff)
- Mobility
- Equipment (drier and cold room)
- Diminishing Genebank space

## Mauritius

### A. General

The National Plant Genetic Resources Unit (NPGRU) forms part of the Crop Division of the Ministry of Agro Industry and Food Security except for a period of six months (February – August 2014) when it was under the Agronomy Division. It consists of a Seed Gene Bank located at Curepipe, and a Field Gene Bank located at Nouvelle Decouverte.

### (i) Staffing

The NPGRU is under the responsibility of the Divisional Scientific Officer (DSO) Mr. N. Gopaul of the Crop Division except for the period February to August where it was under the Divisional Scientific Officer of the Agronomy Division.

Mrs N. Suntah is currently the Officer in charge of Seed Gene Bank,Curepipe PGR Unit.

### (ii) NPGRC Committee

No NPGR committee meeting was held during the reporting period.

### (iii) Training, Workshops and Meetings

No representatives attended any meeting. Board member Mr.N.Gopaul could not attended the Board meeting as air ticketing could not be done in time.

### (iv) Visits

There were no visitors from SADC who came to NPGRC.

**(v) Equipment, Supplies and Facilities**

***Transport/ Logistic Facilities***
The motor vehicle donated by SPGRC is still in good running condition.

***Status of freezers***
The Seed Genebank is currently equipped with 16 vertical freezers and all are in working order. Storage space is adequate.

***Status of Equipment***
The germinator is fully operational and is used in the seed viability determination. The seed grinder has been replaced by a new one and the two dehumidifiers and two sealers are all functional. The moisture content analyser is out of order since March 2014.

List of apparatus/equipment required:
- One seed counter machine
- One seed drier
- One Royal Horticultural Society's (RHS) or Methuen Colour chart
- Pollination bags (for bigger sized crops like cauliflower, *etc.*)
- Aluminium bags (for long term storage)
- One electronic balance

**(vi) Constraints**

***State of Laboratory Plant/Equipment***
In the absence of a drier, sun drying of seeds was effected.

***Seed Viability and Seed Quantity***
The NPGRC is aware of its gap filling commitment for safety base duplicate collection to be deposited at SPGRC. Poor seed viability was observed in old seeds and the Seed Genebank is looking forward to remedy the situation through regeneration and multiplication of the accessions.

***Staff movement***
No replacement has been made for staff who have left the Unit (one Technical Officer and one general worker in 2010, one Technical Assistant -field in 2013).

***Land Resources***
The multiplication and regeneration of the accessions are carried out mainly on Government stations. Land area has been decreasing due to distribution to the farming community and consequently has limited the area under cultivation for PGR activities.

**B. Technical Report**

**(i) Germplasm Conservation**

Twenty two new accessions were collected during the reporting period, thus making a total of 538 accessions that have been registered at NPGRU.

A total of 40 accessions of different families: *Alliaceae*, *Amaranthaceae*, *Apiaceae*, *Brassicaceae*, *Cucurbitaceae*, *Fabaceae*, *Poaceae*, *Solanaceae*, and *Malvaceae* have been collected and will be deposited at SPGRC during planning meeting, September 2014.

**(ii) Regeneration and Multiplication/Characterization**

During the period under review, regeneration and multiplication exercises were ongoing for accessions with poor germination and inadequate quantities in the seed genebank. During this reporting period, 70 seed and 32 vegetative accessions were targeted for regeneration/multiplication and maintenance for the period September 2013 to August 2014.

From the regeneration/multiplication programme (September 2013- August 2014), the following has been achieved:

- 21 seed accessions and 3 vegetative accessions were harvested
- 27 seed accessions were still in the field at various stages of growth
- 29 vegetative accessions still in field and were to be harvested in September - November 2014
- Seeds of 22 accessions failed to germinate

(iii) **Field Genebank maintenance**

Several vegetatively propagated accessions were conserved as live plant specimens in the field at Nouvelle Découverte Plant Genetic Resources Unit zone and Peach palm at Curepipe Experiment Station (Cpe ES) both in the Superhumid Zone and Subhumid zone (Richelieu Experiment Station).

The field genebank holds the largest collection of sweet potato accessions in the country. Other accessions consisting of vegetatively propagated crop species are maintained on different stations namely, Roches Brunes Seed Production Centre (RBSPC) and Barkly Experiment Station (BES). These include accessions of garlic, *Dioscorea* spp., ginger, mango ginger and turmeric.

# Mozambique

## A. General

### (i) Staffing

In terms of staff complement, there were no changes during the reporting period.

### (ii) NPGRCom

No meeting was held since last year, and there was no change on the Committee composition.

### (iii) Training, Workshops and Meetings

- Mr. Francisco Reis and Mr. Aurélio Banze from the National Herbarium attended 1 week short training course on *Collecting, handling and long term conservation of seeds of wild species related to crops*, during 11-15 August, 2014 in Uganda.

- Mr. Francisco Reis still pursuing his degree studies at Universidade Pedagógica (UP) in Maputo, Mozambique.

- April 2014, Dr. Paulino Munisse, Ms. Carla do Vale and Mr. Abilio Virissimo attended the *National Roving Seminar on Making Better Use of IP for the Business Competitiveness and Development in Africa* organised by ARIPO in cooperation with the Goverment of Mozambique. This seminar was held in Maputo, Mozambique.

- May 2014, Dr. Paulino Munisse & Mrs. Eugenia Tembe attended the meeting on *Implementation of National Biosafety Frameworks,* held in Addis Ababa, Ethiopia.

- July 2014, Dr. Paulino Munisse attended the *7th Session of the Intergovernmental Technical Working Group on PGR for Food and Agriculture* held in Rome, Italy.

- June 2014, All NPGRC personnel attended the 1st Coordination Meeting on *Rice Germplasm Collection and Characterization* (Agriculture Productivity Program for Southern Africa - APPSA Project) at IIAM Maputo, Mozambique.

- July 2014 Dr. Paulino Munisse attended the *6th National Conference on Rice*, held in Gaza, Mozambique.

**(iv) Visitors**

During the reporting period, the NPGRC received the following visitors:
- Mr. Stuart Cable, from the Kew Botanical Garden, (Millennium Seed Bank)
- Mr Lerotholi Qhobela – SPGRC Senior Programme Officer, Lusaka, Zambia
- Alex Owusu-Bine, GEF Coordination, Nairobi, Kenya
- Students from the Instituto Superior Politecnico de Chokwe, Gaza, Mozambique

**(v) Equipment and Facilities**

Through SPGRC/FAO-TCP funding, the NPGRC received the following equipment and supplies in September 2014 whuich however, was still being cleared with the Mozambican Customs:
- 1 Sealer machine
- 20 boxes Aluminum foil bags for seed storage 15 x 210 mm
- 15 Potassium nitrate 500gr
- 15 Hydrochloric acid 2,5 L
- 15 Nitric acid 2.5 L
- 15 Sulphuric acid 2.5 L
- 15 Hydrogen peroxide 2,5 L

**(vi) Requirements**

The NPGRC is in need of the following items: GPS, altimeter, 3 air-conditioners, aluminium foil bags, thermometers, one laptop computer, pollination bags and a 4x4 utility vehicle.

**(vi) Constraints**

The transportation to the field plots or collection target sites is still a challenge to the NPGRC due to lack of reliable transport.

**B. Technical Report**

**(i) Germplasm Conservation**

Currently, the NPGRC holds a total number of 2,869 accessions, comprising various food crops, namely cereals, legumes, cucurbits, millets and other minor crops.

**(ii) Regeneration and Multiplication/Characterization**

During the period under review, no regeneration and multiplication/characterization activities were conducted at the NPGRC. The transportation to the field

plots/collection sites still a challenge to the NPGRC. There is an urgent need to acquire a new vehicle.

**(iii) Field Genebank Maintenance**

The field genebank activities of IIAM are conducted in various sites throughout the country, with the Umbeluzi Research Station being the closest site to the NPGRC. This station is located about 28 Km drive from Maputo and the main crops maintained at this field genebank includes cassava and sweet potato clones. Those activities are carried out by the Root and Tubers unity of IIAM in collaboration with the CGIAR centre, the CIP - Mozambique office which is also based at IIAM.

**(iv) *In-situ*/On-Farm**

The IIAM in partnership with the Northeast Zonal Centre (CZNE – Lichinga) and South Zonal Centre (CZS- Inhambane) organized 2-3 field days during 2014. While the first event was organized by the Northeast Zonal Centre (CZNE – Lichinga), a station based at Niassa province (Northern Province), the second event was held in South Zonal Centre (CZS- Inhambane). The main objective of these 2 events was to present the current activities, achieved outputs and future plans for the coming years.

The event in Northeast Zonal Centre had the participation of about 150 people, including technicians from various units of IIAM (Northwest Zonal Centre, Northeast Zonal Centre, and South Zonal Centre), technicians from EMBRAPA and JICA, Provincial Directorate of Agriculture, political representatives, producers and students of the University Unilurio. The participants visited experimental fields whose research work focused on the soil fertility and introduced plant varieties from EMBRAPA. They also visited experimental fields of multiplication of cowpea accessions under the management of Lichinga Research Station. There were exhibitions of products and posters reflecting the main results achieved by the research centre.

The event in the South Zonal Centre had a total of 100 participants drawn from the various stakeholders, namely, researchers from IIAM, small and medium scale farmers and representatives from the NGO's and universities and Agriculture Services. The participants saw demonstrations of the fruit trees propagating material (from seed selection, germination and grafting) and visited field genebanks of cashew and mango trees, the nurseries of cashew trees, experimental plots of beans and cassava. Thereafter, the group participated in an open discussion session on various aspects of the ongoing activities in station. It was highlighted the need of paying more attention to the area of citrus and coconut germplasm and the importance of accessing the technological packages provided by the research sector. It was also mentioned that, more intervention from the research sector should be done on cassava, a major source of income and food in Inhambane province.

**(v) Germplasm Collection**

Under the APPSA Project, Mozambique has conducted one germplasm collection mission in the Province of Zambézia (Districts of Namacurra, Nicoadala, Mocuba, Quelimane e Maganja da Costa). The work consisted on collection of representative seed samples mainly from the farmers' fields and gathering of local knowledge associated with germplasm.

A total of 45 accessions of local germplasm of the cultivated rice (*Oryza sativa* L.) were collected, properly documented using IRRI collection forms and kept at NPGRC for conservation and further use in rice improvement programme. Some of these accessions were referred to by farmers to have interesting traits such as good taste, aroma and defense mechanisms against attack by birds.

**(vi) Documentation and Information**

Currently, the NPGRC has registered manually a total of 2,869 accessions. Out of that 2,314 accessions have been computerized using the SDIS software. The NPGRC has access to a reliable internet connectivity.

**The Rice Germplasm Collection Characterization and Conservation Project (APPSA)**

The Rice Germplasm Collection Characterization and Conservation Project under the Agricultural Productivity Program for Southern Africa (APPSA) have been launched in 3 SADC countries, namely Malawi, Mozambique and Zambia. This project aims to prevent the loss of indigenous valuable rice germplasm and to broaden the genetic basis of rice to address the farmer needs for increased productivity, preference and crop resilience to changing environment in the target countries

Mozambique, as the Project Principal Investigator, organized the First Coordination Meeting of this project held in May, 2014 in Maputo with the aim of gaining a common understanding of the Project, to agree on harmonized activity implementation plan as well as to develop common regional indicators for the project. The main output of the meeting was development of harmonized project documents including common full project document, work plan and budget, logical framework and result-based logical framework and completed environmental safeguards. The meeting was successful as it addressed a number of issues related to project implementation such as harmonization of project activities, methodologies and also enabled precise definition of the project result frame.

# Namibia

## A. General

As mandated by SADC Plant Genetic Resources (SPGRC), the Namibian National Plant Genetic Resources (NPGRC) has been conserving the genetic materials for their immediate or potential usefulness to humans, in breeding or in some other form of research or development as per prescribed standards.

### (i) Staffing

The NPGRC form part of the National Botanical Research Institute, residing under the Directorate of Forestry of the Ministry of Agriculture, Water and Forestry.

The staffs of the NPGRC are as follows:

- Ms R. Hilukwa – Curator, Agricultural Researcher
- Ms K. C. Sikute - Agricultural Research Technician mainly responsible for supporting research activities and manage the technical aspects of the genebank
- Mr E. Lucas - Senior Technical Assistant

The former Curator of the Genebank, Ms S. Loots has now been transferred to become the Coordinator of the Threatened Plants Programme.

### (ii) National Plant Genetic Resources Committee (NPGRCom)

There were no reported changes in the NPGR committee, but the committee has been dormant for some years. The NPGRC will have to review the members and only select people capable of serving on this committee.

### (iii) Training, Workshops and Meetings

- R. Hilukwa studying Forest Ecology
- K.C. Sikute and R. Hilukwa attended two meetings (November 2013, July 2014) for the BSF
- K.C. Sikute attended a short course of Biodivesity, Traditional Knowledge and Intellectual property

### (iv) Equipment, Supplies and Facilities

The NPGRC possesses two 4x4 vehicles running vehicles. There are a total of 48 upright freezers in the NPGRC of which 21 are filled. The NPGRC has four computers one of which is faulty and one printer in working order. It has two faulty dehumidifiers.

### (v) Awareness seminars

During the year, the NPGRC was visited by different schools, several tertiary institutions from Namibia and delegates from Argentina. Mrs T. Lupupa (Senior Officer from SPGRC) visited the NPGRC and conducted a field trip to Zambezi Region.

## B. Technical Report

### (i) *Ex situ* conservation

***Germplasm Conservation***
The NPGRC added 48 new accessions to its collection out of which 21 were crop and 27 crop wild relative species. The number of accessions in the national collection thus increased from 3,984 to 4,032.

The total accessions in the Genebank consist of 50.5% crops and the rest are wild species, which will not be multiplied or characterised in the near future.

***Germplasm Multiplication***
The NPGRC multiplied 5 accessions of *Citrullus lanatus* 2 of which performed very well.

***Distribution of Requested Germplasm***
About 800 accessions of *P. glaucum* were given to a Master's student (genetic diversity studies) and 1 accession of *P. glaucum* and 4 accessions of *C. lanatus* were also distributed to other users for research and development purposes.

In order to expedite clearance for distribution of germplasm materials, the NPGRC formed a Mini-Committee for the purpose and it met a number of times executing its assigned functions.

***Germination Tests***
The NPGRC managed to carry out germination test of 38 *P. glaucum* (genebank) and 18 accessions scored below 85%. Further test will be carried out to verify these results. The NPGRC also collaborated with the Division Plant Production Research, Section Agronomy and Horticulture by assisting them with germination of 11 breeder's material.

### (ii) *In situ*/On-farm Conservation

***In-situ* Conservation**

The Zambezi region where most of the *in-situ*/on-farm conservation activities are directed consist 15 Rural Development Centres of which 6 were visited. During the visits, in company of SPO-*in-situ* and Agricultural Extension Officer, 21 maize samples were collected of which 15 were maize, 3 cucurbits, 1 *Lagenaria* sp. and 2 sorghums.

The visit to the region provided opportunity to administer the pre-tested questionnaire on farming practices where farmers were asked on what they grow, top 5 crops and why, seed selection, preservation, rare and lost crops. They were also asked on what were the rare and lost crops for which they responded as being *Sorghum bicolor* (short white and red and burnt down head), cassava, sweet potato, melon *lunobu* and Livingstone potato.

As a gesture of appreciation for their contribution to conservation, farmers received sorghum and pearl millet seeds from the Genebank.

**(iv) Documentation and Information**

**SDIS**
The NPGRC reported that its SDIS was manually registered with 3,972 accessions whereas the overall accessions number for the Genebank now stands at 4,032.

The genebank updated SDIS with characterization data (80 accessions) and entered 43 accession's Collection data into SDIS.

While the desktop computer was reported not working, the overall Internet access is rated reliable at the Genebank. Namibia reported to had received two hard drives (for the database server) from Sweden (NordGen/Sida) to replace the 'lost' disks.

# South Africa

**A. General**

**(i) Introduction**

The NPGRC was engaged in manually sorting and arranging accessions and samples in the seed genebank/storage facilities and therefore there were no new accessions entered on SDIS for the period under review. Excel spreadsheets used to capture data at the moment.

One chest freezer is allocated specifically for samples from MSB project. Excel spreadsheets with summary of the collection data was created.

**(ii) Staffing**

There were no staff changes for the NPGRC during the reporting period. Scientific technician (*In situ* officer) post has been advertised and short-listing has been done.

Ms. Natalie Feltman (Scientific Manager for PGR) in South Africa has been promoted to Director of Biodiversity and Bio-prospecting at the Department of Environmental Affairs.

**(iii) National Plant Genetic Resources Committee (NPGRCom)**

No meeting held.

**(iv) Training Workshops, Meetings**

- Ms. Feltman and Ms. Maluleke attended CWR Inception workshop in Lusaka in April 2014.
- Ms Maluleke, Mr. Phora and Ms Moeaha attended collection briefing session in North West prior to actual collection.
- Ms. Maluleke, Mr. Phora and Ms. Moeaha attended few meetings with ARC and SANBI officials regarding the implementation of the CWR Toolkit
- Mr. Moila and Mr. Mukoma attended a briefing session on implementation of *on farm* conservation project in Mpumalanga Province.
- Ms Manamela still pursuing her PhD studies with WITS on Cryopreservation of sweet potato

**B. Technical Report**

**(i) *Ex-situ* Conservation**

No multiplication and/or characterization activities were performed during the 2013-2014 season.

The Buffelspoort Quarantine Station (Directorate Inspection Services) was reported to have now been assigned for multiplication, regeneration and characterization activities.

***Tissue-culture***
The NPGRC maintains 27 accessions of sweet potato.

***Cryopreservation***
The process of developing a cryopreservation protocol for three accessions of sweet potato is still under investigation. At the moment, the protocol requires further modification.

***Multiplication & Characterization***
While the NPGRC multiplied 40 accessions each of *Zea mays* and *Arachis hypogaea*, it also multiplied 30 accessions of *Vigna unguiculata.* Additionally, it multiplied and characterized 50 accessions of *Vigna subterranean*.

**(ii) *In-situ*/On-farm Conservation**

***On-Farm Conservation***
In line with the strategic plan of DAFF, 124 seed samples were repatriated to 54 farmers (i.e: Phakani, Mvangatini; Malekutu; Mbonisweni;Chweni; Luphisi and Mahushu Trust) all located in Mbombela Municipality of Mpumalanga Province. As an incentive, a once-off five hundred rand (R500.00) was paid per seed sample repatriated.

While the project is continuously being monitored for progress, there are many challenges faced. These include the fact that farmers are still working as individuals therefore there is a need for them to establish a working committee so that they can get well organized to run the project. Mpumalanga province is currently declared a disaster area due to the heavy rains that the province received since last year. The rainfall has contributed negatively to the growth of other crops especially landrace maize. The participating farmers need more seeds from NPGRC, which is currently a very big challenge as there is no enough seed material to distribute.

**(iii) Germplasm Collection**

In the course of preparations for germplasm collection, farmers briefing session was conducted in four villages in North West Province and later on one successful mixed

collection mission was done in 2013/2014 in Bojanala district from where 22 samples were collected and added to the genebank collection.

**(iv) Community Seed Banks**

Two Community Seed Banks are in the process of being constructed: one in Sterkspruit in Eastern Cape Province where a site has been identified and a guard house will be used, temporarily; and in Mutale in Limpopo Province where also a site which is residential has been identified, thus needs to be changed to commercial use first.

Briefing session on seed genebanking procedures, in Mutale, Limpopo and Sterkspruit, Eastern Cape, were undertaken by Bioversity officials.

**(v) Externally-Funded Project**

South Africa reported on the EU-ACP project -"*In-situ* conservation and use of crop wild relatives in three ACP countries of the SADC region (Mauritius, South Africa, and Zambia). The ARC has had discussions with participants on technical aspects of the workplans and signed Letter of Agreement (SLA) between DAFF and ARC and SANBI detailing their duties in this project. It is presently identifying methodology and criteria for the prioritization of the checklist, prioritizing checklists to create national inventory, and listing sources for collecting existing data about distribution, demography, species biology, threats, genetic diversity, conservation status, traditional knowledge, local uses, of the priority CWR. A follow-up action is training on *in-situ* conservation due to take place in November 2014 in Mauritius.

**(vi) Field Genebanks**

The South African NPGRC has three facilities (two shade- and one glass houses). Monitoring and management of crops is being done regularly by NPGRC officials, although the maintenance of the structures is difficult due to budget constraints.

**(vii) Distribution of Germplasm**

A number of germplasm accessions were requested for and distributed to University of Kwazulu Natal (pigeon pea) and ARC (okra) for research and development purposes. Two articles on *Sorghum* accessions from NPGRC published by Ms Mofokeng (UKZN).

**(viii) Documentation and SDIS**

As reported above, re-arranging accessions and samples in the seed genebank/storage facilities thus no new accessions entered on SDIS for the period under review.

# Swaziland

## A. General

### 1. Introduction

The continued crop failure in dryland crop production due to changing weather patterns is Swaziland's major challenge which threatens food and nutrition security with an increasing population growth. This necessitates continued exploration of adapted and sustainable agricultural practices and food production technologies that can enable the country to address challenges confronting its people so as to sustain and increase food production and productivity.

## A. General Progress

### (i) Staffing

There have been no changes in staffing in the NPGRC as it is still manned by the Curator and a Technician. Efforts to requests for additional staff continued during the 2013/2014 as well as the 2014/2015 season.

### (ii) Membership and Strengthening of NPGRCom

During the year under review, Ms. Zodwa Mamba who was the Chief Research Officer for Department of Agricultural Research and Specialist Services retired. Mr Victor B. Simelane left to further his PhD studies on Plant Breeding with the University of the Orange Free State in March 2013. These altered composition of the Committee.

Once again, there was no meeting held by the NPGRCom during the past season.

### (iii) Meetings, Trainings and Workshops

The following trainings and workshops were attended during the season under review.

- The Curator attended the 5th Session of the International Treaty on Plant Genetic Resources for Food and Agriculture which was held in Muscat, Oman, on 23 – 29th September 2013
- Senior Programmes Officer (SPO) for Conservation at SPGRC visited the NPGRC from the 4th to 8th August 2014

### (iv) Equipment, Supplies and Facilities

It was reported that most of the genebank's equipment was working except for continuous ice accumulation on outside pipes on the freeze drier. The grinder is faulty and the standby electric generator has a battery charging problem and thus both need attention.

## B. Technical Report

The NPGRC, during the 2013/2014 cropping season, accomplished the following activities:

### (i) *Ex-Situ* Conservation

***Germplasm Conservation***

The NPGRC collected 11 *Amaranthus spinosus* samples from kaLanga. This targeted collection exercise was undertaken after discovering that the Amaranth species was missing in the Genebank. A collection of other samples of *Amaranthus spinosus* in other parts of the Lowveld at Ubombo Sugar Ltd is yet to be conducted; hopefully will be done before the end of October 2014 as the Curator is currently engaged in other important research duties which include data collection, entry and analysis in preparation for annual results presentations. The number of accessions conserved by the NPGRC now stand at 996 accessions.

***Germplasm Multiplication***

While 95 cowpea accessions were multiplied for the purpose of increasing seeds and some crop advance research, the NPGRC also multiplied 20 pigeon pea, 15 lablab and 20 mucuna accessions for crop advancement research.

### (ii) Maintenance of germplasm in Field Genebanks

The NPGRC continued with monitoring vegetatively propagated crop germplasm of cassava and sweet potato at the Malkerns Research Station field genebank. Cassava germplasm was further re-transplanted.

### (iii) Distribution of requested germplasm

Four (4) requests were made by farmers for a total seven (7) maize germplasm and one (1) pearl millet and were fulfilled for home use. These include three yellow maize, 2 purple and white maize, one (1) while maize, and one pearl millet. Requestors indicated that they needed these samples for restoration of their lost indigenous germplasm.

### (iv) *In-situ*/On-Farm conservation

There were no *in situ/* on-farm activities implemented during the 2013/2014 cropping season in Swaziland partly due to the ongoing staffing and transport challenges.

### (v) Documentation and Information

***SDIS***
There was no work accomplished on the SADC Documentation and Information System (SDIS).

***Information Dissemination***
The NPGRC Curator who also doubles as Research Officer in the Department of Agricultural Research and Specialist Services (DARSS) participated in the 2013/2014 results presentations for the DARSS in September 2014. A presentation on the results of a research experiment on comparison of tillage methods was presented in a seminar to different stakeholders from the Ministry of Agriculture and its parastals, the University of Swaziland, and Non-governmental Organizations.

***Internet Access***
The NPGRC Internet is functional except on certain occasions especially in the afternoon when it becomes very slow or connection times out, probably due to high traffic.

### (vi) Other Research Activities

**Maize-by-Legume Rotation Conservation Agriculture Trial**
*Role of Plant Genetic Resources in conservation agriculture*
For a long time, agricultural development has been driven by and reliant on very few crops. However, adverse weather conditions have resulted in scientists and politicians to consider promoting the adoption of climate-smart agricultural practices such in-field rainwater harvesting and conservation agriculture.

As a result, the potential role of selected legume crop accessions and conjunction with maize are being investigated for crop rotation as well as cover cropping in a long term trial. The various legumes include common bean, cowpea, groundnuts, mungbean, lablab, velvet bean, pigeon pea, sesame as well as sunhemp.

The results on the effect of the eight NPGRC legume crop accession treatments planted during the 2012/2013 season on the agronomic performance of the maize that was planted during the 2013/2014 cropping seasons shows that nutritional and structural contribution of each of the legumes towards improvement of the soil was insignificant. Indeed, one would expect the legumes to normalize variation that could have existed in the field before, prior to them showing their contribution or influence through the succeeding crop. Thus as no meaningful conclusion can be drawn from this trial after only one year of implementation; it is therefore recommended that the trial be continued in the next cropping seasons.

# Tanzania

## A. General

### (i) Staffing

During the report period, there has been a slight change in the staff status at the NPGRC, where Mr. Mungure have been appointed to head Tropical Pesticides Research Institute (TPRI) Dar es salaam office.

### (ii) Meetings, Workshops, Trainings

- Dr. M. Mollel attended the 5th Session of the International Treaty on Plant Genetic Resources for Food and Agriculture which was held in Muscat, Oman, on 23 – 29th September 2013
- Mr. L. N. D. Mapunda - Training in PGR Management, in October 2013, ICRISAT, Patancheru
- Mr. L. N. D. Mapunda – training in ABS by the Environmental Evaluation Unit at the University of Cape Town, in Zanzibar
- Mr. E. Mausa - a 3 month training on Laboratory techniques used in Morphological and Genetic characterization in South Africa
- Dr. M. Mollel, attended an ITPRFA meeting in Oman, October 2013
- Dr. M. Mollel, attended Biosafety meeting in Dar es salaam, September 2014
- Dr. M. Mollel, Mr. Mapunda and Hamisy – attended a meeting on finalization and extension of MSBP project, between UDSM, NHT, TTSA, Kew-RBG and NPGRC, Arusha

***Trainings/Short courses***

- Mr. S. M. Kabululu, Mr. E. Mausa and Ms G. Kanyairita are attending studies at various graduate levels at Mandela University - Arusha, Sokoine University of Agriculture – Morogoro and in USA respectively.

### (iii) National Plant Genetic Resources Committee (NPGRCom)

Due to lack of funds, no NPGRCom or Crop working Groups meetings was held during the period under review.

### (iv) Constraints and Material Requirements

- The centre is facing a problem of storage facilities both freezers and working space to cope with the number of the collected accessions
- The vehicles which the centre has are too old, hence the need for a new motor vehicle is crucial
- There is a need for renovating available green and screen houses as they are in very bad shape
- The SDIS database system presents some technical difficulties on data export to Excel
- We have very limited funds for general operation of the centre's activities

## B. Technical Report

### (i) Exploration and Collection

During 2013/14, NPGRC has implemented two collecting missions of wild seed collection and exploration under MSB/Afro-montane project funding, covering Mount Meru and Kilimanjaro parts of Tanzania. A total of 7 accessions were collected from Mt. Meru. In total, 123 seed accessions were collected and would be duplicated to KEW Royal Botanical Gardens.

Collected species included *Euryops brownei*-1, *Senecio telekii*-1, *Senecio purtschelleri*-1, *Erica kilimanjari*-2, and *Erica meruensis.*

The NPGRC deposited 546 rice accessions weighing 31 Kg at the Base collection at SPGRC during the planning meeting.

**(ii) Multiplication, Regeneration and Characterization**

During the reporting period, the NPGRC regenerated and characterized a number of accessions of different crop species that include: tomatoes (14), Solanum (4), Capsicum (12), Brassica (7) and Hibiscus (16) were planted and harvested at Madiira, Arusha. Other crop species were characterized and regenerated at Miwaleni (Moshi) which included: Sorghum (30), Eleusine (14), common beans (39), *Vigna aureus* (40), and groundnuts (94). All crops have been harvested and processed for conservation. Data for characterization is being processed. The Centre also multiplied two (2) finger millet varieties at Miwaleni, Moshi. This was was done for the purpose of increasing seed for the two varieties which were distributed to farmers under HOPE project in Iramba and Kondoa.

**(iii) On-farm Conservation**

The on farm conservation project for the selected Neglected and Underutilized Crop species (NUCS) (finger millet, cucurbits and yams) started in 2012, with the financial support from the Commission for Science and Technology (COSTECH). The project aimed at responding to major problems of genetic erosion facing the named plant genetic resources on farmers' fields, as well as enhancing the potential of utilizing these resources in fighting against food insecurity, malnutrition and the impact of climate changes among the resource-poor rural communities in Tanzania.

In terms of progress made, the Project had its data generated in the first year processed/analyzed and three publications written, awaiting for submission to publishers. From the reports, the project observed that the study area harboured a considerable diversity (number of landraces) for the selected species (finger millet-10, cucurbits-9, yams-18); whereas, in terms of usage, the species were used by communities for food, cooking oil, medicinal, traditional ceremonies and for sale.

It was noted that local communities in the study villages have a tremendous wealth of indigenous knowledge with regards to the use and management (practices) of these resources. The practices vary between study communities, as well as between the landraces of the same plant. The communities identified some useful traits among the identified landraces some of which included high yield and drought resistant. High variability for the traits exists between landraces of the same species.

In general, at species level, all the species were commonly grown by large number of households in small land areas, a common characteristic for most indigenous crop species. However, for yams, the rate of genetic erosion was high as to the large extent; the crop is grown by few farmers (52 %) in small land area. The rate of genetic erosion varies between the landraces within the species.

The identified practices play a very useful role in enhancing livelihood among the rural communities. Some of these practices include enhaced diverse uses of farmers' varieties whereby communities strategically grow a mix to rip the inherent benefits of the species. In terms of increasing the resilience of the system, some farmers plant early to adapt to changing climatic condition, intercropping enables farmers to avoid risks in case of crop failures due to drought, insect pests and diseases as well as market fluctuations, seed treatments for yams and cucurbits is a protection against storage pests, drought resistance enables the crops to adapt to the changing climatic condition.

During the report period, two trainings were planned for the District Extension Officers and farmers. The aim of the training was to equip the district extension officers and farmers with knowledge and skills on the conservation of plant genetic resources on farm (On farm seed production, handling and community seed bank management.

**(iv) On Farm Trial**

During the report period, tending of the first years trial was carried out in the project villages in Liwale, Mtwara rural, Newala and Mbinga (weeding, earthling of the yams). Data collection and harvesting of the crops (seeds and tubers) was done. The seeds (finger millet and cucurbits) and tubers (yams) were stored in the group leaders' homes.

Second year field trials for finger millet, yams, cucurbits and Plecthranthus were established in six villages in Liwale, Mtwara rural, Newala and Mbinga district in October 2013. The major activities involved identification of trial sites in collaboration with district extension officers and farmers, development of activity plan, field establishment and management (Weeding, Thinning, staking, manure application) and data collection.

Genetic materials for molecular characterization were collected from the trial sites, DNA extraction and further analysis is waiting for the arrival of the reagents to be purchased by Tropical Pesticides Research Institute (TPRI).

**(v) Germplasm Distribution**

During this season NPGRC managed to distribute a total of 93 accessions to AVRDC, which included Amaranth (5), Curcubita (25), *Glycine max* (9), *Cleome gynandra* (3), Solanum (6), Lagenaria (15) and 30 other accessions.Other distribution include, pigeon peas (80), sorghum (124) and cowpea (68) accession which were distributed to KARI, SUA and Hombolo.

**(vi) Genetic Enhancement**

In collaboration with Africa Biodiversity Conservation and Innovation Center (ABCIC), Nairobi Kenya, NPGRC is implementing a project namely, Varietal Diversification to Manage Climate Risk in East Africa.

Under Government-COSTECH funding, the NPGRC is implementing two projects: "Strengthening on farm conservation of selected neglected and underutilized crop species (cucurbits, finger millet and yams) in Tanzania" and "Identification of molecular markers for biotic and abiotic stresses in finger millet" all of which aim at enhancing genetic diversity.

**(vii) Documentation and Information**

The main activities under Documentation and Information include updating of database, registration and data entry in the computer. During the period registration and re- arrangement of all the germplasm conserved in the gene bank were conducted. As well NPGRC have done production of four digital seed catalogues under FAO – Technical Cooperation Project (FAO-TCP project), for cereals, vegetables oil and legumes crops accessions under ex-situ conservation. 100 entries of collected rice accessions were registered, 22 freezers out of 35 have been re-arranged.

**Constraints and material Requirements**

- Little storage space both freezers and space to cope with the number of the collected accessions

- The vehicles which the centre has are too old, hence the need for a new motor vehicle is crucial
- There is a need for renovating available green and screen houses as they in very bad shape
- NPGRC has very limited funds for general operation of the centre's activities

# Zambia

## A. General

The National Plant Genetic Resources Centre (NPGRC) is a section in the Crop Improvement and Agronomy Division within the Zambia Agriculture Research Institute (ZARI), which aims at conserving the genetic diversity, facilitating access to and promoting sustainable utilization of plant genetic resources for food and agriculture.

### (i) Staff Position

During the period under review the staff positions at the NPGRC remained unchanged both at professional and technical levels. There are three (3) professional officers, one (1) Technical Research Assistants and two support staff. One of the support staff attained his retirement age.

### (ii) Training, workshops and Meetings

During the period under review, some staff attended different training workshops including:

- Mr Graybill Munkombwe attended a short course in Biodiversity Traditional Knowledge and Intellectual Property in Cape Town November 2013.
- Mr. Graybill Munkombwe has continued with his MSc training programme at the University of Zambia (UNZA).
- Two programme staff attended APPSA joint inception and workplan harmonization meeting in Mozambique, 26-30 May 2014.

### (iii) Facilities and Equipment

The 30 KvA genset functioning but not very well and therefore needs attention.

The number of deep freezers has remained at 28. However, there is need for additional freezers considering the anticipated increase in the number of accessions and batches arising from collecting and regeneration activities.

The NPGRC does not have a seed germination facility of its own to undertake germination testing. In the past, the NPGRC has relied on facilities at the Seed Control and Certification Institute (SCCI) for viability testing. However, SCCI gives priority to seed samples from Seed companies, which leads to delays. This therefore calls for urgency in sourcing a germination chamber at NPGRC.

The NPGRC has three (3) functional desktop computers two of which need upgrading, and has two functional printers, a LaserJet M1132 MFP and HP LaserJet P1005.

### (iv) Collaborating Institutions

The NPGRC is collaborating with both national and international institutions in the implementation of the plant genetic resources conservation activities. Some of the national collaborating institutions are Community Technology Development Trust (CTDT), Biodiversity Community Network (BCN), National Remote Sensing Centre

(NRSC), UNZA, SCCI. At international level, the NPGRC is collaborating with the Food and Agriculture Organization (FAO), Bioversity International and ENZA ZADEN.

## B. Technical Report

### (i) PGR Conservation and Distribution

The active collection at the NPGRC is still undergoing re-arrangement so that the germplasm accessions conserved correctly match with the record on the SDIS. Currently, the number of accessions held in the genebank stands at 6,500 without taking into account the recently collected plant genetic resources. The centre is also maintaining a living collection of 100 accessions of cassava in the field genebank.

As part of its mandate, the NPGRC is charged with the responsibility of facilitating access to conserved plant genetic resources for purposes of research and development.

### (ii) Distribution of Germplasm

During the period under review, a total of 46 accessions distributed to users: Bean Improvement Programme (30 accessions), UNZA, School of Agricultural Sciences (3 accessions of beans), and cowpea improvement programme (10 accessions).

### (iii) Multiplication and Characterization of Germplasm Accessions

These were done to increase seed quantity of accessions in order to duplicate the accessions to the base collection and be able to respond to requests for seed samples by users of PGRFA, and characterize the conserved germplasm accessions.

A total of 202 germplasm accessions of maize, rice, cucurbits and sesame were planted during the 2012/13 season. Of these, one hundred and eighty eight (188) accessions were finally harvested. All the four wild rice accessions (ZMB5012, ZMB5013, ZMB5014 and ZMB5015) did not germinate. Six of the cultivated rice accessions flowered but aborted resulting in failed grain formation.

***Characterization of Rice Germplasm***
In order to increase seed amounts for target accessions, rejuvenate and characterize germplasm accessions, the NPGRC conducted agromorphological characterization of rice. 34 accessions were planted at Mt Makulu Paddy plots and the resultant measurements were taken on 8 plants per accession, characterized using Bioversity & IRRI descriptors and data analyzed by NTSYSpc 2.2. Substantive results and conclusions were still being worked on at the time of reporting this activity.

***Characterization of Maize Germplasm***
Fifty (50) accessions of maize grown in unreplicated plots were characterized in the field at Mount Makulu Research Station.

***Analysis of Genetic Diversity of Zambian Sesame Landraces using Agro-morphological Characters***
The NPGRC scientists observed that Zambian sesame landraces collected from various parts of the country have not been characterized making them unknown to researchers and breeders and therefore analysis was deemed necessary to generate genetic information important for development of improved varieties.

With this in mind, 28 accessions were collected from National Genebank at ZARI and planted at Mount Makulu Research Station. Data was collected on 10 plants randomly selected and tagged and standardized crop descriptors used. The data were subject to principal component analysis using NTSYSpc software. In addition, cluster analysis was performed to assess the level if dissimilarity among the accessions.

Results showed:

- presence of variations in the sesame landraces with respect to the qualitative and quantitative characters,
- Plant height, days to flowering 50% and days to maturity 75% were the major determinants of variation in the accessions,

These results have an important implication for further evaluation, improvement and conservation.

***On-farm Maize and Cowpea Evaluation***

This is project under the Southern African Science Service Centre for Climate Change and Adaptive Land Use (SASSCAL) supported through the German funding. In the SADC region, the project covers Namibia, Angola, Botswana, South Africa and Zambia and the Zambian NPGRC is implementing a project within the Agriculture Work package 3 through Task 157 which specifically, implements subtask on strengthening capacity of the local seed system involving maize and cowpea genetic diversity in mitigating the effect of climate change.

It explores potential and harnesses genetic diversity of local crop genetic resources in Zambia for food security, improved nutrition and adaptation to changing climatic conditions. The project is implemented in two selected sites of Rufunsa and Situmbeko.

Early findings include knowledge of traits that of importance to farmers. These were found to be: maturity, yield, cob size, grain colour, grain size and cob rot for maize; and maturity, yield, pod size, grain colour and disease resistance for cowpea.

**(iv) *In-situ* Conservation of Crop Wild Relatives**

This is a 3-year ACP-EU supported project whose implementation partners with Bioversity International, University of Birmingham, University of Mauritius, Directorate of Genetic Resources, South Africa and NPGRC, Zambia.

The project's overall objective is to enhance the link between conservation and use of crop wild relatives (CWR) as a means of underpinning regional food security and mitigating impact of climate change

At its conclusion, the project is expected to achieve the following:

- National capacity on conservation and use of CWR is improved.
- Science, technology and innovation tools, including CWR registry information systems, for in situ conservation and use of CWR are deployed and tested.
- National Strategic Action Plans (SAP) for in situ conservation and use priority CWR developed.
- National policy makers are informed about the value of CWR and SAP promoted among them.

**(v) Characterization and Evaluation of Cassava Germplasm**

Cuttings from 100 accessions were planted at start of 2012/13 season at intra-row spacing of 1.5 m; inter-row spacing of 2.0 m. Agro-morphological data using descriptor list were used and characterization data planned for scoring at 3 and 6 months after planting.

To date, data collecting is still going on whereby other data yet to be collected at nine months and post harvest during 2013/14 season.

**(vi) Documentation and Information**

While the SDIS was reported working well, the NPGRC observed the following:

- The "Germplasm Distribution" and "Tools and Utilities" modules are not active
- On the accession selection module, selected or searched accessions are always being appended to the previous searches after every search
- On the characterisation module, there are only 8 crops listed namely: Beans, Cucurbits, Finger millet, Groundnuts, Maize, Pearl millet, Sorghum and Vigna.
- Some traits on these crops are not included especially on vegetative characters for entering data. In some cases, there are only 2 traits while the IPGRI descriptor has more than those presented here.

### (vii) Targeted Gap Filling Rice Germplasm Collection Mission

Under the APPSA sub-project, upon analyzing the collected germplasm, collection gaps were revealed, pinpointing to geographic collection gaps for Northern, Luapula, Muchinga, Western, Northwestern provinces thus necessitating gap filling collection.

This aimed at broadening diversity of rice germplasm thus widening genetic and geographic diversities useful for R&D as well as documenting indigenous knowledge associated with the collections.

Strategically, the collection mission targeted paddy rice growing areas, ideally, rice fields, drying bays and grain stores. The mission collected 103 samples.

## Zimbabwe

### A. General

### (i) Staffing

There was no staff changes during the reporting year.

***Staff Development***

- Mr K. Kusena – Doing PhD at the University of Zimbabwe (completion: 2016)

### (ii) National Genetic Resources Committee

Two Zimbabwean NPGRCom meetings were held during the year under review and in the country's quest to domesticate ITPGRFA, has a Draft Genetic Resources Management Act.

### (iii) Equipment, Supplies and Facilities

The genebank has 27 freezers, 4 of which are faulty – compressors breaking down and replacement parts cannot be sourced locally. It also has faulty drier whose cooling fans are broken making temperatures fall below zero. Freezers are now breaking down and difficult to repair, currently 4 freezers are down. There is a persistent drier unit problem that needs attention.

### B. Technical Report

### (i) Germplasm Collection

The NPGRC collected 23 landraces (10 cowpeas, 9 sorghum, 3 finger millet and 1 indigenous vegetable) to add to its Active Collection.

### (ii) Study on Distribution of Striga in Zimbabwe

There is very little literature on the geographic distribution of striga. The available literature is found in Flora databases worldwide and contains presence only information. However, there is evidence that Striga is found in all parts of the country. Musimwa (2006) conducted a collection mission around the country collecting representatives' samples.

A collection mission was conducted in April 2013 when the maize crop had just reached physiological maturity. Collection was done in collaboration with the Weed Research Team in the Department which is under the Agronomy Research Institute. About 4 districts were visited and about 12 samples were collected from striga infested fields. The sizes of the samples differed according to extent of Infestation. The largest samples were collected in Rushinga District which is found Mashonaland West province. This District is known to be a Striga hotspot where famers have abandoned some of their fields because of heavy Striga infestation.

The Striga plants were harvested by hand pulling carefully to prevent loss of seed in the field. Whole plants were harvested and then processed to extract the seed. Due to the extreme small size of the Striga seed, the seeds were extracted by first drying the plants and then passing the plants through sieves to collect the seed.

The collected *Striga asiatica* plants were from (with numbers in brackets): Chiweshe near Bindura town (2), Rushinga near Mount Darwin town (3), Bindura near Bindura town (3), and Norton near Chegutu town (4).

**(iii) Characterisation and Evaluation**

The NPGRC evaluated 14 common beans and the data is still being analysed. In addition, 6 sorghum landraces were screened for resistance/tolerance to striga.

***On-farm Conservation and Characterization***

0n-farm characterization and conservation of bambara in Mutoko were characterized by seed exchange, on-farm characterization and promotion of use activities over the reporting period in Zimbabwe.

***Cowpea Characterisation***

The regeneration project was carried out at the Crop Breeding Institute plots which are situated at the Department of Research and Specialist Services. 40 cowpea accessions were regenerated and multiplied, of these 28 were morphologically characterized.

The crop was first harvested on 30/04/2013 and then the second harvesting was on 03/05/2013.During harvesting 10 plants from each plot were harvested separately for characterization. Plants were harvested at physiological maturity. The crop was shelled for characterization on the 4$^{th}$ of May and characterization commenced on the 5$^{th}$ to the 7$^{th}$ of May. Shelling of the rest of the harvested crop was done on the 13$^{th}$ of May 2014.

***Water Melon Mophorlogical and Molecular Characterisation***

A total of 14 watermelon accessions which originated from various parts of Zimbabwe were obtained from the National Gene Bank of Zimbabwe, in the Department of Research and Specialist Services (DR&SS). Each accession was allocated a treatment number, and 12 of the 14 accessions were subjected to a germination test.

The trial was set up in an open field at Gwebi, Varietal Trial Centre (VTC) about 30 km from the NPGRC. The watermelon plants were grown without fertilisers or any soil nutrient supplementing, and supplementary irrigation was applied during dry spells only.

A descriptor list (UPOV, 2006) was used to score the morphological characters of the 12 accessions which germinated of the 14 accessions.

The data was first sorted in Excel and exported to Numerical Taxonomy System (NT Sys) and saved as a CSV file. The data was then transformed into a normal distribution by dividing $y$ bar (the deviation of $x$ from the minimum value) by the standard deviation of the data. Dissimilarity and Similarity module, cluster analysis, Eigen, SAHN and matrix plot to be generated in the NTSYS Cluster analysis or clustering is the assignment of a set of observations into subsets (called clusters) so that observations in the same cluster are similar in some sense.

## 7. NPGRC PLANNED ACTIVITIES FOR THE YEAR 2014/2015

# Angola

### (i) Multiplication, Regeneration and Characterisation of Some Accessions in the genebank

The proposed activities include characterization of 70 and 20 accessions of common beans and cowpea respectively. The NPGRC will also multiply 20 accessions each of cowpea and maize, 11 accessions of lossaka, 12 accessions of chilli pepper and 10 accessions of okra.

All the above will be conducted at the Experimental field of the NPGRC.

### (ii) Regeneration of Genebank Germplasm Materials

The Centre intends to multiply and regenerate materials from the Genebank. These will include maize (325), common bean (158), sorghum (99), cowpea (63), groundnut (61), pearl millet (42), bambara (11), pumpkin (42), pea and sesame (9 each), rice (8) and soya (3) accessions. That makes a total of 816 accessions.

### *(iii)* *In-situ*/On-farm Conservation

There is a project on on farm conservation which is going to be implemented in two provinces of Huambo and Huíla. The objectives are:

- to sensitise the farmers and the agricultural institutions to organise and promote local varieties of maize seed fairs in order to reintegrate, increase the lost agricultural diversity, and to contribute for the conservation of agro diversity in the farmers' property.
- to strength the traditional seeds system in the distribution of seeds through exchange and trading between farmers
- to create mechanisms such as the establishment of community seed banks which facilitate the immediate access to seeds.

# Botswana

### (i) Characterisation of Sorghum, Maize and Pearl Millet Accessions

The main objectives for this activity include characterisation and preliminary evaluations on sorghum accessions, maize and pearl millet, regenerate accessions of sorghum with low seed viability. It will also attempt to salvage characterisation data for sorghum and pearl millet and increase number of seeds per accession (for bridging the gap between NPGRC and SPGRC).

### (ii) Germplasm Collection

Eight field trips have been planned as indicated in the workplan that include the targeted plant species, their locality and proposed dates for collection. The duration of the trips will be ranging from a day to 12 days depending on the situation. The activity will funded by DAR.

# Democratic Republic of Congo

**(i) Updating the Status of Genebank Accessions in Four Main Research Centres of DRC**

***Justification***

The Democratic Republic of Congo has been member of the PGR network but its critical political and wars situations have deprived to DRC to actively get on board.

The food security and alleviation of poverty have been the bottleneck of the world's effort to sustain actions towards agriculture development.

The importance of the genebank for agricultural development has been known as an important strategy for the breeders and other researchers in accomplishing the goals mentioned above.

The purpose of this proposal is to get actual figures on the status of the accessions that are available and sustain actions for their maintenance and use in plant breeding.

***Objectives***

- To conduct an inventory of the species accessions and to reorganize them in a database.
- To maintain the database of these accessions so that scientists can request and use them in their breeding programme sharable in the region.
- To ascertain the staffing regime capable of sustaining genebank maintenance, and establish potential of DRC's germplasm.

***Results***

- The number of accessions per species in each research Centre known.
- Rejuvenation and maintenance of accessions accomplished
- Technicians trained on the data entry and database maintenance
- Database of accessions is developed and maintained

***Work Programme***

- January-June 2014: Preparation of inventory in each research centres and station.
- July 2014- August 2014: Going through results and elaboration of report

***Estimated Budget***

The DRC would like to propose the same budget presented last year for inventory (US$ 20,500) with the inclusion of characterization (US$ 5,000) of new samples found during the collection mission at Kipopo and Mvuazi Stations.

# Lesotho

**(i) Multiplication and Characterization Proposal**

The NPGRC proposes to multiply and characterize 110 accessions of sorghum, 100 accessions of maize, and 40 accessions of beans. Activities will be undertaken at Thaba Tseka Regional Research Station representing the Highlands.

It will be done with the objective of availing characterization data to enhance utilization of the accessions, and acquisition of sufficient seed quantities for active and base collections to close the gap at the NPGRC and SPGRC.

**(ii) Seed Germination Tests of Accessions in Active Collection**

This proposal is justified by the fact that frequent power cuts could affect the lifespan of material in active collecting and therefore conducting germination tests will determine the need for regeneration/rejuvenation of material. If the germination % is found to be below 90%, there will be need to regenerate the accessions.

**(iii) Maintenance of the Existing Plant Species in Field Genebanks**

## Malawi

Malawian NPGRC in its plans for next year, intends to collection missions, do molecular and phenotypic characterization for rice and maize, mainly under the funding of APPSA.

With the same funding, the NPGRC will also hold one seed diversity fair, produce promotion/awareness materials, buy 5 more freezers and other assorted equipment and construct a *state-of-the-art* genebank laboratory.

## Mozambique

**(i) Gap filling multi-crop germplasm collection mission in Niassa province**

**Justification:** Exploratory expeditions will be conducted in regions particularly targeting on districts which have not been covered in the previous expeditions.

**Objectives:** The main objectives of this mission will be to collect as much possible the existent germplasm (grain legumes) occurring in Niassa province for conservation and future use.

## Namibia

**(i) Multiplication and Characterisation**

The NPGRC planned to multiply and characterise five accessions of *Citrullus lanatus* at Sandveld Research Station 2013/2014.

**(ii) On-farm conservation**

The NPGRC plans to document at the same time collecting maize seeds from the Zambezi region (Caprivi region). Maize is a popular diet to most Namibians and yet the Namibian NPGRC has few samples in custody. It is known that the existing and traditional farming systems in Namibia play a pivotal role in protecting agro biodiversity and supports the sustainable land management. Therefore the objective will be to collect Maize seed for gab filling and to document the farming practices with regard to crop conservation.

The information obtained can be used in promoting effective management and maintaince of plant genetic resources of the landraces/traditional varieties at farm level. Farmers group can be identified immediately which can work together with the NPGRC Namibia.

**(iii) Germination Tests**

The NPGRC proposed to continue with germination tests of 120 *P. glaucum* accessions in 2014/2015.

**(iv) Germplasm Collection**

The NPGRC plans to conduct collection of *Zea maize* seeds and documentation of farming practices in Zambezi region for the purpose of gap filling in the same region as well as to identify more groups that have been maintaining crop diversity.

**(v) Documentation and Information**

- Update SDIS registration and Base/Active modules with new accessions
- Update the germplasm collecting information system from 3,917 to 3,983
- In collaboration with SPGRC, sort out problems with passport data which is not saving on the collecting module.
- Continue to update the NPGRC web page.

## Seychelles

Seychelles NPGRC is proposing the following activities for next financial year:

- Initiate holding of the first NPGRCom meeting in last quarter of 2013 or first quarter of 2014 in order to launch all activities mentioned
- Creation of Unit responsible for the Conservation of PGR in Seychelles. Proposed name is National Agricultural Crop Conservation Unit (NACCU)
- Identification of new staff for training in PGR
- Training of staff members in PGR documentation and database management
- Arrange for staff to attend short courses on PGR with the assistance of SPGRC as and when requested
- Securing space for SDIS in the SAA server, with the help of SPGRC technical personnel
- Initiate collection mission
- Attend SPGRC meetings and workshops as requested

## South Africa

**Multiplication and Characterization**

The NPGRC plans to multiply 40 accessions of *Zea mays* and *Arachis hypogaea* (groundnuts) each. It will also multiply accessions of *Vigna unguiculata.* And multiply and characterize 50 accessions of *Vigna subterranea.*

**Viability Testing**

The Genebank with continue to assess the viability of the stored materials even though to date, purchasing the anchor germination paper is yet to be finalized.

**Documentation & Information**

Continue verifying all records (Active/Base collection *versus* Collection Books)

***In-vitro* Conservation**

The genebank is targeting introduction of other vegetatively propagated species in tissue culture; whereas, standardisation of the cryopreservation protocol is in progress.

**On-Farm Conservation**

The *on farm* conservation programme will be continued in Nkomazi Local Municipality, Mpumalanga province for the financial year 2014/2015. A preliminary list of farmers and crops has already been generated. The following villages will form part of the conservation project i.e. Tsambokhulu, Mgobozi, Magogeni and Schulzendal.

## Swaziland

The following activities are proposed for the 2014/2015 cropping season:

**(i) Germplasm Multiplication**

The NPGRC propose to multiply some accessions that include: maize-2, jugobeans – 2, beans – 3, cowpeas – 1, pearl millet – 1, and finger millet -1.

**(ii) Inbred-line Development**

The NPGRC will continue to collaborate with the University of Swaziland, Faculty of Agriculture in advancing the 37 Generation 1 ($S_1$) inbred lines to Generation 2 ($S_2$).

## Tanzania

**(i) Exploration and Collection**

Due to funding constraint the continuation of germplasm collection will depend on proposal development to seek funds from donors. With funds available, priority areas for collection will include Coastal Areas and Eastern Zone, targeting mainly spices, vegetables, cereals, legumes and oil crops.

Possible collection is justifiable by the fact that the identified areas are among the areas with great risk for genetic erosion due to its fast urbanization and development

**(ii) Multiplication, Regeneration and Characterization**

Regeneration, multiplication and characterization of selected crop accessions at the genebank for conservation, safety duplication, utilization and distribution of the accessions are rationalized by insufficient amount of seeds for storage as base and active collections, existing huge gap between *Ex-situ* conservation and safety duplication, and for effective utilization of accession through characterization data.

However, number of accessions to be multiplied and characterized will depend on the availability of funds.

**(iii) Documentation**

The NPGRC wishes to add more data to SDIS database because apart from passport data, most of the information such as characterization data *etc.*, is not incorporated into SDIS. More effort will be relevance and attract more users such as breeders, *etc.*

It will generally enhance information availability, utility and accessibility through harnessing of SDIS database with the rest of information from the collection forms and characterization data.

## Zambia

**(i) Phenotypic characterization of 55 rice germplasm accessions**

This will be done at Mt Makulu *dambo* paddies and in Nanga.

**(ii) Germplasm Collection**

Targets to collect maize germplasm, document traditional information associated with germplasm. This collection targets uncollected areas of: Mkushi & Mpika districts (Luano valley).

The NPGRC also intends to collect rice germplasm from western and north-western provinces of Zambia. Agro-morphological characterisation of collected rice germplasm will thereafter be conducted.

**(iii) Phenotypic characterization of 50 maize germplasm accessions**

This will be done at Mt Makulu experimental fields.

**(iv) On-farm**

Under on-farm conservation, the NPGRC intends to:

- Train farmers in on farm seed production and maintenance
- Select farmers participating in on farm seed production.
- Establish seed multiplication plots on farm
- Plant selected crop varieties on selected farmers' fields
- Conduct farmer driven, researcher supervised on-farm seed multiplication

**(v) *In-situ* conservation of CWRs**

Under in-situ conservation, the NPGRC plans to undertake:

- Finalization of checklist and inventory of CWRs
- Prioritization of CWRs species for conservation and use
- *In situ* conservation & pre breeding training workshops
- Development of Exemplar National Strategic Action Plan for conservation and use of priority CWRs
- Development of policy briefs for policy makers
- Sensitization of policy makers and stakeholders

## Zimbabwe

**(i) Sweet Sorghum Germplasm Collection**

Sweet sorghum has the potential for use as bio fuel (Ethanol) production. It can replace sugarcane and jatropha because sorghum is an annual crop. Sorghum can produce 1500 litres of ethanol per acre in four months, compared to sugarcane, with the potential of 2500 litres of ethanol per acre in twelve months. The NPGRC is targeting collection of sweet sorghum inorder to enhance its genetic diversity under *ex-situ* conservation for future breeding purposes.

An Ecogeographic desk study will be carried out to find out the target sites for collecting a wider genetic diversity of the crop. Collection will be carried out just before harvesting the crop from March up to April in the year 2014.

**(ii) Groundnut seed collection Mission for Aflatoxin Research**

The NPGRC will also carry out a groundnut seed collection mission and the seed is mainly required for an ongoing Aflatoxin Research project in the Department.

**(iii) Screening Sorghum Landraces for Resistance/Tolerance to *Striga asiatica***

One of the major constraints to increased sorghum productivity in the small holder farming sector in Zimbabwe is attack by witch weeds, the most common of which is Striga asiatica (L.) Kuntze. Striga asiatica is a devastating obligate root parasite of cereal crops of the Graminae family (maize, sorghum and millets) (Stroud, 1993). Crop yield losses can be up to 100% depending on the extent of the damage and level of infestation. Striga asiatica resistant varieties offer an economically feasible and culturally sustainable technology for small holder farmers since they do not require additional inputs (Mabasa, 1996).However there are no high yielding *S asiatica* resistant varieties for resource-poor farmers in Zimbabwe. If highly striga resistant sorghum varieties are found this problem could be resolved. It is envisaged that such desirable unique sorghum characteristics could be found in the large sorghum genebank collection preserved at the National Genebank of Zimbabwe. It is therefore worthy to screen some of the sorghum landraces at the genebank for striga resistance and high yield potential.

Much effort has been accorded towards the development of resistant or tolerant lines of crops so as to combat the striga problem. The man effort using this approach has been in sorghum. In India Rao, attempted to develop varieties of sorghum which are resistant to S asiatica because other methods of controlling this pest were too costly (Rao, 1967). A resistant variety, designated N13, was released after six years of selection for resistance. Also in Zimbabwe there has been some research on screening and developing lines for S asiatica resistance. However as reported by Ramaih (1986), there are various limitations to breeding for the resistance in sorghum. These limitations include low yield and grain quality in the resistant varieties, hybridization of Striga plants which results in new strains that may overcome resistance genes and great variability in the resistance exhibited by developed lines. Mutengwa et al 1999 did screening experiments for striga resistence on sorghum and found a few varieties that significantly delayed the germination of striga but however their yield potential was low. It is also important to note that the variability exhibited by the lines is influenced by other various factors such as level of infection, climatic factors and management practices.

# 7. General Discussions

## 7.1 SDIS: Are Member States Using SDIS?

It was generally observed that Member States are using the SDIS to manage their collections. However, it was noted that some countries such as Zimbabwe and South Africa were inputting their data in Excel sheet since when they finished re-arranging their genebanks. The working Excel sheets were improvised for data inputting whilst re-arranging but needed to be converted to the standing database.

It was reported that Zimbabwe has already submitted the Excel sheet to be worked on in the coming week by SPGRC. South Africa is not yet to submit the Excel sheet as the re-arrangement process was prolonged. It was resolved that further consultations will be made to see the way forward.

In order to avoid for NPGRCs sending accessions that have already been sent to SPGRC, it was agreed that SPGRC generates a list of all accessions already sent to the base by each country, and then NPGRCs will compare with what they have.

It was also resolved that SPGRC should work on SDIS issues faced in all NPGRCs.

## 7.2 NPGR Committee Issues

It was noted by participants that almost all NPGRCs were not holding NPGRCom meetings. SPGRC was therefore asked to raise the issue with Board members why the meetings are not held.

It was also proposed that Alternate Chair can be appointed to stand in the committee meetings for the Chairperson. Alternate Chair should preferably be from other institutes out of the genebank system.

SPGRC was also asked to remind Member States on the terms of reference for the NPGRCom and crop working groups.

It was suggested that in SPGRC web portal be created space for crop working group discussions.

## 7.3 SADC Protocol on PGRFA

It was noted that while SADC has a number of protocols, none is available on PGRFA. It was mentioned that PGR is superficially noted in other protocols such as Forestry Protocol, etc. The meeting agreed that combined efforts should be put to come up with the PGRFA protocol document.

## 7.4 Rice Regeneration and Characterisation at SPGRC

In its quest to conduct characterization, SPGRC was advised by the meeting to consult with NPGRCs of Malawi, Tanzania, and Mozambique who have expertise in rice characterisation.

## 7.5 GB5 Issues

The meeting suggested that the Board should find time to deliberate on Governing Board 5 (GB5) issues and prepare recommendations for GB6.

## 7.6 Giving Access to Materials (Access and Benefit Sharing)

In order to have more or less common access rights to germplasm materials, the meeting requested countries that already have the sharing/access mechanisms in

place, to forward them to SPGRC where modalities for harmonised accessibility can be worked on.

### 7.7 Community PGR Registers

- It's been covered in the proposal and will be presented to the board as well
- Conservation Fund: Need to establish NPGRC'S by law to push for such at board level.
- Revise the SADC crop mandate list (must be revised and expanded)

### 7.8 Batches (Material Regeneration)

The meeting resolved that no live materials should be thrown away at any time.

### 7.9 Gap between the Active and the Base Collection

- SPOs can help carry material when they visit NPGRCs to cut on the cost.
- SPGRC should consider sourcing funds within budget for materials dispatch to the base.

### 7.10 Planning Meeting Participants

Given that for the time being, SPGRC cannot sponsor more than one participant per country to attend the planning meeting, it was resolved that all member countries who can afford to sponsor more people are free and encouraged to do so.

### 7.11 Equipment Replacement Plan and List of Suppliers

It was recalled that SPGRC promised to share with NPGRCs its equipment replacement plan and list of suppliers since last year. This was not promptly done as SPGRC was refining its plan to be in line with the new RISDP focus.

During the meeting, SPGRC once again promised to share the said documents with NPGRCs with immediate effect.

### 7.12 Characterization of Materials and Packaging Materials

It was observed that NPGRCs were lagging in characterizing the germplasm materials held in their genebanks which in a way fails to attract its utilization by potential users. The meeting agreed that there was need to target characterization as an important activity and that SPGRC should develop a project focused on characterization. Further evaluation of material must be done to add value to it through characterization, evaluation, *etc.*

While there is a general outcry for inadequate packaging materials such as aluminium foil bags, it was noted that frantic efforts are being done to ensure funds are sourced for the same. It was reported that some foil bags and pollination bags will be provided by SPGRC through FAO for the TCP project participating countries.

**Annex I: SPGRC/NPGRC Planning and Review Meeting: Program**

| | |
|---|---|
| **Monday, 6th October 2014: Arrival of Delegates and Participants** | |
| **General Rapporteurs: Ms Nolipher Mponya and Mr Graybill Munkombwe** | |
| **Tuesday, 7th October 2014** | |
| **Session 1:** | **Opening Ceremony** |
| | **Chair: Mrs. T. Lupupa** |
| | ***Rapporteur:* Thabsile Dludlu** |
| 09:00 – 09:30 | Welcome address: **Head of SPGRC** |
| | FAO Representative |
| 09:30 – 10:00 | Programme and logistics announcements: Mr. **B. Kapange** |
| | Issues arising from the previous meeting (2013): Mr. **B. Kapange** |
| **10:00 – 10:30** | **GROUP FOTO & MORNING TEA BREAK** |
| **Session 2** | **Presentation of the Finalized National Strategies for PGRFA** |
| 10:30 – 11:00 | Presentation of National Strategies: **The Head of SPGRC** |
| | FAO-TCP Summary Report: **T. Lupupa** |
| | Discussions and way forward |
| **Session 3:** | **Country Reports: Progress Reports (including FAO TCP and Bioversity *in situ* Crop Wild Relatives Project)** |
| | **Chair: Ms Carla do Vale** |
| | ***Rapporteur:* Ms Tiny Motlhaodi** |
| 11:00 – 13:00 | **Country Presentations: Progress Reports and Work Plans** |
| | Country Presentations |
| **13:00 – 14:00** | **LUNCH BREAK** |
| **Session 3 (Cont'd ...)** | **Presentations: Country Progress Reports and Work Plans** |
| 14:00 – 15:30 | **Country Presentations** |
| | **Chair: Mr Lumbe Ramazani** |
| | ***Rapporteur:* Ms Kahimbi Sikute** |
| **15:30 – 16:00** | **AFTERNOON TEA BREAK** |
| 16:00 – 17.00 | Country Presentations |
| **Wednesday, 8th October 2014** | |
| **Session 3 (Cont'd ...)** | **Presentations: Country Progress Reports and Work Plans** |

| | |
|---|---|
| | **Chair: Mr Lourance N D Mapunda** |
| | ***Rapporteur:*** **Ms** Jermina Moeaha |
| 09:00 – 10:30 | Country Presentations |
| **10:30 – 11:00** | **MORNING TEA BREAK** |
| 11.00 – 12.00 | Web-SDIS development progress: **Mr B. Kapange**<br>Face-lifted SPGRC Portal: **Mr B. Kapange**<br>Proposed IK Database: **Mr M. Daka** |
| **Session 4** | **Other SPGRC Reports** |
| 12:00 – 12:30 | Preliminary Report on the Evidence Based Evaluation on PGR Conservation: **Mr. L Qhobela** |
| | Discussions |
| 12.30 – 13.00 | SPGRC Generic Project Proposal: **Mr. B. Kapange** |
| | Discussions |
| **13:00 – 14:00** | **LUNCH BREAK** |
| **Session 5:** | **Summary Reports and General Discussions** |
| | **Chair: Dr. P. Munyenyembe** |
| | ***Rapporteur:*** **Mr. Kudzai Kusena** |
| 14:00 – 15:30 | Summary Reports: SPOs<br><br>In situ Conservation: **T. Lupupa**<br>Ex situ Conservation: **Mrs. P. Ng'ono**<br>Documentation & Information: **Mr. B. Kapange** |
| **15:30 – 16:00** | **AFTERNOON TEA BREAK** |
| 16:00 – 17:00 | General Discussions |
| **Thursday, 9th October 2014: Departure of Delegates and Participants** | |

## List of Participants

Mr **Daka**, Mike
TO Doc. & Information
SPGRC
P/Bag CH6
**LUSAKA**
Zambia
Tel: +260 21 233391/2
Cell: +260 977876178
Email: mike.daka@spgrc.org.zm

Ms **Dludlu**, Thabsile
Research Recorder Technician
Malkerns Research Officer
P O Box 4
**MALKERNS**
Swaziland
Tel: +268 25274071
Cell: +268 76435520
Fax: +268 2527 4070
Email: tjdludlu@yahoo.com

Mr **Kapange**, Barnabas W
SPM - Doc. & Information
SADC Plant Genetic Resources Centre
Private Bag CH6
**LUSAKA**
Zambia
Tel: +260 211 233815-6 or 233391-2
Cell: +260 979 365122
Fax: +260 211 233746
Email: bkapange@spgrc.org.zm or spgrc@zamnet.zm

Mr **Kusena**, Kudzai
Curator
Genetic Resources & Biotechnology Institute
P O Box CY 550
Causeway
**HARARE**
Zimbabwe
Tel: +263 4 702519 Ext 2029
Cell: +263 77 3041186
Fax: +263 4 791223
Email: ngbz@iwayafrica.co.zw

Mr **Lowsing**, Nunkoo
Agriculture Support Officer
Mauritius
Tel: +230 56761234
Cell: +230 57776137
Fax: +230 6701757
Email: nunkoolowe@yahoo.ca

Ms **Lupupa**, Thandie J
SPM *In Situ*
SADC Plant Genetic Resources Centre
Private Bag CH6
LUSAKA
Zambia
Tel: +260 211 233815-6 or 233391-2
Cell: +260 966 551293
Fax: +260 211 233746
Email: tlupupa@spgrc.org.zm or spgrc@zamnet.zm

Mr **Mapunda**, Lourance N D
Collection and Doc. Officer
TPRI – National Plant Genetic Resources Centre
P O Box 3024
ARUSHA
**Tanzania**
Tel: +255 27 250 9674
Cell: +255 78 6262635
Fax: +255 27 250 9674
Email: lourance65@yahoo.com

Mr **Marques**, Claudio
Head of Seed Laboratory
Centro Nacional de Recursos Fitogeneticos (CNRF)
Avenida Revolução de Outubro (CNIC)
C P 10043 (BG)
LUANDA
**Angola**
Tel: +244 222 350495
Cell: +244 92 4155117
Email: claudiomarques-88@hotmail.com

Ms **Martins**, Teresa Alexandrina A
Assistant Doc. & Information Officer
Centro Nacional de Recursos Fitogeneticos (CNRF)
Avenida Revolução de Outubro (CNIC)
C P 10043 (BG)
LUANDA
**Angola**
Tel: +244 222 350495
Cell: +244 92 3535436
Email: alexandrina_39@hotmail.com

Ms **Moeaha**, Jermina
Scientist Production: Ex-Situ
Directorate Genetic Resources
Dept. Of Agriculture, Forestry & Fisheries
Private Bag X973
**PRETORIA 0001**
South Africa
Tel: +27 12 808 5397
Cell: +27 12 8459803
Email: jerminam@daff.gov.za

Ms **Mohloboli**, Maleoa
Curator
Department of Agricultural Research
P O Box 829
MASERU - 100
Lesotho
Tel: +266 28 332918
Cell: +266 58 857203
Fax: +266 22 310362
Email: maleoacm@yahoo.co.uk

Ms **Mponya**, Nolipher Khaki
In-Situ/On-Farm Conservation Scientist &
Acting Curator
Chitedze Research Station
P O Box 158
**LILONGWE**
Malawi
Tel: +265 1 707219
Cell: +265 99 1722733
Fax: +265 1 707041
Email: noliemponya@yahoo.com

Mr **Munkombwe**, Graybill
Senior Agric. Research Officer
Zambia Agric. Research Institute
P/B 7
**CHILANGA**
Zambia
Tel: +260 211 278130
Cell: +260 955 880 490/966 880490
Fax: +260 211 278130
Email: munkombwegraybill@yahoo.com

Dr **Munyenyembe**, Paul M
Head, SPGRC
SPGRC
P/Bag CH6
**LUSAKA**
Zambia
Tel: +260 211 233391/1
Cell: +260 977 746219
Fax: +260 211 233746
Email: pmunyenyembe@spgrc.org.zm or
spgrc@zamnet.zm

Mr **Mushinge**, Ferdinand
Technical Officer – *In Situ* Conservation
SPGRC
P/Bag CH6
**LUSAKA**
Zambia
Tel: +260 21 233391/2
Cell: +260 966 436947/0976494469
Email: ferdcmush@yahoo.co.uk

Mrs **Ng'ono**, Peggy S
Technical Officer –*Ex Situ* Conservation
SPGRC
P/Bag CH6
**LUSAKA**
Zambia
Tel: +260 21 233391/2
Cell: +260 966 589114
Email: pengosa@yahoo.com

Ms **Pedro**, Evaldina Jorge H F
Doc. & Information Officer
Centro Nacional de Recursos
Fitogeneticos (CNRF)
Avenida Revolução de Outubro (CNIC)
C P 10043 (BG)
**LUANDA**
Angola
Tel: +244 222 350495
Cell: +244 92 3607939
Email: evaldinajorge@hotmail.com; or
cnrf@ebonet.net

Mr **Pedro**, Jose
Field Characterisation Officer
Centro Nacional de Recursos
Fitogeneticos (CNRF)
Avenida Revolução de Outubro (CNIC)
C P 10043 (BG)
**LUANDA**
Angola
Tel: +244 222 350495
Cell: +244 92 9624911/91; 2225641
Email: pjose59@yahoo.com.br

Mr **Ramazani**, Lumbe
Head of Div. Management Genetic Materials
National Institute for Study & Agric. Research
(INERA)
P O Box 2037
**KISHANSA – GOMBE**
DR Congo
Tel:
Cell: +243 815168294
Fax:
Email: lambertlumbe@yahoo.fr

Ms **Sikute**, Kahimbi Charlotte
Forest Technician
National Botanical Research Institute
Private Bag 13184
**WINDHOEK**
Namibia
Tel: +264 61 2022058
Cell: +264 81 2320490
Fax:
Email: sikutek@nbri.org.na

Ms **do Vale**, Carla
Research Officer
Inst. Of Agric. Research for Mozambique -IIAM
(Instituto de Investigacáo de Agrária de
Moçambique)
AV FPLM – Mavalane
**MAPUTO**
Mozambique
Tel:
Cell: +258 82 8066610
Fax: +258 21 460097
Email: cdovale080@gmail.com