CONTENTS

List of Abbreviations....4

1 MANAGEMENT AND ADMINISTRATION....6
- 1.1 The 28th Ordinary Board Meeting, Lusaka, Zambia 6
- 1.2 Workshops and Meetings 7
- 1.3 Visitors 8

2. PERSONNEL, EQUIPMENT AND SUPPLIES....9
- 2.1 SPGRC Personnel 9
- 2.2 Staffing in NPGRCs 9
- 2.3 Equipment and Supplies 10
- 2.4 SPGRC Buildings 11

3. MEETINGS, TRAINING AND EDUCATION....11
- 3.1 NEPAD/SANBio Training 11
- 3.2 MSc Training in PGR Policy 12
- 3.3 PGR Policy Guidelines Development 12
- 3.4 Some Important Meetings Attended by SPGRC Staff 13

4. TECHNICAL ACTIVITIES....15
- 4.1 GERMPLASM COLLECTING AND *IN SITU* CONSERVATION 15
- 4.2 DOCUMENTATION AND INFORMATION 19
- *4.3* *EX-SITU* CONSERVATION 22

5. FARM....26

6. DISCUSSIONS OF GENERAL ISSUES AT PLANNING MEETING....26
- 6.1 Gap bridging and equipment/facilities issues 26
- 6.2 Database servers 26
- 6.3 Utilization of conserved materials 27
- 6.4 International Treaty capacity building 27

7. ESTABLISHMENT OF THE SADC CENTRE AT SPGRC....27

8. FINANCIAL REPORT 2009/2010 28

9. APPENDICES....31
- Appendix I: Members of the Board of SPGRC, 2010/2011 31
- Appendix II: SPGRC Staff Members, 2011/2012 32
- Appendix III: List of Some Prominent Visitors to SPGRC (2011/2012) 33

10. PUBLICATIONS....34

List of Abbreviations

ABIA	Agricultural Biodiversity Initiative for Africa
BioFISA	Finnish-Southern Africa Partnership Programme to Strengthen NEPAD/SANBio Network
Bioversity	Bioversity International
CACESA	Cassava Central, Eastern and Southern Africa
CBU	Copperbelt University
DRC	Democratic Republic of Congo
FAO	Food and Agriculture Organisation (United Nations)
FAO-SFS	FAO Southern Africa Sub-Regional Office
GCDT	Global Crop Diversity Trust
GIS	Geographic Information System
HaSSP	Harmonized Seed Security Project
IK	Indigenous Knowledge
IPR	Intellectual Property Rights
IT	Information Technology
LAN	Local Area Network
NEPAD	The New Partnership for Africa's Development
NordGen	Nordic Gene Bank
NPGRC	National Plant Genetic Resources Centre
NPGRCom	National Plant Genetic Resources Committee
NTSYSpc	Numerical Taxonomy and Multivariate Analysis System
PGR	Plant Genetic Resource
RCWG	Regional Crop Working Group
SACAU	Southern African Confederation of Agricultural Unions
SADC	Southern African Development Community
SANBio	Southern Africa Network for Biosciences
SDIS	SPGRC Documentation and Information System
Sida	Swedish International Development Co-operation Agency
SLU	Swedish University of Agricultural Sciences)
SPGRC	SADC Plant Genetic Resources Centre
SPO	Senior Programme Officer, SADC
TEEAL	The Essential Electronic Agricultural Library
ZESCO	Zambia Electricity Supply Company

Report Highlights

- 28th SPGRC Ordinary Board Meeting Held in Lusaka, Zambia
- Technical Review and Planning meeting held in Lusaka, Zambia
- General Discussions from planning meeting
- SADC Seed Centre establishment at SPGRC

1 MANAGEMENT AND ADMINISTRATION

1.1 The 28th Ordinary Board Meeting, Lusaka, Zambia

The Board of SPGRC met in Lusaka, Zambia from 12th to 13th October 2011. The meeting was opened by the Permanent Secretary in the Ministry of Agriculture and Livestock, Dr Austin Sichinga, who welcomed Board Members to Zambia and wished them successful deliberations and a happy stay in Lusaka.

In his opening remarks, the Board Chair expressed his happiness to have Dr Sichinga as the Guest of Honour and congratulated Zambia for the peaceful elections and the democratic principles on the conclusion of the elections. The Board Chair acknowledged the fact that the work of the Board was becoming challenging since the donor aid had come to an end. He urged the Board to try identify donors within the region to ensure that SPGRC was sustainable.

As the Board needed to elect a new Chairperson and a Vice Chairperson, it went into an election session resulting into South Africa and Malawi being elected respectively as the Chair and Vice-Chair of the Board (Dr Julian Jaftha and Dr Alfred P Mtukuso respectively). Cognizant of the good work done by the immediate former Board Chair, the Board agreed that a formal letter be written to Dr Maggs-Kolling to thank her for leading the Board for three years.

With the coming to an end of the project, as a gesture of recognition for the excellent work done, the Chairperson on behalf of the Board, presented a gift to the former Technical Advisor, Dr Moneim Fatih and thanked him for the unreserved support and guidance he rendered to SPGRC. He said Dr Fatih was knowledgeable and a master of all. He thanked him for the warm and gentle nature he brought to the SPGRC Board and also for the interest he had shown to the region.

The SPGRC Board Chair, Dr Julian Jaftha (r) giving a present to former SPGRC Technical Advisor, Dr Moneim Fatih

The Head of SPGRC informed the Board that the draft regional PGR policy guidelines which intended to harmonise the PGR policies in the region were at draft stage and being shared with stakeholders for their inputs. He reported that they would be ready for presentation to the SADC Ministers responsible for Food Agriculture and Natural Resources by the first quarter of 2012.

In its deliberations, the Board directed that a long-term impact assessment study to be funded by Sida be carried out later after the completion report. This was a follow up to the Head's report to the Board that a 5th Phase completion report was being compiled.

The Board noted that in line with the decision of Ministers responsible for Agriculture and Food Security of 2009, that the SADC Seed Centre was supposed to be accommodated at SPGRC had now been established at SPGRC and that the Centre's Coordinator had reported for duty.

The Board urged SPGRC Management and SADC Secretariat to finalize the SPGRC Financial Sustainability Study document and circulate it to Board Members for comments so that it could be approved at the next Board Meeting before it could be taken to the Council of Ministers.

The Board noted that the Planning Meeting emphasized the need for the conserved materials to be used by the breeders, students, farmers and other stakeholders. The meeting urged NPGRCs to take initiatives in promoting the utilisation of conserved material.

In addition to the above, the Board also discussed and deliberated NPGRCs highlights from planning meeting, SPGRC progress report, and decisions of the SADC Council of Ministers.

1.2 Workshops and Meetings

1.2.1 Annual Technical Review and Planning Meeting

The SPGRC/NPGRCs Annual Technical Review and Planning Meeting was held at Protea Hotel – Cairo Road in Lusaka, Zambia between 5th and 9th September 2011. The meeting's main objectives were to: review the implementation of the technical activities for 2010/2011 cropping season; evaluate

the technical and budgetary plans for the 2011/2012 cropping season; and facilitate information sharing on any other technical and networking issues. The meeting was co-sponsored by SPGRC, FAO (Southern African Regional Office) and the Southern African Network for Biosciences (SANBio).

In addition to the routine discussions and deliberations on conventional SPGRC network activities, the meeting also discussed draft report of the PGR policy through a project funded by the Southern African Network for Biosciences (SANBio) as well as on FAO activities in the southern African region, focusing on potential collaboration programmes.

Some of the major achievements scored during the reporting time were outlined including implementation of the SANBio policy guidelines project; close collaboration with FAO which culminated into funding of the network to develop conservation strategies; SPGRC senior officers successful backstopping of NPGRCs. It was also reported that SPGRC was discussed as an agenda item during the last (June 2011) meeting of the SADC Ministers responsible for Food Agriculture and Natural Resources, who re-affirmed their commitment to support the network.

The meeting was also informed that money that was promised in 2010 by Sida (*in lieu* of constructing biotechnology laboratory at SPGRC) could not be secured and this has affected planned procurement of vehicles and generators for needful NPGRCs as well as other facilities and consumables for the network.

Participants were reminded that SPGRC is required to submit a 5th Phase Project completion report and urged NPGRCs to submit their respective information for compilation of this report.

Group photo of the annual planning meeting participants

The representative from the FAO - Southern Africa Sub Regional Office (FAOSFS), Dr Joyce Mulila-Mitti thanked SPGRC for inviting FAO to be present at this meeting. She indicated that FAO was looking forward to a long term working relationship with SPGRC and NPGRCs as they also believed that PGR conservation and sustainable utilization is the basis for improved crop production. She then mentioned that FAO was looking at the whole spectrum of PGR conservation, utilization and seed systems. Ms Mulila-Mitti highlighted initiatives by the FAOSFS that could be tapped into by the SPGRC network and NPGRCs. She expressed her wish for more resources being availed in support of SPGRC network. She finally thanked the network members for their commitment to PGR conservation activities.

Amongst the remarkable achievements by this meeting include agreement with Sida Technical Advisor that the SDIS central synchronizing server that has been held by donor for long should be transferred for hosting within the region. This will expedite the process of migration of the standalone database to the anticipated web-based SDIS system.

A presentation by the FAO-Rome representative, Dr Chikelu Mba, focused on FAO's contribution in strengthening seed systems in developing countries that cover seed policy, strategy and programmes formulation or review, seed related information and knowledge management, variety development, seed production, agriculture extension, seed marketing, seed security and other value chain issues, plus capacity building. It was realized that FAO supported and implemented a number of projects in the SADC region into which SPGRC network could tap in. These include initiation of the harmonization of seed

rules and regulation, Harmonized Seed Security Project (HaSSP) – pilot project in Malawi, Swaziland, Zambia and Zimbabwe for implementation of SADC harmonised seed regulatory system, facilitating establishment of SADC Seed Security Network, supporting the Cassava Central, Eastern and Southern Africa (CACESA) Strategic Framework. She also enumerated FAO's country-level support of a number of SADC Member States. The representative explicitly highlighted opportunities for linkages and collaboration and plans for future support of SPGRC.

1.2.2 Regional Crop Working Groups

No Regional Crop Working Groups (RCWGs) meetings were held during the reporting period due to financial constraints. The outputs from previous meetings continued to be used in the implementation of strategies for collection and conservation of plant genetic resources of various species groups.

1.3 Visitors

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

2. PERSONNEL, EQUIPMENT AND SUPPLIES

2.1 SPGRC Personnel

The staffing levels at SPGRC remained unchanged during the year with the exception of Mr Kennedy Hamudulu (Technical Officer – Documentation & Information) who left the institution in October 2011 to become a Member of Parliament in Zambia.

2.2 Staffing in NPGRCs

Research officers who went for further training from the NPGRCs of Angola, Mozambique and Zimbabwe reported back and continue to work in their respective NPGRCs. While Dr. Pedro Moçambique (Angola) and Dr. Paulino Munisse (Mozambique) completed their PhDs in Brazil and Denmark respectively, Ms Rudo Musango successfully completed her BSc degree in Zimbabwe.

The Malawian NPGRC Curator, Mr Lawrent Pungulani left for further training (PhD) in New Zealand and Mr. Abilio Afonso (Mozambique) continued with his MSc studies in Sweden.

Otherwise, the staffing in NPGRCs remained rather stable with the exception of Swaziland NPGRC which is facing acute staff shortage; Tanzania's recently graduated staff (Ms Anna Makundi) left for another job; and Zambia which saw a scientist, Mr Andrew Phiri resigning from service.

The composition of most NPGRComs remained unchanged except Swaziland which had one of its member replaced, and an interim NPGRCom for Seychelles was constituted.

Very few NPGRComs met to discuss NPGRC activities, Treaty domestication, and capacity building, among others. Some NPGRComs have not held their meetings for more than a year.

2.3 Equipment and Supplies

A new BMW saloon car was procured in 2011 to replace the ageing Volvo car used by the Head. The old Toyota HIACE minibus and a Toyota Hilux were disposed off during the year. The Massey Ferguson tractor used in farm work at SPGRC was involved in an accident in December 2010 and according to insurers' assessment, it had to be written-off. The money recovered from the insurers will be used to purchase a new tractor.

In the effort to improve management of the library, a desktop computer was procured, together with library management software. These have been installed and data input has commenced.

Power outages from the State utility company (ZESCO) continued, causing damage to some equipment in the genebank. The standby generator as reported earlier on is very old and need either a major overhaul or preferably, replacement.

The SPGRC project has provided and continued to maintain functioning of equipment and facilities in the network, mainly through technical backstopping. The end of the 20-year project has seen NPGRCs struggling to maintain equipment/facilities and in the sourcing of consumables.

The withdrawal of the donor funds meant for the construction of a Biotechnology Laboratory at SPGRC was a blow to the network. The donor did not approve the anticipated reallocations that were to include procurement of equipment, stand-by generators for Lesotho and Tanzania; and motor vehicles for DRC and Mozambique.

Renovation of the Swaziland NPGRC building was reported to be going on well. The renovation plan was modified to include a shelter for the standby generator and a shelter that will be used for drying materials.

2.4 SPGRC Buildings (Offices and Staff Houses)

There has been no change in status during the year under review. SPGRC continued to pay heavily for frequent and expensive maintenance of office buildings and staff houses mainly due to initial poor workmanship, for example poor plumbing materials were used. Major maintenance work on buildings included replacement of substandard materials that were used during the construction of the houses.

3. MEETINGS, TRAINING AND EDUCATION

3.1 NEPAD/SANBio Training Workshop on Technology Transfer and Commercialization

The SPO – Documentation & Information represented SPGRC in training on technology transfer and commercialization held on 21-22 July 2011 in Livingstone, Zambia.

The objectives of the training were to develop guidelines for IP, IK and Benefit Sharing in the SADC region; and to exchange information and share experiences on technology transfer: product identification, development and marketing.

There are no schools where researchers are taught how to be innovative, instead, research that is responsive to the people's environment will eventually produce innovative products. Awareness on what is or not patentable is still unacceptably low among researchers.

The workshops on Intellectual Property Rights (IPR), Indigenous Knowledge (IK) and Benefit Sharing Draft Guidelines, and Technology Transfer have so far laid the ground for improved understanding of Southern Africa's development intervention. It was suggested that future workshops should focus more on existing problems and possible opportunities within the public institutions of SANBio member states. The two workshops transferred new knowledge and skills related to IPR and Technology Transfer to over 35 participants from the SADC region.

3.2 MSc Training in PGR Policy

The offer for MSc training given to Ms Petrina Mabuku sponsored by the SANBio/BIOFISA project being coordinated by the SADC Plant Genetic Resources Centre (SPGRC) was regrettably withdrawn following candidate's failure to register due to strict selection procedures by the intended university (University of Namibia).

So as not to lose funds, the SANBio project nominated a second on the list candidate, Mr Onismus Chipfunde and asked him to register with a university with funding from SANBio. Mr. Chipfunde, a Research Officer from the Zimbabwean NPGRC successfully joined the University after completing the registration process and he started classes on 12th March 2012.

He is sponsored to pursue an 18-month MSc studies in Environmental Policy and Planning on a full time basis at the University of Zimbabwe under sponsorship of SANBio/ BioFISA project.

3.3 PGR Policy Guidelines Development

The SPGRC held a stakeholders' meeting between 1st and 2nd December 2011 in Pretoria, South Africa. The meeting brought together Curators to discuss and finalize the PGR policy guidelines before they were further taken up for editing and presentation to the SADC Ministers responsible for Food, Agriculture and Natural Resources who will officially adopt the guidelines as regional guidelines on PGR conservation and utilization.

The guidelines have now been finalized and translated into French and Portuguese ready for presentation to the Ministers. They will later be printed and distributed widely to stakeholders in SADC region and beyond.

3.4 Some Important Meetings Attended by SPGRC Staff

Apr 2011	– SPO – *Ex-situ* travelled to Tanzania to provide technical support to the genebank and facilitated for PGR materials to be despatched to SPGRC for base collection
May 2011	– The SPO *in situ* visited Angola to assess the conservation status of Root & Tuber crops and to verify areas of rich diversity for the implementation of on-farm conservation activities – The SPO *in situ* attended the SACAU policy conference in Vereeniging, South Africa
Jun 2011	– The SPO Documentation and Information visited South African and Mozambican NPGRCs to attend to SDIS matters as well as other information management issues – SPO – *Ex-situ* travelled to Ndola to attend Zambia Trade fair and attended a meeting with CBU Department of Biology and Natural Sciences
July 2011	– The SPO Documentation & Information attended a 2-day workshop on technology transfer in Livingstone, Zambia, organised by the NEPAD/SANBio/BioFISA project – The SPO *in situ* visited the on-farm conservation farmers in the Mazabuka district in Zambia. – The SPO *in situ* participated in a mixed crop collection mission in Namibia and provided technical expertise in the implementation of on-farm activities in Namibia. – SPO and TO Documentation & Information attended the Zambia Int'l Trade Fair in Ndola, Zambia
Aug 2011	– The SPO *in situ* attended the crop diversity fair in Swaziland. – The SPO *in situ* visited farmers with rich crop diversity for the promotion of conservation through use in Mauritius. – SPO – *Ex-situ* travelled to Mauritius NPGRC to undertake monitoring and an evaluation program and provided technical backstopping
Sept 2011	– The SPO *in situ* attended the crop diversity fair and encouraged farmers to maintain the diversity in Botswana

Oct 2011	– SPO Documentation & Information participated in the Tanzanian germplasm collection mission in Lake and Kagera regions – SPO – Ex-Situ travelled to Swaziland to attend to matters related to safe conservation of materials
Nov 2011	- The Head participated in the Expert Group Forum for Agricultural Biodiversity Initiative for Africa (ABIA) meeting in Accra, Ghana – The SPO *in situ* conducted an on-farm conservation field trip on the Western Province of Zambia for landraces inventory. – The Head attended the Finance Sub-Committee meeting in Gaborone, Botswana
Dec 2011	
Jan 2012	
Feb 2012	– The Head attended the SADC Council of Ministers' meeting in Luanda, Angola
Mar 2012	– The Head and SPO Documentation & Information went on a consultative mission with University of Zimbabwe in Harare over training postgraduate student in PGR Policy – SPO Documentation & Information attended the SANBio/BioFISA Stakeholders' Workshop in Pretoria, South Africa – SPO – *Ex-Situ* travelled to Mozambique on a technical backstopping mission regarding the GCDT project – The Head attended the SADC public finance management training workshop in Gaborone, Botswana

4. TECHNICAL ACTIVITIES

4.1 GERMPLASM COLLECTING AND *IN SITU* CONSERVATION

4.1.1 Germplasm Collection

Germplasm collection missions were conducted in six countries. A total of 836 samples (598 crops, 238 wild species) were collected as reflected in Table 2 below.

A total of five (5) tree seed collection missions were carried out in Tanzania during the report period through funding from MSB Project. While a total of 37 accessions of *Eleucine coracana* were collected and conserved at the NPGRC through the HOPE project; 32 accessions of *E. coracana, E. intermedia, sp. Africana, E. indica and E. multiflora* were collected and conserved using the Bioenovate Project. Germplasm exploration and collection of wild crop relatives was carried out and a total of 90 accessions were collected through the financial support from the Global Crop Diversity Trust.

Table 2: Germplasm Collections in the 20010/11 season

Country	Number of Samples	Remarks
Angola	245	Mixed crops
Botswana	79	Crops, wild species
Lesotho	64	Legumes and wild species
Namibia	122	Mixed crops
South Africa	43	Sweet potato
Swaziland	6	Crops
Tanzania	277	Mixed crops and wild species
Totals	**836**	

4.1.2 On-Farm Conservation

Table 1: Status of On-Farm Conservation

Country	Progress	Plan 2011/12
Botswana	Activities on going and Crop Diversity Fair held in 15th September 2011at the Serowe Village	– Conservation activities continuing
Malawi	6 newly formed groups, 20 field demonstrations. Crop Diversity Fair held 20th September 2011	– Selection of best/preferred Finger Millet and other local varieties for seed production and commercialization under formal seed systems to be done. – Strengthening of Community Seed Banks on-going. – Promote Bambara in collaboration with Bunda College.
Namibia	Farmers identified for on-farm conservation activities. Crops for multiplication, restoration collected.	– Collected material to be multiplied, threatened material to be restored to farmers on request.
Seychelles	Every Home a Garden promoted for continued conservation through use	– A demonstration garden to be established and activity to be rolled out within the country.

Swaziland	Activities on going in 2 sites, Crop Diversity Fairs conducted in August and September 2011, attended and greatly supported by the PS for the Ministry of Agriculture.	– Conservation through use to be strengthened and rolled out to 3 sites. Crop diversity and identification of adaptive/preferred crops for seed production – local seed commercialized.
Tanzania	Activities were started in 2007 – work in progress. Trials – 75 of sorghum, finger millet, lablab. Data analysis on going, in 4 villages (80 farmers)	– Characterization of trials. – Establishment of a Community Seed Bank. – Crop Diversity Fairs: Morogoro, Dodoma, Mtwara
South Africa	Multiplication of NPGRC material by farmers: bambara 25, cow pea 65. Community Seed Bank activities ongoing.	– Continue engaging farmers to multiply NPGRC: maize, pearl millet, pumpkin, calabash, cow pea, ground nuts. Site – KwaZulu Natal
Zambia	A total number of 413 participating: 5 sites. Seed samples distributed for restorations. No field days and seed fairs held	– Awareness raising on the importance of conservation through use to be continued. – Training participating farmers on sustainable farming practices, utilization of crops for different purposes.

Zimbabwe	No report, activities ongoing	– Restore genebank accessions to target communities, evaluation of crops by farmers and researchers,

During the year, the Malawian genebank conducted on-farm demonstration, through twenty demonstration plots that were managed during the season. The genebank successfully conducted a field day in Mzimba, Bulala EPA where farmers were involved in a participatory variety selection on finger millet.

Namibia conducted an inventory of farmer's crop conservation practices through a participatory methodology. The seed collection mission was carried out in Omusati region where most of the farmers are still using their old traditional varieties and 122 samples were collected. The predominant species that are used as staple food are *Pennisetum glaucum* followed by *Sorghum bicolour* and *Vigna unguiculata*.

About 25 bambara nuts and 65 cowpea accessions were multiplied by engaging 7 individual farmers and 4 farmer groups in South Africa. 100 seeds were given for each bambara nuts accession and 50 for each cowpea accession. Four and two rows were planted for each bambara nuts and cowpea accession respectively.

Six Extension Officers and 80 Farmers attended practical and theoretical training on the on-farm seed production, and conservation under the on-farm conservation project in Tanzania. Studies on the impact of Bt cotton on wild biodiversity in East Africa were reported in progress and studies of gene flow from cultivated rice to its AA genome wild relatives came to an end with its data analysis and report writing being in progress.

Farmers' recruitment and crop selection went hand-in-hand with holding seed diversity fairs, field days and farmers' training by the Zambian NPGRC. The programme has over the years expanded and currently has 413 small-scale farmers multiplying local crop varieties in various parts of the country.

4.1.3 *In Situ* Conservation and Under-utilized Plants

SPGRC continues to maintain wild fruit trees and medicinal plant species. NPGRCs maintain live collection of root and tuber crops in field gene banks and at the national centers or in specialized institutions.

During the planning meeting, there was a concern raised by member states on the rate at which invasive species are spreading and the threat they pose to vegetation and to the forage species/grasses utilized to feed livestock and game animals.

4.2 DOCUMENTATION AND INFORMATION

4.2.1 Hardware and Software

Besides the routine updating of software (applications, antivirus, *etc*.), SPGRC acquired a new desktop for the library together with a library management software that has been installed and data input commenced.

4.2.2 Database Development

Development of the web-based SDIS from a stand-alone window based system progress slowed down due to unforeseen circumstances. Relocation of the central synchronization server that is with the donor could not materialize at first for the reason that it was obsolete, but later on, SPGRC was informed that there was no money to ship it. SPGRC Documentation Unit offered some money for the transfer and we are waiting for action from the donor. Another reason for the slowdown was that pre-installed database servers were being sent directly by the donor to NPGRCs without SPGRC involvement. Since they were being sent with little or no documentation, many countries pre-formatted them and started using them for other purposes mostly because they lied idle uninstalled. Otherwise, the database itself is ready for trial online and the client-part of the envisaged system has been delivered by SPGRC.

4.2.3 Information

5.2.3.1 Network News

The SPGRC annual report for 2010/2011 was published and distributed. For the first time SPGRC managed to publish the report not only in English but also in translated versions of French and Portuguese. The SPGRC Network newsletter for January-December 2011 has been edited and is in its final design works ready for printing within second quarter of 2012.

In order to reduce costs for publishing and postage, as advised by the Board, SPGRC announced its intention to publish online (on its web page) most of its publications starting next year, but ensuring we also reach the disadvantaged (without Internet access.

4.2.3.2 Connectivity to the Internet

SPGRC submitted a connectivity proposal in 2007 and resubmitted it in April/May 2008 to NordGen with a few updates in the costing and status. The proposal was to be funded through the SPGRC project in readiness for the upcoming web-based SDIS under which all NPGRCs need LANs and reliable connection to the Internet.

To date, DRC, Mozambique, Seychelles, Tanzania, and Zimbabwe remain unreliably connected to the Internet and extra support is needed, especially in the anticipation of the operationalization of the web-based SDIS. A new entrant Seychelles will need support to build a LAN whilst annual subscriptions need to be provided for DRC, Mozambique, Seychelles, and Tanzania.

4.2.3.3 Publicity and Awareness of SPGRC

The Documentation and Information Section led institutional participation in both the Zambian International Trade Fair (ZITF) in Ndola and the Zambian annual agricultural and commercial show in Lusaka to raise awareness on the network activities and SPGRC's role in the SADC region.

The SPGRC published publicity materials such as calendars and Christmas cards that were together with other publications distributed to stakeholders.

SPGRC has maintained and added new features to its portal accessible at http://www.spgrc.org.zm hosted by a local company in Zambia. The efforts to reclaim from the donor, the original SPGRC domain name (http://wwwspgrc.org) which is best known by most stakeholders has not been possible. The donor is still withholding the domain name and therefore SPGRC will maintain the currently used domain name.

4.2.4 Library Services

The SPGRC library which is designated to serve the network continued to purchase new books, and journal and serial titles as well as other publications while renewing the existing subscriptions. Eight new titles related to biodiversity management were purchased and added to the library collections.

The SPGRC has applied to subscribe to The Essential Electronic Agricultural Library (TEEAL) of the Cornell University that provide access to hundreds of thousands of journal full-text articles (in PDF format) of the past 20 years. Once accepted, SPGRC will assist network scientists to search for required information on their behalf.

4.2.5 Support to NPGRCs

The Documentation & Information Officer and Technical Officer undertook technical backstopping missions in Tanzania, South Africa and Zambia. During the missions, hard- and software problems were resolved and staff training conducted on effective utilization of the SDIS and the information contained therein.

The Senior Documentation & Information Officer as Principal Investigator of the SANBio Project attended project management course conducted by SANBio in April 2011 in Livingstone, Zambia.

There were generally no major constraints reported with regard to the operation of SDIS in most NPGRCs, although some NPGRCs reported equipment breakdowns, outdated software, and need for new equipment and facilities. Activities undertaken include updating of the country profile, active collection module, germplasm collection module and updating SDIS, *etc*.

In most countries SDIS is working well and NPGRCs strive to ensure that backups are made very often as soon as new data is added to the system. The Diva-GIS version 7.1 is still in use to produce maps for location sites of the material collected.

Unreliable and erratic power supplies were reported from a number of countries although it sounded like Angola, Lesotho and Tanzania are hard hit. This has put the data inputting, conserved materials and equipment itself at risk from possible power surges. NPGRCs were strongly advised to protect the equipment with the help of UPSs.

Almost every country reported receiving database servers but many of which are not installed given the fact that it has solely been the Technical Advisor who has been doing it without involvement of SPGRC. Since the servers were dispatched directly to NPGRCs, with little documentation, many of them have their application software wiped out and will need re-installation.

4.3 EX-SITU CONSERVATION

The primary objective is to develop and coordinate Ex-Situ conservation activities in the region and giving a special attention to the regional genebank.

4.3.1 Seed Handling and Storage

NPGRCs expressed difficulties getting various specialised genebank facilities (drier spares) and materials such as pollination bags and aluminium pouches of a good quality in the region. A few providers for specialised genebank

equipment and materials of good quality were identified by SPGRC as:

- **Hunyani Flexible Products** is based in Zimbabwe and supplies pollination bags. The company is flexible to provide special orders on client demand if the order is big and can be contacted at +263046627309.

- **Munters (Pty) Ltd** is based in Modderfontein in South Africa and provides dehumidification facilities. This service provider will be useful to NPGRCs that operate driers that use Munters dehumidifiers and can be contacted at +2711997 2000.

There are many paper and packaging companies in the region that supply aluminium foil packets; however, the challenge was the quality to that meet required storage standard.

- **Moore and Buckle Flexible Packaging** is a British company and supplies aluminium foil pouches that are acceptable for long term storage and the company can be contacted at +441744733066.

A total of 583 accessions were received and registered at SPGRC from six countries between 9th September and 14th October 2011 as shown in the figure below:

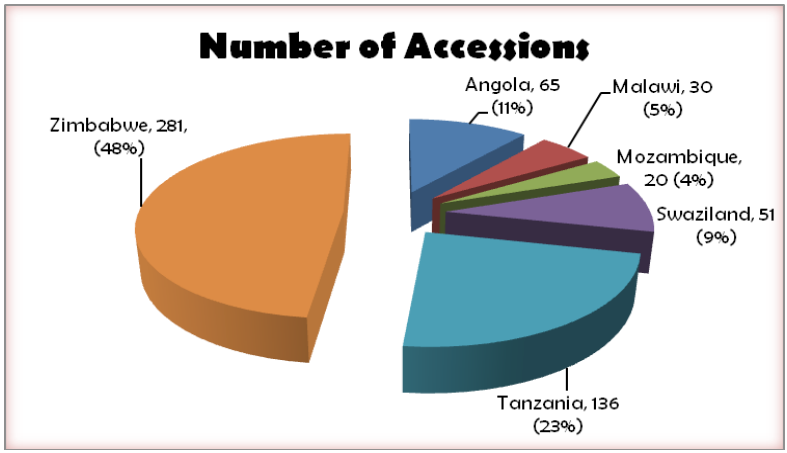

Figure 1: Number of accessions received from NPGRCs in 2011

4.3.2 Facilities and Equipment

The following equipment and facilities were procured for the regional genebank:

- Non destructive moisture meter
- Seed counter
- Freezers

4.3.3 Regeneration

A Regional regeneration project implemented in Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe, funded by the Global Crop Diversity Trust to regenerate regionally prioritised genetic resources involving: maize, sorghum, beans, pearl millet, finger millet, pigeon pea and cowpeas, was concluded with over 2000 accessions regenerated and slightly less than 50% duplicated to the regional genebank for long term conservation.

For the security of the seed germplasm held in the region's genebank and in line with international agreements, a total of 1463 seed accessions of beans, cowpea, finger millet, ground nuts, maize, pearl millet and sorghum were sent to Svalbard Global Seed Vault in Norway for safety storage.

4.3.4 Multiplication and Characterisation

In addition to multiplication and characterisation of various crop species that took place in Member States, additional seed accessions of beans and water melons were multiplied at the region's Experiment Station in Lusaka, Zambia.

4.3.5 Member States' Collections of Major Species Conserved at SPGRC

The total number of seed bearing accessions that is currently conserved at the region's genebank for each participating Member State is shown in figure 1 below.

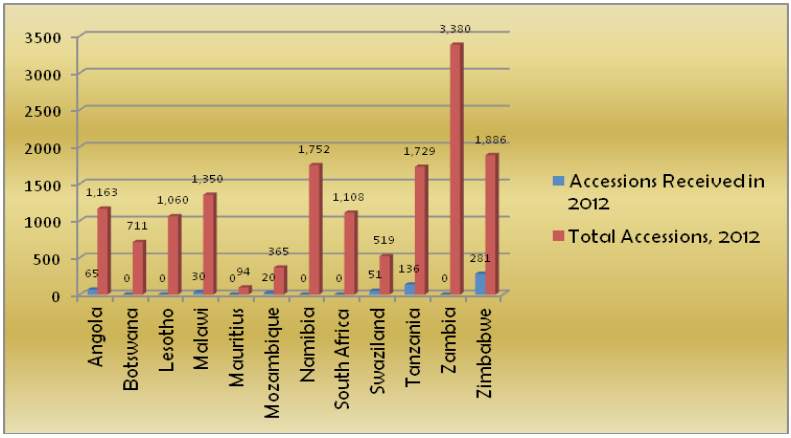

Figure 2: Number of accessions by country at SPGRC

4.3.5 Collections of major species conserved at SPGRC

There are other plant species that have shown potential to become crops of major importance for agriculture and food security in the region; nonetheless, the following table shows crops that are major crops in use in the region and have been conserved at the regional genebank.

Table 4.3.5: Accessions of Major Species held at SPGRC

Species	Common Name	Number of Accessions
Sorghum bicolor (L.) Moench	Sorghum	5133
Eleusine coracana	Finger Millet	1161
Zea mays L.	Maize	2158
Pennisetum glaucum (L.) R. Br.	Pearl Millet	1617
Vigna unguiculata (L.) Walp.	Cowpea	1151
Arachis hypogaea L.	Groundnut	754
Phaseolus vugaris L.	Beans	1122
Oryza sativa L.	Rice	335
Vigna subterranea (L.) Verdc.	Bambara Nuts	332
Cucurbits (C. Pepo & maxima)	Pumpkin	355
Citrullus lanatus (Thumb.) Matsumura & Nakai	Water Melon	215
Triticum aestivum L.	Wheat	142
Cajanus cajan (L.) Millsp.	Pigeon pea	172
Cicer arientinum L.	Chickpea	145
Pisum sativum L.	Pea	106
Sesamum indicum L.	Sesame	101
L. siceraria	Gourd	118
Total		**15,117**

4.3.6 Coordination and Technical Backstopping the Network

Member States including Tanzania, Mozambique, Swaziland, and Lesotho were visited and technical backstopping, monitoring and evaluation for adherence to international standards for genebanks and promotion of *ex-situ* conservation strategies and support was provided.

5. FARM

Farming activities for the 2011/12 cropping season had to be deferred to the next season due to the delayed procurement of a tractor and financial limitations. The old tractor was involved in a traffic accident and is beyond repairs.

6. DISCUSSIONS OF GENERAL ISSUES AT PLANNING MEETING

6.1 Gap bridging and equipment/facilities issues

The planning meeting had a long discussion regarding the bridging of the gap between Base and Active collections. It was revealed that some NPGRCs had seeds to send to SPGRC but were financially de-capacitated. It was agreed that since finances were limiting, both at NPGRCs and at SPGRC, Curators should try to find means and resources to send the seeds to the Base.

With regard to promised equipment but which was not delivered, SPGRC reported that the money promised as savings from construction of Biotechnology laboratory at SPGRC was not released by the donors. As for the DRC and Seychelles equipment, SPGRC management was to discuss on the side with concerned countries.

SPGRC admitted lack of capacity to maintain equipment and facilities, and promised to build it as soon as funds were available. SPGRC promised to provide contacts of equipment and service providers for genebanking from within the region. These will form a base for sourcing required consumables and spare parts,

6.2 Database servers

SPGRC reported that the new version of SDIS would depend on the availability of the central synchronizing server and network availability in the respective countries. In a number of countries the local servers

have been delivered but are not yet installed. The SPGRC is working to get resources to make it operational as it has taken too long.

The long debate on why the central server has not been transferred to the region from Sweden ended up by SPGRC offering use part of its budget to ship the server to Gaborone if donor lacked funds for that.

The SPGRC informed the meeting that since the server installations started, SPGRC (Documentation staff) has never been involved and that it was not in possession of passwords for the servers, and therefore, disabled to help with the installations and maintenance. It was suggested that the password for the countries server to be given (by the Technical Advisor) to both the Curators and IT people and to SPGRC.

6.3 Utilization of conserved materials

SPGRC suggested that it was the network responsibility to make sure that conserved materials were being used by breeders and other stakeholders. NPGRCs should also make initiatives to promote the utilization of the conserved materials.

6.4 International Treaty capacity building

Members supported the idea that there is a need for capacity building in this area and people were urged to visit the website for information in the whole issue of the Treaty. It was also observed that the representation of the NPGRCs members to the International Treaty meetings is very poor.

SPGRC declared that it cannot direct the Member States on the selection of its members on participating in the International Treaty meetings; rather it will communicate the matter to the board meeting, also advising on the positioning of National Focal Point.

7. ESTABLISHMENT OF THE SADC SEED CENTRE AT SPGRC

The Board noted that in line with the decision of Ministers responsible for Agriculture and Food Security of 2009, the SADC Seed Centre was supposed to be accommodated at SPGRC. The Board was informed that the SADC Seed Centre had now been established at SPGRC and that the Centre's Coordinator, Mr Kalipochi Kawonga had now reported for duties.

8. FINANCIAL REPORT 2009/2010

Table 8.1: Income & Expenditure Statement for the Year Ended 31st March 2010

	2010/11, US$	2009/10, US$
Income		
Member States Contributions	1,103,397	1,234,165
Grants	-	-
Other Income	105,046	78,547
Total Income	**1,208,443**	**1,312,712**
Expenditure		
Operating Expenses		
Employee Benefits Expense	331,316	330,158
Transport, Subsistence and Conferences	29,230	26,707
Rents	0	0
General Expenses and Supplies	113,483	113,446
Communications	18,966	16,045
Audit and Professional Fees	6,880	17,630
Depreciation	92,555	95,455
Sub-Total	***592,430***	***599,441***
Programme Expenses		
Member States Funded	639,815	670,055
Sub-Total	***639,815***	***670,055***
Total Operating Expenditure	1,232,245	1,269,496
Operating Surplus	**(23,802)**	**43,216**
Finance (Costs)/Income	(6,180)	(5,535)
Operating Surplus	**(29,982)**	**37,681**
Other Comprehensive Income:		
Exchange Rate Gain/(Loss)	(6,744)	(27,620)
Surplus (Deficit) for the Year	**(36,726)**	**10,061**

Source: *SADC Financial Statements for the Year Ended 31st March 2011*

Table 8.2: Statement of Financial Position as at 31st March 2011

	2010/11, US$	2009/10, US$
Assets		
Non-Current Assets		
Property, plant and equipment	1,803,404	1,888,994
Current Assets		
Debtors and prepayments	152,567	169,817
Cash and cash equivalents	504,754	489,719
Current Assets	657,321	659,536
Total Assets	**2,460,725**	**2,548,530**
Member States Funds and Liabilities		
Member States Funds		
Reserve Fund	20,140	20,140
Accumulated fund	253,137	252,981
Staff loan fund	24,784	24,815
Deferred projects income	-	-
Member States Funds	298,061	297,936
Non-Current Liabilities		
Post-employment benefit	220,096	218,398
Deferred capital grant income	1,752,687	1,815,585
		2,033,983
Current Liabilities		
Payables	189,881	216,611
Deferred grant income	-	-
	189,881	216,611
Total Member States Funds and Liabilities	**2,460,752**	**2,548,530**

Source: *SADC Financial Statements for the Year Ended 31st March 2011*

Table 8.3: Cash Flow Statement for the Year Ended 31st March 2011

	2010/11, US$	2009/10, US$
Cash Retained from Operations		
Surplus for the year	(36,726)	10,061
Adjustments		
Depreciation	92,555	95,455
Profit on Disposal of Fixed Assets	(23,257)	(426)
Finance Income	6,180	5,538
Exchange Gain/(Loss)	6,744	27,620
Transfer from Capital Grants	(64,945)	(68,758)
Transfer from Accumulated Fund	-	-
	(19,449)	69,490
Receivables	17,250	(59,489)
Payables	(26,728)	83,762
Net Cash from Operations	**(28,927)**	**93,763**
Cash Flows from Investing Activities		
Acquisition of Fixed Assets	(6,962)	(76,337)
Proceeds on Disposal of Fixed Assets	23,257	426
Interest Received	250	-
Interest Paid	(6,430)	(5,538)
Exchange Gain/(Loss)	(6,744)	(27,620)
Net Cash Flows from Investing Operations	**3,371**	**(109,069)**
Cash Flows from Financing Activities		
Member States Special Funds	36,882	24,477
Grants Received	2,048	-
Staff Loan Fund	-	-
Lease Repayments	-	-
Gratuity Fund	1,668	51,699
Development Partners Fund	-	-
Net Cash Flows from Financing Activities	**40,598**	**76,176**
Net Increase in Cash and Cash Equivalents	15,042	60,870
Opening Cash and Bank Equivalents	489,716	428,846
Closing Cash and Bank Equivalents	**504,758**	**489,716**

Source: *SADC Financial Statements for the Year Ended 31st March 2011*

9. APPENDICES

Appendix I: Members of the Board of SPGRC, 2010/2011

Dr J Jafta	– South Africa (Chairperson)
Dr Pedro Moćambique	– Angola
Ms Mary Molefe	– Botswana
Prof Jean-Albert M. Nkonko	– DRC
Dr M M Ranthamane	– Lesotho
Dr A P Mtukuso	– Malawi (Vice-Chair)
Ms Carla do Vale	– Mozambique
Mr Nitish Goupal	– Mauritius
Mr Steve Carr	– Namibia
Mr A. Moustache	– Seychelles
Dr S Kunene	– Swaziland
Dr H. Mansoor	– Tanzania
Dr Richard Kamona	– Zambia (Alternate)
Dr Cames Mguni	– Zimbabwe
Ex-Officio Members	
Mrs M Nyirenda	– SADC
Dr Jojo Baidu-Forson	– Bioversity International
	– Donor
Dr Paul M Munyenyembe	– SPGRC (Secretary)

Appendix II: SPGRC Staff Members, 2011/2012

Dr Paul M Munyenyembe	Head, SPGRC (*18 July 2008*)
Ms Thandie J Lupupa	Senior Programme Manager – *In-Situ* Conservation (*16 May 2006*)
Mr Barnabas W Kapange	Senior Programme Manager - Documentation & Information (*09 May 2006*)
Mr Lerotholi L Qhobela	Senior Programme Manager – *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 Kennedy K Hamudulu	Technical Officer - Documentation & Information **(Left in October 2011)**
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 Alexius M Nyambe	Driver (*01 February 1991*)
Mr Kapelwa E Songa	Typist/Receptionist (*01 September 1989*)
Mr Gibson Zulu	General Worker (*01 August 1989*)
Mr John Mfwembe	Worker (*04 September 1989*)
Mr Wale Banda	General Worker (*01 April 1990*)
Mr Olipen Phiri	General Worker (*05 January 2009*)

Appendix III: List of Some Prominent Visitors to SPGRC (2011/2012)

Yoshi Aki Nishikawa	Nagoya University, Japan
Masaaki Shiraishi	JICA
Cousins Gwanama	University of Namibia
Paul Desmarais	Kasisi Agric Training Centre P O Box 30652 Lusaka
Robson Nyirenda	Kasisi Agric Training Centre P O Box 30652 Lusaka
Austin Chilala	Kasisi Agric Training Centre P O Box 30652 Lusaka
Charles Nkhoma	Kasisi Agric Training Centre P O Box 30652 Lusaka
Gloria Musowa	Kasisi Agric Training Centre P O Box 30652 Lusaka
D Zulu	Kasisi Agric Training Centre P O Box 30652 Lusaka
John Phiri	Kasisi Agric Training Centre P O Box 30652 Lusaka
Desmond Moono	Kasisi Agric Training Centre P O Box 30652 Lusaka
Nkomoki Jackson Jnr.	Kasisi Agric Training Centre P O Box 30652 Lusaka
Bridget O'Connor	Kasisi Agric Training Centre P O Box 30652 Lusaka
Edgar Choongo	Kasisi Agric Training Centre P O Box 30652 Lusaka
Jopseph Sifabe	Kasisi Agric Training Centre P O Box 30652 Lusaka
John M Magamo	P O Box 50103 Lusaka
Timothy F Kashimakakazhi	P O Box 50396 Lusaka
Katoba K Levy	P O Box 50396 Lusaka
Chibwe Simon	P O Box 31319 Lusaka
Eric Sommeling	Kapupe Road, Woodlands, Lusaka
Jürgen Hagmann	Postat 391, Pretoria 0067, South Africa
Simon Mwale	SADC, P/Bag 0095, Gaborone, Botswana
Samuel Kareithi	SDC Pretoria, Lynwood Rd., Pretoria, South Africa
Eleonore Martin	38850 Bilieu, France
Yacine Babchia	74540Vivela Ciesaz, France
Chikelu Mba	FAO, Rome, Italy
Joyce Mulila Mitti	FAO, Harare, Zimbabwe

Heli Kuknipalo	FCG, Helsinki, Finland
Moola Mutondo	Copperbelt University, Kitwe, Zambia
Bob Day	NZSD, Pretoria, South Africa
Judith K Champo	ZCA – Mpika, P O Box 450143, Mpika, Zambia
Veli-Matti Rokka	MTT Agrifood Research, Finland
Elina Kiviharju	MTT Agrifood Research, Finland
Jim Middlefelll-Williams	James Hutton institute, Dundee, Scotland, UK
Rabson Mulenga	ZARI, Mt Makulu Research Station, Chilanga, Zambia
Jack Chipili	ZARI, Mt Makulu Research Station, Chilanga, Zambia
Marco Birmendylla	Enza Thaden, NLD
Evans Tembo	SCCI, Box 350199 Chilanga, Zambia

10. PUBLICATIONS

Mujaju, C. (2011). Diversity of landraces and wild forms of water melon (*Citrullus lanatus*): Distribution and implications for conservation in Southern Africa, with emphasis on Zimbabwe. Doctoral Thesis No. 2011:93, Faculty of Landscape Planning, Horticulture and Agricultural Science, Swedish University of Agricultural Sciences, Alnarp, 2011.

Abstract: Water melon (*Citrullus melon*) is commonly grown in traditional agrosystems throughout the drought-prone Southern Africa as a staple food (edible seeds), a dessert food (edible flesh), and for animal feed. Several morphotypes of watermelon are found in this area: sweet watermelon, cooking melon and seed melon landraces of the traditional agrosystems; and possibly introgressed types which are regarded as agronomic weeds. There has been little work on investigating the relationships between wild and cultivated forms, and to study amount and partitioning of genetic variation, to allow for better conservation strategies. Previous studies have reported relatively low levels of genetic diversity in cultivated watermelon but these have been based mainly on US plant introductions and modern watermelon cultivars linked to breeding programmes for disease resistance. By contrast, germplasm maintained in the putative centre of origin in Southern Africa, can be expected to display considerably higher variability.

Three different sampling strategies were used to collect plant material of both wild and cultivated forms of cow melons (*Citrullus lanatus* var. *citroides*) and of sweet melon (*C. lanatus* var. *lanatus*, only known from cultivation): (1) in-depth sampling in the fields of one village in Zimbabwe, (2) medium-scale sampling across the water melon growing districts in Zimbabwe, and (3) broad-scale sampling across Southern Africa (Botswana, Namibia, South Africa, Zambia and Zimbabwe). Two molecular marker methods were used, random amplified polymorphic DNA (RAPD) and simple sequence repeats (SSR) also known as microsatellite DNA. Similarity matrices obtained with RAPD and SSR, respectively have been highly correlated, suggesting that for some applications, the less demanding RAPD can be a useful alternative, especially in developing countries. Considerable amounts of genetic diversity were found at all levels, including within-accessions (half-sib families). Sweet melon accessions appear to contain almost as much variability as cow-melon accessions. A genetic structure analysis divided the wild-weed-landrace complex collected in one village into three groups confirming the existence of three major forms with limited admixture. Defining the major forms into landraces and/or folk varieties was considered critical for identification of proper units for both on-farm and ex-situ conservation. Distribution of most watermelon accessions in Zimbabwe was associated with sandy loam and sand soils.

Ng'uni, D. (2011). Phylogenetics of the Genus *Sorghum*, Genetic Diversity and Nutritional Value of its Cultivated Species. Doctoral Thesis. Faculty of Landscape Planning, Horticulture and Agricultural Science, Swedish University of Agricultural Sciences, Alnarp, 2011.

Abstract: Sorghum (*Sorghum bicolor* (L.) Moench) ranks fifth among cereal crops and second highest in production after maize in Africa particularly in the semi arid regions where it is a food security crop. This study assessed phylogenetic relationships of the species within the genus *Sorghum*, genetic diversity and the nutritional value of cultivated sorghum for its use for breeding and conservation. The phylogenetic analyses based on sequence data from four chloroplast DNA (cpDNA) regions and the internal transcribed spacer (ITS) revealed that *S. laxiflorum* and *S. macrospermum* were more closely related to *Eu-sorghum* species than to any other section and that the former two species are best merged into one section. Assessment of 27 Zambian sorghum accessions and 14 accessions from Malawi, Tanzania and Zambia for genetic diversity based on microsatellite markers revealed a significant genetic variation within and largely among (> 80%; $p < 0.001$) sorghum accessions. Bioassay for grain mineral contents of 27 farmer varieties of sorghum from southern Africa and 13 improved varieties showed that improved sorghum varieties were superior in macronutrients while farmer varieties showed superiority for grain Fe and Zn contents. Morphological characterization

of 17 accessions from southern Africa revealed considerable variation among accessions and plant height, days to 50% flowering and inflorescence length were more important discriminating traits. The studies in this thesis provide insights into the extent and pattern of genetic relationships within the genus *Sorghum* and reveal significant genetic variation for nutritional value improvement.