SPGRC

SADC Plant Genetic Resources Centre

Twenty Seventh Annual Report 2016/2017

SPGRC
Lusaka, Zambia
2017

More than 800 regional rice accessions being regenerated at Lifuwu Research Station in Mlaawi, for SPGRC
(Photo: Courdtesy of Dr Lawrent Pungulani, Curator – Malawi)

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SADC Plant Genetic Resources Centre (SPGRC)
Farm # 6300, off Great East Road
Private Bag CH6
LUSAKA
Zambia
Tel: +260-211-233391/2; +260-211-233815; +260-211-213816
Fax: +260-211-233746
Email: registry@spgrc.org.zm; spgrc@zamnet.zm
URL: http://www.spgrc.org.zm

Table of Contents

Abbreviations

AAO	Assistant Administrative Officer
AFO	Assistant Finance Officer
AnGR	Animal Genetic Resources
CCARDESA	Centre for Coordination of Agricultural Research & Development in Southern Africa
CWR	Crop Wild Relative
DAR	Department of Agricultural Research
DRC	Democratic Republic of Congo
FANR	Food, Agriculture and Natural Resources (Directorate at SADC Secretariat)
FAO	Food and Agriculture Organization (United Nations)
FOFIFA	National Centre for Applied Research & Rural Dev., Madagascar
ITPGRFA	International Treaty for Plant Genetic Resources for Food and Agriculture
Kbps	Kilo-bit per second
Mbps	Megabit per second
NPGRC	National Plant Genetic Resources Centre
NPGRCom	National Plant Genetic Resources Committee
PGRFA	Plant Genetic Resources for Food and Agriculture
SADC	Southern African Development Community
SANBio	Southern African Network for Biosciences
SDIS	SPGRC Documentation and Information System
SPGRC	SADC Plant Genetic Resources Centre
SPO	Senior Programme Officer, SADC
TCP	Technical Cooperation Programme
TEEAL	The Essential Electronic Agricultural Library
TO	Technical Officer, SPGRC

SPGRC Profile

Vision, Mission and Objectives	
Vision:	*Be the lead institution in the conservation and sustainable use of plant genetic resources, contributing to the enhancement of food security and livelihoods in the SADC region*
Mission:	*Mobilise, conserve and make available plant genetic resources using state-of-the-art technologies and standards, contributing to sustainable development, environment and food security for the well being of the people of SADC*
Objectives:	– *Reduce plant genetic erosion and increase options of PGR and seed systems to enhance productivity* – *Promote generation of knowledge and exchange of information on PGR* – *Influence policy environment so as to improve access to and use of PGR in the region* – *Mobilize adequate financial resources for conservation and sustainable use of PGR in the SADC region*

Background

The Centre was established in 1989 as a 20-year project, initially funded by Nordic donors and, later supplemented with SADC member country contributions on an increasing scale - until the end of the project in 2011when Member States started to fully fund SPGRC.

Located about 25 Km off Great East Road in Lusaka on an 89ha land, generously provided by the Government of Zambia on a 99-year lease, the Centre has been entrusted and mandated with the conservation and evaluation for sustainable utilization of regional plant genetic resources for the present and future generations thus contributing to food security and improved livelihoods; and coordination of all activities through the network of National Plant Genetic Resources Centres (NPGRCs).

Achievements and Challenges

Though challenged by lack of adequate funds, low germplasm utilization and domestication of the ITPGRFA, outstanding construction of the biotechnology facility at SPGRC; the Centre has trained staff up to PhD level, collected over 45,000 germplasm samples from the region, implemented several projects in developing policies, strategies, provided equipment o NPGRCs, etc.

1 MANAGEMENT AND ADMINISTRATION

1.1 33rd SPGRC Board Meeting

The 33rd SPGRC Ordinary Board meeting was held in Johannesburg, South Africa between 17th and 18th November 2016. The Board Chairperson, Mr Godfrey Mwila started by recognising the presence of the Guest of Honour Dr Julian Jaftha to the Board Meeting. He then welcomed Board Members to the 33rd SPGRC Board Meeting. The Chairperson said the meeting could not take place in October 2016 as planned due to delays in holding the Annual Technical Review and Planning Meeting of SPGRC, which usually precedes the Board meeting. The Chairperson also mentioned that the SPGRC Extra-ordinary Board Meeting that was scheduled for April 2016 could not take place due to financial constraints faced by the Centre. The Chairperson reminded Board Members that one of the key issues that SPGRC was working on was finalization of its sustainability strategy. The Chairperson said that during the year, the financial sustainability and generic proposals of SPGRC were approved by the SADC Ministers of Agriculture & Food Security and eventually, by the Council. The two approved documents would now await implementation by the SPGRC Management. The Chairperson was hopeful that the Board would make substantive progress in making decisions and guiding SPGRC Management in order for it to move forward.

The Chairperson then thanked SPGRC Management for providing necessary documentation for the meeting and for the logistics. He also thanked South Africa for hosting the meeting. Mr Mwila then requested the Board Members to introduce themselves for the sake of the new entrants to the Board. He finally wished everybody a good stay in Johannesburg.

SPGRC Board, 2016

The Chief Director, Plant Production and Health in the Ministry of Agriculture, Dr Julian Jaftha, delivered the official opening remarks on behalf of the Director General of the South African Department of Agriculture, Forestry & Fisheries who could not due to other engagements. The Guest of Honour highlighted that the region is faced with the challenges of climate change. He stated that during the previous farming season, South Africa experienced severe drought though the predictions reflected that more rains would be received in the next season. He further said that SPGRC has taken a good direction by incorporating the conservation and use of Crop Wild Relatives that will be used for crop improvement against pest and diseases and drought resistant tolerant traits. He thanked SPGRC for the continued coordination of PGRFA activities in the region and the work done on fund mobilization such as the development of the Endowment Fund proposal. He requested the Centre to engage with International Cooperating Partners. He then wished the Board fruitful deliberations.

On behalf of the other Board Members, Mr Naiken thanked the Chief Director, Plant Production and Health in the Ministry of Agriculture, Dr Julian Jaftha for representing the Director General. He said SPGRC network was now ready to move to another level of doing more on research for resilient varieties. He appealed to SPGRC to continue mobilising resources that can benefit all the member states. He also said SPGRC network should look for varieties that can adapt to the climate change that was being experienced in the region.

The Board adopted the pre-defined agenda and discussed minutes of the immediate previous meeting from which the board was updated on matters arising that included progress made on SPGRC Addendum to the MoU Establishing SPGRC, planned SPGRC donor meeting, capture and maintenance of in-situ conservation data, status of breakdowns of genebank equipment and facilities, and migration of the SPGRC Documentation & Information System (SDIS) from current standalone to a web platform.

SPGRC Board in Session, Johannesburg, 2016

The Acting Head, Mr Barnabas Kapange, informed the Board meeting that the contract of the former Head of the institution, Dr Paul Munyenyembe expired and that he left SPGRC in July 2016 and that he was appointed to act as Head until a substantive Head was recruited. He presented SPGRC progress implementation report to the Board, followed by a highlights report of NPGRCs progress reports, as presented by the Senior Programme Office – Ex-situ, Mr Lerotholi Qhobela.

The Board was also updated on some key decisions undertaken by the SADC Council of Ministers and also by the SADC Ministers responsible for Agriculture and Food Security after which the Board Supported regional response to the drought situation that prevailed in most parts of the region, and noted the progress made on the Regional Agricultural Investment Plan, draft Protocol for the Protection of New Varieties of Plants and Charter Establishing the SADC Seed Centre. The Board also noted the approval of SPGRC generic proposal and financial sustainability strategy; and further noted the additional responsibility given to SPGRC for developing a regional proposal for conservation and utilization of animal aquatic genetic resources. The Board will support SPGRC in accomplishing this task.

The Board was also presented with and approved SPGRC Business Plan for 2017/2018. It was also updated on the status of collections at Active and Base and encouraged other countries to submit to SPGRC data on their active collections so as to put up a holistic effort for filling the gaps.

Upon presentation of the reviewed Addendum to the MoU Establishing SPGRC, the Board recommended approval by SADC Ministers Responsible for Agriculture and Food Security.

On development of proposal for animal and aquatic genetic resources, the board commended SPGRC Management for initiating development of the proposal for conservation and sustainable utilization of animal genetic and aquaculture resources and encourages management to continue with the initiative. It also recommended that SPGRC should work in close collaboration with CCARDESA and Botswana – Department of Agricultural Research (DAR) in realizing conservation and utilization of Animal Genetic Resources (AnGR) in the region.

1.2 Workshops and Meetings

1.2 Visitors

During the reporting period, SPGRC received many visitors including schoolpupils, university students, scientists, farmers and prominent individuals. These are listed in the Appendix III.

1.3 Resource Mobilization for SPGRC

Efforts to mobilize additional financial resources to support SPGRC work that include sustenance and improvement of genebanking facilities and buildings, and for conservation and utilization activities, SPGRC engaged the Global Crop Diversity Trust for possible funding of the proposed Endowment Fund. Discussions are ongoing and results are expected by third quarter of the 2017/18 financial year.

The generic project proposal entitled "Enhancing Capacities for Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture in the SADC Region (2017 - 2022)" developed by SPGRC and approved by the Board in 2014 was presented to and approved by the Ministers Responsible for Agriculture and Food Security at their meeting in July 2016, and later in September 2016 was endorsed by the SADC Council of Ministers. It targets all sections of conservation and sustainable utilization of plant genetic resources for the region and has, through FANR and PPRM, been shared with potential donors for possible funding.

The proposal to be funded by FAO-TCP on development of national strategies for conservation and utilization of PGR whose signing between SADC Secretariat and FAO was deferred is now being circulated for signing by participating Member States of Angola, Namibia, South Africa, Swaziland and Zimbabwe will be implemented starting financial year 2017/18.

2. PERSONNEL, EQUIPMENT AND SUPPLIES

2.1 SPGRC Personnel

There were changes to the staff complement at SPGRC during the year (as reflected in Appendix II). Following new SADC rules endorsed by the SADC Council of Ministers, three members of staff at SPGRC retired during the reporting period. These included the Head of SPGRC – Dr Paul M Munyenyembe, the Driver - Mr Alexius M Nyambe, the General Worker – Mr Wale Banda.

Mr Stephen Siakanchele

Mr Julius Daka

Accordingly, two new members of staff were recruited to replace staff who retired in the previous year. Mr Julius Daka who is the new driver/messenger was engaged on 1st June 2016, replacing retired Mr Alexius Nyambe; whereas, Mr Stephen Siankachele engaged on 1st December 2016 assumed the position of General Worker, replacing retired Mr Wale Banda.

2.2 Staffing in NPGRCs

The staffing in most NPGRCs remained unchanged except for the few instances where either vacant positions could not be filled up. Mr Musa Mbingo was recruited by the NPGRC Swaziland to fill up the position of Information Officer. Mr Chiyapo Gwafila resumed work at NPGRC Botswana upon successful completion of studies from University of Botswana. Mrs Bhimladevi Mungra was during the year, appointed to become the Curator of the Mauritius NPGRC.

2.3 Equipment and Supplies

The network embraces to uphold standards in conservation and sharing/exchanging of germplasm materials. Countries are however, challenged with the depreciated genebanking equipment and facilities that need servicing and/or replacement.

Post-dependence of supply and servicing/repairing by donors, the network is looking forward to contracting alternative local sources of technical support for the genebank equipment and facilities. Countries prioritize maintenance in their future projects that could attract support equipment/facilities supply and maintenance.

Twenty-five (25) chest freezers were purchased and installed at the regional gene bank, replacing the same number of old freezers. By the reporting time, another ten (10) deep freezers were in the process of being purchased for the regional genebank.

The SADC asset replacement plan in which SPGRC requirements are included is due to implemented in 2016/2017 financial year will include purchase of freezers and drier/germinator, and upgrading of communication infrastructure.

2.4 SPGRC Buildings (Offices and Staff Houses)

In terms of office buildings, there were no changes to improve or upgrade the facilities, pushing SPGRC to continue paying heavily for frequent and expensive maintenance of office buildings due mainly to initial poor workmanship. Major planned maintenance work on office buildings include renovation of ablutions and deteriorating main entrance doors. As for the residential houses, plans are underway to at least renovate kitchen fittings, which are totally broken down.

3. MEETINGS, TRAINING AND EDUCATION

3.1 Training and Education for NPGRC Staff

A number of network scientists and technicians attended a variety of training workshops and meetings that aimed at building capacity in conservation and sustainable utilization of PGRFA. A number attended workshops on Biodiversity, traditional knowledge and intellectual property, implementation of national biosafety frameworks, amongst others.

While Mr S. Kabululu (Tanzania) and Mr K. Kusena (Zimbabwe) continued with their PhD study programmes; Mr Chiyapo Gwafila (Botswana) and Ms Remmie Hilukwa (Namibia), and Ms. G. Kanyairita (Tanzania) graduated with their MSc studies from various universities. Malawian Ms Ireen Nyirenda and Jackson Chikasanda as well as Mr Francisco Reis (Mozambique) also graduated with BSc qualifications from various universities.

3.2 Training of SPGRC Staff

Due to financial constraints, no training of staff from SPGRC took place during the reporting period. However, through running projects in which SPGRC participated, some training opportunities were utilized by staff such as training in the management of crop wild relatives (ACP-EU funded project), Access and Benefit Sharing training, and training in synthetic biology, attended by SPO – *In-situ* Conservation.

SPO – *Ex-situ* Conservation undertook a 6-day training course in project monitoring and impact assessment that was conducted in South Africa in September/October 2016.

3.3 Some Important Meetings Attended by SPGRC Staff

Table 3.1: Meetings attended by SPGRC Staff

Apr 2016	– SPO – Ex-situ and SPO – Doc. & Info participated in experts' meeting for development of genebank standards for animal genetic resources in Africa in Kigali, Rwanda – All SPOs, Asst. Admin Officer attended the SADC/FANR retreat held in Rustenburg, South Africa – SPO – *In-situ* conducted a mission to assist with inventory and field genebank management in Seychelles
May 2016	– SPO – *In-situ* conducted a technical backstopping mission to assist with management of traditional crops on-farm in Tanzania
June 2016	– SPO and TO – Doc. & Info. configured, installed and trained users of web-based SDIS in Malawi, Mozambique, Namibia and Tanzania – SPO – *In-situ* and SPO – Doc. & Info. participated in Africa stakeholders' consultative meeting on farmers' rights in Harare, Zimbabwe

July 2016	– SPO & TO – Doc & info and AFO attended a SADC Finance Sub-Committee meeting in Gaborone, Botswana – SPO – Doc. & Info. (Acting Head) attended a SADC Ministers of Agriculture & Food Security in Ezulwini, Swaziland – SPO – Doc. & Info. (Acting Head) and AFO attended a Finance Sub-Committee meeting in Gaborone, Botswana – SPO – *In-situ* conducted a training workshop on Climate Smart Agriculture practices and seed systems in Sithumbeko, Zambia
Aug 2016	– SPO – *Ex-Situ* conducted a technical backstopping mission in Madagascar – SPO – *Ex-Situ* attended a Climate-Smart Agriculture conference in Johannesburg, South Africa – SPO – *In-situ* conducted a farmers training on climate-smart agriculture and community seed systems in Malawi
Sept 2016	– SPO – Doc & Info attended an Integrated Seed Systems Development (ISSD) Africa conference in Nairobi aimed at strengthening different seed systems – SPO and TO – Doc. & Info. configured, installed and trained users of web-based SDIS in Madagascar – SPO - in situ attended a stakeholders' workshop on preparation of National Strategic Action Plan for conservation and sustainable use of crop wild relatives in South Africa; and further, conducted an NPGRC active collection inventory
Oct 2016	– SPO and TO – Doc. & Info. configured, installed and trained users of web-based SDIS in Lesotho
Nov 2016	– SPO – *In-situ* participated in a dissemination conference of SADC Crop Wild Relatives project in Pretoria, South Africa – All SPOs, AFO, AAO and Personal Secretary attended the 33rd SPGRC Board meeting in Sandton, South Africa
Dec 2016	– SPO & TO – Doc & info (Acting Head) and AFO attended a SADC Finance Sub-Committee meeting in Gaborone, Botswana
Jan 2017	
Feb 2017	– Acting Head attended a SADC Finance Sub-Committee and SADC Audit Committee meetings in Gaborone, Botswana – SPO and TO – Doc. & Info. configured, installed and trained users of web-based SDIS in Mauritius – SPO – Doc. & Info. participated in a NEPAD-SANBio/BioFISA II annual event in Boksburg, South Africa
Mar 2017	– SPO – Doc. & Info. (Acting Head) and AAO attended a SADC Council of Ministers and Extra-Ordinary Summit of Heads of State And Government in Ezulwini, Swaziland

4. TECHNICAL ACTIVITIES

4.1 GERMPLASM COLLECTING AND *IN-SITU* CONSERVATION

The *In-Situ*/On-farm conservation section coordinates on-farm conservation, germplasm collection, conservation of root and tuber crops in field genebanks, *in-situ* conservation and crop production at the SPGRC Farm.

4.1.1 On-farm Conservation

The Unit has rolled out on-farm activities with the ultimate target of strengthening conservation and utilization of plant genetic resources (PGR) at farmer level, to maintain crop diversity, minimize genetic erosion and to encourage the farming communities to use crop diversity to spread the risks that come with the effects of climate change. The promotion of on-farm conservation, seed restoration and access to planting materials was carried out through established farmers groups particularly where communities maintain a diversity of local crops. The NPGRCs work in liaison with the Extension Services to organize field days and seed fairs where farmer-to-farmer information and seed sharing is facilitated. This also provided a forum for seed exchange for the improvement of local seed systems and the access to planting material in the rural areas.

The NPGRC in Tanzania mobilized farmers' groups and established on-farm conservation and use of underutilized and neglected crops at various regions of the country. The promoted crops included cucurbits, yams and finger millet. Planting materials for these crops were distributed by the NPGRC. Farmers provided land for demonstration plots and labour. The farmers harvested, and redistributed produce to members of the groups. Yams were well adopted and grown by almost all the members in their respective farms, followed by pumpkins and lastly finger millet. Farmers suggested the inclusion of other crops at the demonstration plots (pigeon pea, cassava, ground nuts, maize, bambara nuts and sorghum). A group in Mbinga District requested for assistance in capacity building to become recognized seed growers for sesame, finger millet and ground nuts, to try a meet a high demand of seed for these crops.

The Malawi Genebank has established a number of on-farm conservation groups in several sites where communities still maintain a rich diversity of traditional crops. The country is also promoting the establishment of Community Seed Banks to intensify the conservation of traditional crops by farmers to access food, nutrition and income generation for enhanced livelihoods. Farming communities have identified early maturing varieties of maize, cow pea, sorghum that are promoted for coping with the challenges of climate change. They also proposed to venture into commercialized production of seed derived from locally adapted crops that can be sourced within the communities.

Community Seed Bank activities were carried out in South Africa, Swaziland and Zimbabwe. Namibia and Botswana have identified sites for the establishment of on-farm conservation activities.

4.1.2 Climate Smart Agriculture for Sustainable Use of PGRFA

The region is experiencing significant effects of climate change that are threatening the continued farming of traditional crops, which are the building blocks for the breeding for improved varieties. The management of crop diversity at farmer level is linked to agro-ecological farming practices to build up resilience in coping with the moisture stress and degraded soils. Moreover, famers are also trained on the registration and formal commercialization of preferred traditional varieties that are tolerant to the biotic stress brought about by climate change.

In Malawi, training workshops were held at Salima (Chipoka and Chinguluwe) to scale up agro ecological farming practices that secure more food on less land in more sustainable ways and to improve community resilience to climate change through crop diversification, on-farm crop management and seed production. The two communities had already started mobilizing funds to register their clubs as recognized Seed Growers, starting with production of Basic Seed for a sorghum variety that had been recently released with their participation in its development. A time frame was set for farmers to identify land suitable for seed production and with recommended isolation distances, source of seed and to commence the registration procedures to be Seed Growers. The long term outcome or anticipated ultimate impact is to have improved access to seed, commercialization of adaptive local crops and to have sustainable production to improve food and nutrition security.

In Zambia, a farmer training workshop was carried out at Sithumbeko, to sensitize smallholder farmers to include climate smart factors in their production systems and to equip them with the knowledge on seed multiplication. Farmers brainstormed on experiences indicating changes in rain patterns and other effects of climate change such as delayed on-set of rains, prolonged interval of dry spells during the

Traditional maize storage, Tubu Village, Botswana

planting season, increase of pest and diseases, rising temperatures and high intensity of heavy showers that cause run offs. Farmers shared appropriate farming practices for coping with these challenges. These included integrated farming systems, agro forestry, Conservation Agriculture, use of cover crops, use of green manure, crop rotation and crop diversification.

Farmers expressed great appreciation for the sensitization on climate smart agricultural practices and were eager to implement the skills learnt during the next planting season. Farmers were also ready to be registered as potential seed growers for two local crops, maize and cow pea.

The Botswana NPGRC in collaboration with the *in-situ* unit of SPGRC organized a farmers' workshop on the conservation of crop diversity on-farm and the use of agro ecological farming practices to cope with climate change. This was held at the Cresta Hotel in Mahalapye and the function was graced by the participation of the Assistant Minister of Agricultural Development and Food Security who is also the MP for Serowe North. The farmers were drawn mainly from the Central District. The overall theme was "Plant Genetic Resources Conservation – safeguarding our reservoir of traits of economic importance for sustainable development". This was the very first farmers' workshop to be convened in the country as regards the strengthening of the continued management of crop diversity at farmer level. A follow up trip will be done just before the start of the planting season in 2017 to strengthen the establishment of on-farm conservation groups and to convene another farmers' workshop in the western part of the country where local crops are utilized.

4.1.3 Disaster Impact Assessment Surveys

Floods and drought have become a constant threat in the SADC region. Disaster impact assessment surveys were carried out in the Nsanje Province in Malawi (floods) and the Zambezi Region in Namibia (drought); to identify lost crops. Recommendations on proposed Intervention programs on seed restoration activities were developed with the respective National Genebanks.

The Technical Officer from Namibia visited two farming communities in Zambia as a familiarization tour in preparation for the establishment of crop restoration activities in the drought prone areas of the Zambezi region. After the visit, the NPGRC has since distributed seed samples (sorghum, pearl millet and maize) and legume tree seedlings for the promotion of agro-forestry and Conservation Agriculture practices which fall under the Climate Smart Agriculture concept that is adopted globally in facing the challenges of climate change.

A report was compiled and presented to the Ministers of Agriculture with the following recommendations that were endorsed:

Countries to:

a) align disaster management programmes with traditional crop restoration activities for sustainable food security and improved household livelihoods.
b) allocate financial support for local seed multiplication programmes to combat

the loss of crop genetic resources and for the procurement of Open Pollinated Varieties (OPVs).

c) establish community based seed enterprises to improve farmer seed systems and post-disaster seed relief programmes.

4.1.4 *In-situ* Conservation

Crop wild relatives (CWR) are wild species that are closely related to crops and are recognized as a vital component of agricultural biodiversity. In general, CWR are genetically diverse, locally adapted and contain an incredible amount of genetic diversity for improved tolerance to extreme temperatures, drought and flooding.

Crop Wild Relatives are increasingly suffering from genetic erosion thus a coordinated, systematic and integrated approach to their conservation is essential and should include both *in situ* and *ex situ* strategies. This can be best practically implemented through well articulated national and regional conservation plans.

A concept note on an integrated CWR Conservation Strategy was developed by SPGRC in collaboration with the Birmingham University and circulated to Member States for comments.

4.1.5 Germplasm Collection

This activity is mainly done by national *In-Situ*/Collection Officers and the SPO provides technical expertise when need arises. In practice, adequate seed quantities should be collected for conservation, distribution to end users and deposited at SPGRC for Base collection. However this is not always practical depending on the availability of material from the donor or farmer during collection missions. This is why it is important at the time of receiving material; by Curators to document or register whether the sample is accepted for conservation or pending for further multiplication to meet the required quantities.

Seed collection from farmers' fields, Botswana

During the reporting period, Collection missions were conducted in Angola (33 samples of mixed crops), Malawi (60 of maize and rice), Mozambique (78 rice and 2 wild rice from the Delgado Province), Tanzania (400 samples of maize and rice). A total of 540 samples were collected.

4.1.6 Field Genebanks and SPGRC Multiplication Farm

The mandate for SPGRC is to promote the establishment and maintenance of field genebanks for the conservation of vegetatively propagated material. Unlike most of the SADC countries, Seychelles depend more on vegetatively propagated material as a food source. The Government in partnership with the private sector has established a field genebank at a private farm. SPGRC provided technical guidance particularly on the need of identifying the priority plants to be conserved.

SPGRC continued to maintain 25 species of wild fruit trees and medicinal plants. A total of 105 plants, all collected from various parts of Zambia are in the arboretum. The materials have been used for educational purposes particularly to students visiting the institution.

4.1.7 Farm Activities

Cereal crops have been rotated with beans and sun-hemp. A variation of local crops was planted in small panels for educational purposes and to enhance the institutional visibility at agricultural shows. Crops grown included: local maize, sorghum, pearl millet, beans, chick pea, pigeon pea, green gram, okra, Corchorus spp., amaranths, melons and gourds.

4.2 DOCUMENTATION AND INFORMATION

4.2.1 Hardware and Software

Hard- and soft-ware was continuously updated and maintained and Internet bandwidth was upgraded to 2Mbps, with further expected upgrading to 5Mbps by December 2017.

The Centre continued with technical maintenance of a mail server which also acts as a domain controller. The SPGRC Local Area Network and associated IT equipment and facilities were kept running smoothly thus enhancing sharing of information and data resources across local and outside clients. The Centre procured three (3) desktop computers to replace the depreciated machines.

4.2.2 Database Development

A completed new web-based SPGRC Documentation & Information System (SDIS) that was presented to stakeholders during the annual technical review and planning meeting in September 2015, was adopted and members of SPGRC network agreed to start using it once installed in their respective countries. The region will be able to share information on the global platform, GENESYS. The database is thus globally accessible with a link at SPGRC website (www.spgrc.org.zm) or directly to http://sdis.spgrc.org.zm

Interactive training on web-SDIS, Mauritius

The system has already been installed in 14 SADC Member State genebanks (Angola, Botswana, DRC, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Swaziland, Tanzania, Zambia, and Zimbabwe), with the last one being conducted in South Africa in the near future. Web-SDIS installation and staff training for the newly admitted Comoros is planned for the future.

4.2.3 Network News and Publicity

The SPGRC Annual report for 2015/16 is in preparation and should be ready for printing and distribution by July 2016. Meanwhile, the SPGRC website has remained a major conduit for updating information regarding activities and achievements made by SPGRC.

The Internet access at SPGRC was upgraded to 2,000 Kbps using optic fibre and with an increase in demand for speed; plans are underway to cost-effectively upgrade subscribed bandwidth using funds provided by SADC Secretariat's Asset Replacement Fund.

4.2.4 SPGRC Library

The SPGRC purchased new books, and journals and serial titles as well as other publications while renewing the existing subscribed titles. A few new titles related to biodiversity management were purchased and added to the library collections that serve network scientists to keep themselves abreast with new information, technology and other developments in PGR conservation, management and utilization.

The Essential Electronic Agricultural Library (TEEAL) database (stationed at SPGRC), continued to provide service to scientists who can have full-text articles from more

than 200 world-renowned journals in agricultural research and production. The library management software (*Surpass*) has assisted in effectively managing the SPGRC library that serves the SPGRC network.

4.2.5 Publicity and Awareness of SPGRC

The Centre did not participate in publicity events including the national and regional shows/exhibitions, as well as media coverage events due to limited funding. SPGRC shall in future, commit more resources towards facilitation of participation in such national, regional, global publicity and scientific events.

4.3 *EX-SITU* CONSERVATION

Conservation of germplasm materials *ex-situ* is one way to ensure that SADC food security needs are met in future without compromising current food security needs by maintaining a working regional genebank that conserves SADC Base collection supplied by Member States.

4.3.1 Seed Handling and Storage

Conservation of germplasm materials *ex-situ* is one way to ensure that SADC food security needs are met in future without compromising current food security needs by maintaining a working regional genebank that conserves SADC Base collection supplied by Member States.

4.3.1 Seed Handling and Storage

In terms of seed exchange, handling, and processing management, significant improvements were made in exchanging samples from national genebanks to the Regional Genebank. Seed Import Permits were acquired by SPGRC for member states that were ready to exchange a total of 478 materials and were issued and materials received (Mauritius-31, South Africa-17 and Zambia-430). Import permits are being processed for germplasm materials from Botswana, Mauritius and Zimbabwe.

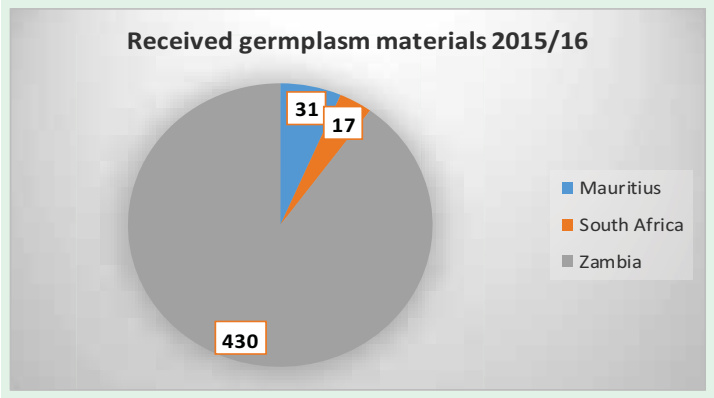
To further improve seed handling and processing management system, 25 new chest freezers were replaced in genebank and the four air-conditioners serviced and well maintained, all in order to create desired ambient climate suitable for seed preservation. A new microscope was procured and various seed treating chemicals were acquired to facilitate the seed testing processes.

With dwindling support by external funding, the national plant genetic resource centres have been alerted of their responsibility to self-sufficiency with conservation resources in this era of climate change. However, in order to promote efficiency, NPGRCs that expressed inability to access aluminium foil packets were assisted and issued foil packet and pollination bags as a way to continue in promoting efficiency for the network.

A new drier has been ordered and is yet to arrive thus affecting the normal conservation processes as some collections are awaiting to be dried first before they

can be passed into the genebank for storage. The delay has affected operations as most genebank operations are intertwined to each other.

Five hundred and Seventy Six (576) seed samples were received from NPGRC during the period under review. Three countries took part in sending seed samples to SPGRC as shown in figure below.



Since the new drying cabinet is still being awaited, the available collections were sun dried to ensure their life potential was not affected significantly. Their moisture contents were then tested and the average moisture content achieved without mechanical drying were between 8 and 9% Moisture Content.

Table 4.1: Accessions received by SPGRC from MS over the past 11 years (2005-2016)

	Years												
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Angola	50	43	590	71	140	68	65	45	35	20	-	-	-
Botswana	-	-	199	-	159	130	-	216	279	-	-	-	-
DRC	-	-	-	-	-	-	-	-	-	-	-	-	-
Lesotho	64	75	183	169	-	490	-		-	-	-	-	-
Malawi	34	113	-	126	95	14	30	13	9	56	29	83	104
Mauritius	-	23	-	38	-	-	-	38	41	40	-	31	-
Mozambique	27	38	-	28	158	-	311	-	-	-	78	-	-
Namibia	500	714	95	192	-	-	-	-	32	-	24	-	-
Seychelles	-	-	-	-	-	-	-	-	-	-	-	-	-
South Africa	256	-	189	-	-	-	-	-		-	62	17	-
Swaziland	-	20	-	36	-	-	-	51	-	545	-	-	-
Tanzania	68	-	84	-	126	-	358	72	-	-	-	-	
Zambia	162	22	34	-	293	-	-	-	-	-	-	-	430
Zimbabwe	30	-	-	-	-	-	281	-		-	-	-	42
Total Accessions received at SPGRC	1191	1048	1374	660	971	702	1045	335	396	661	193	131	576

Total Received 2005 - 2017 : 9283 accessions

4.3.2 Facilities and Equipment

Twenty-five (25) chest freezers that were purchased earlier have since been installed in the gene bank, i.e. replacing the same number of old freezers. Recently, ten (10) more deep freezers were purchased. These have also been installed in the gene bank, replacing ten old freezers.

The SADC asset replacement plan in which SPGRC requirements are included is due to be implemented in 2017/2018 financial year.

4.3.3 Regeneration and Multiplication

Seed characterization, multiplication, regeneration and pre-breeding

Four crop species namely *Zea mays*, *Sorghum bicolor*, *Vigna unguiculata* and *Pennisetum glaucum* were sown for seed multiplication during the 2016/17 planting season. A total of 255 accessions were planted of which 65 were Zea mays, 91 were Sorghum, 12 were *Pennisetum glaucum* and 87 were *Vigna unguiculata*.

Young rice crop at Lifuwu Centre, Malawi

As part of contribution towards information sharing, two Cooperative College students were attached and supervised on characterisation and a total of 105 accessions that included Zea mays (15), Sorghum (15), Phaseolus vulgaris (75) were used. They have since been harvested and processing is ongoing.

4.3.4 Status of Collections in NPGRCs and at SPGRC

During the year, total number of collections duplicated to SPGRC rose from 17,613 to 18,091 as reflected in Table 4.2 below with a gap reduction of 430 collections from 27,427 last year to 26,949 this reporting year. As shown in table-4.2.

Table 4.2: Status of collection: 2016/17

Country	Collections in Country	Collections held at SPGRC	Gap
Angola	4,281	1391	2890
Botswana	4480	1085	3395
DRC	0	0	0
Lesotho	1519	1206	313
Malawi	3917	1708	2209
Mauritius	4613	213	4400
Mozambique	2404	736	1668
Namibia	2619	1742	877
Seychelles	0	0	0
South Africa	3091	1188	1903
Swaziland	972	498	474
Tanzania	6001	2713	3288
Zambia	6500	3551	2949
Zimbabwe	6311	2175	4136
Total	**44,795**		

Figure 4.2: Number of accessions by country and duplicates at SPGRC

During the reporting period, the accessions holdings and major species at SPGRC are as shown in table 4.3 below.

Table 4.3: Accessions of Major Species held at SPGRC

Species	Common Name	Number of Accessions
Sorghum bicolor (L.) Moench	Sorghum	506
Eleusine coracana	Finger Millet	1181
Zea mays L.	Maize	2322
Pennisetum glaucum (L.) R. Br.	Pearl Millet	1648
Vigna unguiculata (L.) Walp.	Cowpea	1553
Arachis hypogaea L.	Groundnut	822
Phaseolus vugaris L.	Beans	1140
Oryza sativa L.	Rice	500
Vigna subterranea (L.) Verdc.	Bambara Nuts	417
Cucurbits (C. Pepo & maxima)	Pumpkin	444
Citrullus lanatus (Thumb.) Matsumura & Nakai	Water Melon	217
Triticum aestivum L.	Wheat	142
Cajanus cajan (L.) Millsp.	Pigeon pea	174
Cicer arientinum L.	Chickpea	145
Pisum sativum L.	Pea	106
Sesamum indicum L.	Sesame	104
L. siceraria	Gourd	1129
Others		547
Total		**17,897**

4.3.5 Herbarium

The aim was to increase herbarium specimens and data collection required to improve conservation and utilization of genetic resources. The work initiated and there were challenges in the way that could not be controlled and was postponed to later date.

4.3.6 Arboretum

SPGRC continued to maintain 25 species of wild fruit trees and medicinal plant at the regional centre. A total of 105 plants, all collected from various parts of Zambia are in the arboretum.

4.4 TECHNICAL BACKSTOPPING TO NPGRCs

Compliance to international legal obligations under the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and Global partnerships including service provision to the SPGRC network guides its coordination and

management commitments. The SPOs travelled to the national genebanks during the year and provided technical backstopping on matters relating to commitment for implementation of best genebank standards to ensure longer term conservation and promotion of the use of germplasm, establishment and continuous management on on-farm/*in-situ* activities, and on standardized information sharing/exchange and propagation of use of ICTs in managing germplasm collections using databases.

Following the re-engagement of Madagascar in SADC community, SPGRC initiated the return of the country into the network and a technical support was provided to Madagascar and preliminary fact finding and technical evaluation to establish NPGRC were initiated. Madagascar has asked SPGRC to extend the mission widely to other potential parts of the National Centre for Applied Research and Rural Development (FOFIFA) before coming to a conclusion. There is need for further evaluation to assess on how to reorganize and promote transformation in order to adhere well to the newer demands for effective conservation and utilization of PGRFA for the present and future needs.

5. INTERIM FINANCIAL REPORT 2016/2017

Table 6.1: Statement of Financial Performance for the Year Ended 31st March 2017

	2016/17	2015/16
	US$	US$
Revenue from Non-Exchange Transactions	**(1,419,647)**	**(1,384,000)**
Member States' contributions	(1,413,640)	1,384,000)
Transfers and asset donations	-	-
Development Partners' contributions	(6,007)	-
Revenue from Exchange Transactions	**(4,147)**	**(5,574)**
Institutional property rentals	(4,147)	(5,574)
Investment revenue	-	-
Total Revenue	**(1,423,794)**	**(1,389,574)**
Expenditure		
Operating Expenses	**1,288,045**	**1,364,147**
Staff costs	856,697	995,599
Transport, subsistence and conferences, supplies and communications	310,399	265,695
Lease expenditure	-	-
Contingent rental on finance leases	-	-
Audit and professional fees	5,016	2,396
Depreciation current year change	108,884	94,381
Depreciation effect of changes in residual values	-	-
Finance cost	7,049	6,076
Total Expenditure	**1,288,045**	**1,364,147**
Other Gains/(Losses)	**51,008**	**12,821**
Gain/(Loss) on sale of assets	-	(7,299)
Gain/(Loss) on foreign exchange transactions	51,008	20,120
Surplus/(Deficit) for the Year	**(84,741)**	**(12,606)**

Source: *SADC Financial Statements for the Year Ended 31st March 2017*

Table 6.2: Statement of Financial Position as at 31st March 2017

	2016/17 US$	2015/16 US$
Assets		
Current Assets	**920,461**	**597,048**
Cash and cash equivalents	862,560	546,489
Receivables from exchange transactions	41,564	13,112
Receivables from non-exchange transactions	-	-
Prepayments	16,338	37,447
Value Added Tax receivables	-	-
Non-Current Assets	**1,856,141**	**1,952,652**
Property, plant and equipment	1,856,141	1,952,652
Total Assets	**2,776,602**	**2,549,700**
Liabilities		
Current Liabilities	**(132,226)**	**(94,599)**
Trade and other payables from exchange transactions	(126,892)	(93,707)
Trade and other payables from non-exchange transactions	-	-
Finance lease liability	-	-
Post-employment benefit	-	-
Deferred Revenue from Development Partners	(5,334)	(893)
Member States' Special Funds	-	-
	76,800	46,501
Non-Current Liabilities	**(240,933)**	**(219,058)**
Post-employment benefit	(240,933)	(219,058)
Finance lease liability	-	-
Total Liabilities		
Net Assets	**(2,403,443)**	**(2,236,043**
Accumulated surplus	(2,403,443)	(2,236,043)
Total Net Assets and Liabilities	**(2,776,602)**	**(2,549,700)**

Source: *SADC Financial Statements for the Year Ended 31st March 2017*

Table 6.3: Statement of Cash Flows the Year Ended 31st March 2017

	2016/17, US$	2015/16, US$
Cash Flows from Operating Activities		
Surplus/(Deficit) for the year	84,741	12,606
Adjustments:		
Depreciation	108,884	94,381
Gain/(Loss) on sale of assets	-	7,299
Finance Income	-	-
Finance costs	7,049	6,076
Revenue from donations of assets	-	-
SADC House revenue realised	-	-
Member States Special Fund receipts	82,660	2,929
Member States Special Fund payments	-	-
SADC House contributions	-	-
Gratuity Fund receipts	21,875	-
Gratuity Fund payments	-	(49,526
Development Partners Fund receipts	-	-
Development Partners Fund payments	-	-
(Increase)/Decrease in payables	37,627	17,798
(Decrease)/Increase in receivables	(7,343)	(1,127)
Net Cash Flows from Operating Activities	**335,493**	**90,436**
Cash Flows from Investing Activities		
Purchase of property, plant, equipment	(12,373)	(123,062)
Proceeds from sale of property, plant, equipment	-	(7,299)
Interest received	(7,049)	(6,076)
Net Cash Flows from Investing Activities	**(19,422)**	**(136,437)**
Cash Flows from Financing Activities		
Finance Charges Paid on SADC House	-	-
SADC House lease repayments	-	-
Net Cash Flows Used in Financing Activities	**-**	**-**
Net Increase/(Decrease) in Cash and Cash Equivalents	**316,070**	**(46,001)**
Effect of exchange rate adjustments	51,006	11,375
Opening cash and cash equivalents	546,489	592,490
Closing Cash and cash equivalents	**862,560**	**546,489**

Source: *SADC Financial Statements for the Year Ended 31st March 2017*

7. APPENDICES

Appendix I: Members of the Board of SPGRC, 2016/2017

Mr Godfrey Mwila	– Zambia (Chairperson)
Dr Pedro Moçambique	– Angola
Ms Tiny Mtlhaodi	– Botswana
Prof Mbuya Kankolongo	– DRC
Dr Lefulesele Lebeso	– Lesotho
Dr Wiseman Kanyika	– Malawi
Dr Jacqueline Rakotoarisoa	– Madagascar
Ms Carla do Vale	– Mozambique
Mr Nitish Goupal	– Mauritius
Ms Johanna F. Andowa	– Namibia
Mr Marc Naiken	– Seychelles
Dr Noluthando N. Nkoana	– South Africa
Dr Innocentia S. Kunene	– Swaziland (Vice-Chairperson)
Dr Hussein Mansoor	– Tanzania
Dr Cames Mguni	– Zimbabwe
Ex-Officio Members	
Mrs Margaret Nyirenda	– SADC Secretariat
Dr Jojo Baidu-Forson	– Bioversity International
	– Donor
Barnabas Kapange	– SPGRC (Secretary)

Appendix II: SPGRC Staff Members, 2016/2017

Vacant	Head, SPGRC
Ms Thandie J Lupupa	Senior Programme Officer – *In-Situ* Conservation (*16 May 2006)*
Mr Barnabas W Kapange	Senior Programme Officer - Documentation & Information (*09 May 2006*) – Acting Head, SPGRC
Mr Lerotholi L Qhobela	Senior Programme Officer – *Ex-Situ* Conservation (*15 May 2006*)
Mrs Mary B Phiri	Assistant Administrative Officer (*01 March 2000*)
Ms Florence C Chitulangoma	Assistant Finance Officer (*08 March 1993*)
Mrs Peggy S Ng'ono	Technical Officer-Conservation (*01 June 2005*)
Mr Mike Daka	Technical Officer - Documentation & Information (21 May 2012)
Mr Ferdinand Mushinge	Technical Officer – *In situ* (*01 March 2004*)
Mrs Phyllis M Litula	Personal Secretary (*12 November 2001*)
Mr Wilbroad M Chashi	Senior Finance Clerk (*01 July 2002*)
Mr Julius Daka	Driver/Messenger (*01 June 2016*)
Mr Kapelwa E Songa	Typist/Receptionist (*01 September 1989*)
Mr Gibson Zulu	General Worker (*01 August 1989*)
Mr John Mfwembe	General Worker (*04 September 1989*)
Mr Stephen Siankachele	General Worker (*01 December 2016)*
Mr Olipen Phiri	General Worker (*05 January 2009*)

Appendix III: List of Some Prominent Visitors to SPGRC (2016/2017)

Zombe Sikazwe	SCCI, P. O. Box 350199, Chilanga, Zambia
Tobias Smith	UCCRI, Pembinske Street, Cambridge, CBI 3BU, UK
Robin Unuth	SADC Secretariat, Gaborone, Botswana
Chisepo Lungu	SADC Secretariat, Gaborone, Botswana
Stephand Nzowa	AGU, P. O. Box 279, Makambako, Tanzania
Eliud Nginyiri	Chair, Rescope Board, Kenya; +254722307576
Josephine C. K. Mulenga	NAPSA, P. O. Box 158, Chongwe, Zambia
Lizzie C. Sakala	NAPSA, P. O. Box 158, Chongwe, Zambia
Simon Mwale	CCARDESA, P/Bag 357, Gaborone, Botswana
Fanuel Tagwira	CCARDESA Chair, Africa University, Zimbabwe
Catherine Mungoma	CCARDESA, P. O. Box 31521, Lusaka, Zambia
Lukonde Mwelwa	UNZA School Of Agric, Box 32379, Lusaka, Zambia
Given Bwalya Phiri	ZARI, P/Bag 7, Chilanga, Lusaka, Zambia
Mebelo Ndiyoi	ZARI, P/Bag 7, Chilanga, Lusaka, Zambia
Ookeditse Kamau	SADC Secretariat, Gaborone, Botswana
Grace Moleta	SADC Secretariat, Gaborone, Botswana
Mweembe S. Phiri	Cooperative College, Lusaka, Zambia
Chipili Mukuma	Cooperative College, Lusaka, Zambia
Alfred M. Sichilima	Copperbelt University, Kitwe, Zambia

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