In situ conservation and use of crop wild relatives in three ACP countries of SADC region

INTERIM NARRATIVE REPORT
For period 1 January to 31 December 2015

List of acronyms used in the report

ACP	*African, Caribbean and Pacific*
ARC	*Agricultural Research Council*
CBD	*Convention on Biological Diversity*
CGRFA	*Commission on Genetic Resources for Food and Agriculture*
CWR	*Crop wild relatives*
DAFF	*Department of Agriculture, Forestry and Fisheries (South Africa)*
FAO	*Food and Agriculture Organization of the United Nations*
GB	*Governing body of the ITPGRFA*
GERMINATION	*Genetic Resources Management in Action towards an Indian Ocean Network (a complementary project)*
GIS	*Geographic information systems*
ITPGRFA	*International Treaty on Plant Genetic Resources for Food and Agriculture*
LOA	*Letter of agreement*
NSAP	*National Strategic Action Plans*
PGR	*Plant genetic resources*
SADC	*Southern African Development Community*
SANBI	*South African National Biodiversity Institute*
SC	*Steering Committee*
SLA	*Service level agreement*
SPGRC	*SADC Plant Genetic Resources Centre*
STI	*Science, technology and innovation*
TNA	*Training needs assessment*
UNEP/GEF	*United Nations Environment Programme/Global Environment Facility*
UoB	*University of Birmingham*
UoM	*University of Mauritius*
ZARI	*Zambia Agriculture Research Institute*

1. Description

1.1. **Name of beneficiary of grant contract:** Ehsan Dulloo

1.2. **Name and title of the Contact person**: Ehsan Dulloo

1.3. **Name of partners in the Action:** Bioversity International, University of Birmingham (UoB), University of Mauritius (UoM), Zambia Agriculture Research Institute (ZARI), Department of Agriculture, Forestry and Fisheries (DAFF) South Africa

1.4. **Title of the Action:** *In situ* conservation and use of crop wild relatives in three ACP countries of SADC region

1.5. **Contract number:** FED/2013/330-210

1.6. **Start date and end date of the reporting period:** 1 January – 31 December 2015

1.7. **Target country(ies) or region(s):** Mauritius, South Africa, Zambia, and SADC region

1.8. **Final beneficiaries &/or target groups[1] (if different) (including numbers of women and men):** Final beneficiaries: Farmers, so far the project have not reached farmers directly;

Target groups include scientists working with crop wild relative (CWR) conservation, breeders, policy makers as well as communication specialist. In the table below the breakdown of the number of target group reached differentiated by gender are provided

Target groups	Female	Male
Scientist	63	120
Breeder	4	12
Policy maker	41	93
Communication specialist	2	3

1.9. **Country(ies) in which the activities take place (if different from 1.5):** n.a

[1] "Target groups" are the groups/entities who will be directly positively affected by the project at the Project Purpose level, and "final beneficiaries" are those who will benefit from the project in the long term at the level of the society or sector at large.

1. Assessment of implementation of Action activities

1.1. Executive summary of the Action

The main objectives of the project are to: (i) to enhance the scientific capacities within the partner countries (Mauritius, South Africa and Zambia) and the Southern African Development Community (SADC) region to conserve crop wild relatives (CWR) and identify useful potential traits for climate change adaptation and (ii) to develop National Strategic Action Plans (NSAP) for the *in situ* conservation of CWR in Mauritius, South Africa and Zambia, as a means of underpinning regional food security and mitigating the adverse effects of climate change. During project year 2, the training needs assessment report was finalized and the second regional training workshop on predictive characterization and pre-breeding took place in April 2015 in Pretoria, South Africa. Remote and face to face on-the-job training was provided to the countries to support the finalization of the CWR checklist and the identification of priority CWR. Analysis of CWR diversity at regional level was started. National and regional checklists have been finalized and priority CWR identified at both levels. UoB and Bioversity developed a number of Excel and Word templates to support implementation of activities and the development of NSAPs. To kickstart the preparation of the NSAP, a first national stakeholder meeting was organized in each country involving the local stakeholders, to identify challenges and actions that need to be put in place and set up a road map for the development of the NSAPs in each country. Extensive project management support was provided via email, skype meetings and face to face meetings to the countries. A major budget revision was requested to the EU because after the first project year some significant changes to the budget deemed necessary and staff changes had occurred in all project countries as well as in UoB and Bioversity. The visibility of the project was raised during side events on the occasion of the 15th regular session of the Commission on Genetic Resources for Food and Agriculture (CGRFA) and the sixth meeting of the Governing Body (GB6) of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), during a project meeting of the GERMINATION project in Reunion and a meeting at the Global Crop Diversity Trust in Germany. The mid-term review and second steering committee meeting took place in Rome, Italy, 30 Sep – 2 Oct 2015.

1.2. Activities and results

Activity 1.1 Conduct a needs assessment of the capacity of stakeholders in the conservation and use of CWR (R1)

Topics/activities covered: The 'baseline report on capacities to conserve and use CWR within the SADC region' was finalized and submitted to the ACP-EU secretariat.

Reason for modification for the planned activity: Nothing to report. Activity completed.

Results of this activity: *R1 – National capacities in the three ACP countries on conservation and use of CWR of SADC region are improved*

1.1 Indicator 1: Baseline report is prepared analysing the capacity of SADC member states in *in situ* conservation and capacity to use CWR in breeding programmes (R1)

All tasks under this activity have been completed and reported in the annual interim narrative report 2014. This indicator has been accomplished. The 'baseline report on capacities to conserve and use CWR within the SADC region' was finalized and submitted to the ACP-EU secretariat. This report summarizes and analyses results of the detailed training needs assessment (TNA) that had been carried out at national and regional level at the beginning of the project.

The task has allowed identification of a list of stakeholders within the SADC region. It has highlighted the lack of expertise on CWR (especially within the environment sector). Some key topics were identified where capacity needs to be strengthened. These included taxonomy, climate change modelling, ecogeographic surveys, geographic information systems (GIS), seed handling of CWR, and

data management. It was quite evident also that there was generally a lack of policies on CWR, given there was not a high level of awareness about CWR among stakeholders in SADC region.

The results of the TNA informed the development of the training curricula for the two regional training workshops. The final report has been made publicly available on the project website http://www.cropwildrelatives.org/sadc-cwr-project/work-packages/capacity-building/training-needs-assessment/.

A1.2 Conduct two thematic regional training workshops on in situ conservation and use of CWR, based on identified capacity building needs (R1)

Topics/activities covered: During the reporting period, the second regional training workshop on predictive characterization and pre-breeding was held in Protea Hotel Manor, Hatfield, Pretoria, South Africa, 13 – 16 April 2015, organized by the South African partner Department of Agriculture Forestry and Fisheries (DAFF). The SADC Plant Genetic Resources Centre (SPGRC) secretariat co-ordinated the identification and nomination of participants from SADC countries. The training curriculum, agenda and programme were developed by Bioversity in collaboration with UoB and FAO. Since the workshop was held in South Africa, additional South African participants benefited from the training with participants coming from different organisations, i.e. DAFF, University of Stellenbosch, South African Biodiversity Institute (SANBI), Limpopo Department of Agriculture and Agricultural Research Council (ARC).

The workshop was opened by the Director General of DAFF, Prof. Edith Vries with opening remarks from Dr Ehsan Dulloo, SADC CWR global project coordinator, Mr Schaefer, Minister Counsellor, Head of Operations, European Union delegation to South Africa, Dr Shadrack Moephuli, CEO, ARC, Prof Michele Hammer, Acting Chief Director - Biosystematics and Collections, SANBI, and Ms Tlhagale, Director: Strategic Partnership (DAFF). Prof Willem Botes, Stellenbosch University, South Africa and also Chair of the South Africa Breeding association, delivered a keynote address on pre-breeding, relevant to the theme of the training workshop.

The sessions on predictive characterization included lectures and practical exercises on the CAPFITOGEN tools developed within a programme funded by the ITPGRFA (http://www.capfitogen.net/en/ and http://www.planttreaty.org/capfitogen), which the participants carried out on their own computers. The sessions on pre-breeding were based on the 'e-learning course on 'Pre-breeding for Effective Use of Plant Genetic Resources', available cost-free from http://www.fao.org/elearning/#/elc/en/course/PB and jointly developed by Bioversity International, the Food and Agriculture Organization of the United Nations (FAO) and the Global Crop Diversity Trust under the auspices of the Global Partnership Initiative for Plant Breeding Capacity Building. They included lectures, discussions and a group exercise, in which participants drafted an outline of a pre-breeding action plan for NSAPs. All participants were provided with a certificate of attendance, lecture notes and additional background documentation.

There was a good balance between genetic resource scientists and breeders in the training workshop. The number of beneficiaries is larger than those who attended the workshops. For example, in Mauritius, participants on their return to their country gave presentations of the topics covered in South Africa to members of their local committee.

Reason for modification for the planned activity: One modification during the preparation of the workshop became necessary in order to keep workshop expenses within the given budget. The air fares identified by the DAFF in-house travel agency, which DAFF is required to use, were significantly above the available budget. Bioversity International was therefore requested to arrange travelling for participants from SADC countries through its internal travel office, which resulted in cost savings.

Results of this activity: *R1 – National capacities in the three ACP countries on conservation and use of CWR of SADC region are improved*

1.2 Indicator 2: Capacity of at least 30 people from SADC Member States in *in situ* conservation and use of CWR has improved by the end of project (R1)

This indicator has been fully achieved and exceeded. The first regional training workshop on *in situ* conservation of CWR and diversity assessment techniques, held in Mauritius in November 2014 was attended by 13 female and 14 male trainees from 14 SADC countries. The second regional workshop predictive characterization and pre-breeding of CWR held in South Africa in April 2015, was attended by 9 female and 14 male participants from 9 SADC countries. In total, 18 female and 23 male national scientists from 14 SADC countries have been trained on conservation and/or use of CWR. Detailed workshop reports, lectures and other teaching material from both workshops are available from the project web site at http://www.cropwildrelatives.org/sadc-cwr-project/work-packages/capacity-building/regional-training-workshops/.

A1.3 Support on-the-job training in the three ACP countries (R1)

Topics/activities covered*:* Extensive support has been provided by UoB via email and skype meetings to the project countries in the preparation of the CWR checklists, determination of prioritization criteria and definition of the prioritization methodology. Bioversity staff visited all three countries in the first months of 2015 to provide support in project management, revision of work plans and national project budget. A technical meeting was held at SANBI on 17 April 2015 with Bioversity, UoB, DAFF and SANBI staff to discuss both CWR checklist creation and prioritization. Visits took place as follows: Mauritius: February, April, June; South Africa: February, April; Zambia: March. Technical backstopping meetings were held back to back with the national stakeholders' workshops in Zambia (August 2015), Mauritius (September 2015), and South Africa (November 2015)

Considerable time and efforts have been invested in the generation of templates for the development of checklists and the collation of CWR occurrence data, as well as for the development of the NSAPs. They serve to provide concrete tools to the countries for easier implementation of the activities as well as to harmonize and standardize the formats of the checklist, occurrence data and strategies. These will constitute additional products of the project which shall be distributed widely and will be available to support the development of CWR conservation strategies in other SADC countries and outside the SADC region.

Reason for modification for the planned activity: Nothing to report

Results of this activity: This is an ongoing activity. Intensity of remote support via skype and email has been increased and visits to the countries have taken place more frequently to provide training and project management assistance. Two templates have been provided to the countries. One template is used to collate all data of the CWR checklist, and the second template serves to store the occurrence data for the CWR priority species. Furthermore, two Word templates have been developed and provided to the countries to support the compilation of the NSAPs (see activity 3.4). It has become evident during the year that despite the two training workshops, partners have needed to have additional technical support for them to apply the tools and methodologies for preparing checklists, inventory lists and undertaking the diversity analyses. In order to ensure sustainability of the project in the countries, the Steering Committee has recommended that an exit strategy be developed to ensure that project may be up scaled in the countries and beyond in the SADC region. The University of Birmingham and Bioversity International have been tasked to prepare this strategy.

A2.1 Develop science, technology and innovation toolkits for the conservation and use of CWR (R2)

A2.2 Pilot test the draft toolkits in each participating partner country (R2)

Activities 2.1 and activity 2.2 are closely related and will run in parallel. We therefore report jointly on both activities.

Topics/activities covered: The online 'Interactive Toolkit for Crop Wild Relatives Conservation' is being developed with the support of the services of an IT specialist from NewtVision (http://www.newtvision.com/en/). NewtVision has provided a first draft of the toolkit system, which was reviewed by the UoB, and subsequently produced a beta version of the toolkit based on the feedback provided. This version will be uploaded with content and tested by the UoB, Bioversity International and other project partners in the first half of 2016. Based on the feedback obtained on the beta version, a final version will be produced.

The online Interactive Toolkit for Crop Wild Relatives Conservation is based on the existing resource book developed by the UoB and published by FAO (the Resource Book for the Preparation of National Plans for Conservation of Crop Wild Relatives and Landraces[2]). The online toolkit will be published on the CWR global portal, hosted by Bioversity, where also the project website is published.

Reason for modification for the planned activity: Initially it was agreed that the partner countries would send their feedback on each section of the Resource Book and deadlines for their contribution were established. However, this strategy did not work as partner countries failed to send their feedback to any of the sections. Each country was therefore requested to prepare individual documents detailing the methodology and results related to each step of the development of their NSAP which will then serve as case studies in the SADC region. These documents together with the skype meetings held so far as well as the exchange of emails will provide enough information and good feedback on how the toolkit can be adapted and improved.

Results of this activity: 2.2 Indicator 1: A tested toolkit for conservation and use of CWR is available in partner countries (R2)

Activity is ongoing. A beta version of the toolkit has been developed which will be populated with content and will be tested.

A2.3 Publish and distribute widely the CWR toolkits (R2)

Topics/activities covered: Activity not started yet. The product will be finalized in 2016

Reason for modification for the planned activity: Nothing to report

Results of this activity: Nothing to report

A3.1 Compile baseline information on distribution, diversity, conservation status and threat of targeted CWR in the three partner countries into web-accessible national registries, with linkages to the global Crop Wild Relatives web portal (R3)

Topics/activities covered: The CWR checklists in all three countries have been finalized. Also the subsequent prioritization of the checklists to identify priority CWR for conservation has been completed in all three countries. The compilation of occurrence data for the priority CWR, necessary for the identification of conservation sites, is ongoing in all three countries. Details are provided below for each country.

Mauritius: The curator of the Mauritius Herbarium produced two CWR checklists, one for Mauritius and the other for Rodrigues island. These were submitted to the project committee in February 2015 and were used to prepare the national CWR checklist. The national CWR checklist was developed through a process of data harmonization and cross-checking of the national flora of both Rodrigues and Mauritius with the Mansfeld's World Database of Agricultural and Horticultural Crops (Hanelt

[2] *available at: http://www.fao.org/fileadmin/templates/agphome/documents/PGR/PubPGR/ResourceBook/TEXT_ALL_2511.pdf*

and IPK, 2001, available on http://mansfeld.ipk-gatersleben.de/). The national CWR checklist contains 260 genera and 528 species of Mauritius, while for Rodrigues the checklist contains 116 genera and 142 species. For the prioritization of the CWR, the following criteria were chosen: (1) threat status, (2) occurrence status, (3) economic value of the related crop, and (4) potential for crop improvement. The resource book was used as a guide to determine the scores to be assigned to species for the prioritization. The total score number is an additive index, calculated by summarizing the values of the four criteria above. Occurrence data for the priority CWR are being collated and georeferenced. The national project committee decided to work on the palm species *Dictyosperma album* for molecular characterization.

South Africa: The process to draw up South Africa's CWR species list and to prioritize CWR for conservation involved three steps, which are summarized below.

i) Compiling the crop genera list:

This first step was conducted by checking various literature sources of lists of crops globally, including major crops and underutilized crops. An Excel spreadsheet was produced that combined all this information, and a total of 6020 genera of all crops were included. As the focus of this project is on food security, only food and fodder crops were extracted into a separate list of 532 genera. This list was further refined by checking that only crops that were cultivated rather than wild harvested were included. Only food and fodder crops were included and no ornamentals, spices, aromatic or medicinal, or forestry crops. Fungi and seaweeds were also removed from the list of genera. The final list included 420 crop genera.

ii) Compiling the Food and Fodder CWR checklist for South Africa:

Taking the list of crop and fodder genera, all species, subspecies and varieties present in South Africa were extracted from the National Plant Checklist of South Africa (SANBI). 1609 taxa were included, of which 1479 are species.

iii) Prioritization of CWRs for South Africa:

The following criteria were used to prioritise the CWR list:

- Potential for crop improvement (applying the gene pool or taxon group concept, see Annex I for details about these concepts)
- Socio-economic value (at i. global, ii. continental and iii. regional (SADC) scales – from FAOSTAT average over 10 years, or from Kell et al. 2015)
- Conservation status (Red List status or conservation concern)
- Distribution / occurrence – i. endemic / ii. indigenous / naturalized

Scores were assigned to each taxon for each criterion and then these were totalled and ranged from 1 to 26. Those taxa scoring above 10 were identified as priorities = 261 taxa. Those taxa which scored less than 10, but were known to belong to genepool 1-3were added to the list = 31 taxa. This resulted in a total of 292 taxa. A number of the taxa are naturalized or invasive species, 253 indigenous taxa are included in the priority list of which 93 are endemic to South Africa.

SANBI's BRAHMS distribution database was queried for records of the 292 taxa and yielded 120,448 occurrences within South Africa. These are being georeferenced. Fieldwork will target 31 of the highest priority scoring CWR in three field trips to record conditions of their populations *in situ*.

Zambia: Zambia initially followed two different methodologies to produce the national CWR checklist: the first one resulted in a very comprehensive checklist that included all wild relatives of globally cultivated crops (that includes 3671 taxa) and the second one resulted in a checklist of wild relatives of crops grow only in Zambia (572 taxa belonging to 64 genera with 107 crops). Subsequent meetings with the project national committee resulted in the decision that a monographic approach rather than a floristic approach was to be undertaken, meaning that a first initial prioritization was needed to reduce the number of crop genera to be included in the checklist. Out of the CWR checklist

of crops grown in Zambia (572 taxa), 59 crops from 29 genera were then prioritized and wild relatives were extracted resulting in a partial checklist of 464 taxa. Geographical distribution of CWR, utilization potential for crop improvement, threat status, and economic use value of related crop were identified as the criteria to further prioritize the partial CWR checklist. Range scores were assigned to each of these criteria and information related to the criteria was gathered for each taxa in the partial CWR checklist. 34 CWR were prioritized. Occurrence data for the priority CWR are being collated and georeferenced.

Countries have documented the procedures and criteria used in the checklist development and prioritization process. UoB has provided feedback and support in the compilation of these documents. Templates to facilitate data collation, organization and standardization have been developed by Bioversity and UoB, which will form the basis of the CWR registries. The checklist and inventory templates were adapted from previous projects, and the occurrence data collation template is a new product from this project. This template will form the basis for collating information on CWR and will be maintained in national databases. The question of data ownership has been discussed during the mid-term review and needs to be further discussed at country level to be resolved.

Reason for modification for the planned activity: The development of the CWR checklists and subsequent prioritization has been slightly delayed. This is partly due to technical and partly to administrative reasons. Initial difficulties in Mauritius in defining the scope of the checklist and agreeing on the approach to be undertaken led to delays in starting the activities. The development of the South African CWR checklist took longer than it was meant to due to various misapplications of the process. Collation of the additional data needed for subsequent prioritization of the final checklists in Zambia and South Africa took longer than expected as criteria for prioritization had first to be agreed at national level. Changes in the project teams in Mauritius (late hiring of project assistant and subsequent resignation of the same after one month) and South Africa (change of national project coordinator) slowed down progress.

Fieldwork in South Africa was supposed to start in December 2015 but due to a very severe el Nino drought it had to be postponed to January 2016.

Results of this activity: Results of the checklist development and prioritization of CWR are summarized in table 1.

Table 1: Summary of checklist, priority CWR and related crops in the three partner countries

	Mauritius	**South Africa**	**Zambia**
Number of taxa in CWR checklist	528 in Mauritius 142 in Rodrigues	1609	464
Number of taxa CWR priority list	10 in Mauritius 10 in Rodrigues	292	34
Priority CWR related crops	Mauritius: coffee (*Coffea*), olive (*Olea*), fig (*Ficus*), Indian olive (*Elaeocarpus*), fonio (*Digitaria*) Rodrigues: Aloe, millets (*Digitaria, Panicum*), Asparagus, sweet potato (*Ipomoea*), olive (*Olea*), fig (*Ficus*)	Sweet potato (*Ipomoea*), eggplant (*Solanum*), rooibos tea (*Aspalathus*), millets (*Digitaria, Echinochloa, Eleusine, Panicum, Paspalum, Setaria*), cucumber/gherkin and melon (*Cucumis*), yam (*Dioscorea*), etc	Cowpea (*Vigna*), yam (*Dioscorea*), rice (*Oryza*), Sorghum, cucumber/melon (*Cucumis*), millet (*Eleusine*), sweet potato (*Ipomoea*), Pearl millet (*Pennisetum*), eggplant (*Solanum*)

A3.2 Identify regional and national in situ CWR hotspots and priority sites for in situ conservation and ex situ collection validated through expert interviews and field visits using innovative GIS technology (R3)

Topics/activities covered: At national level, no progress has been made in this activity since the countries are still in the process of collating occurrence data for the CWR priority species. In South Africa, the diversity analysis will be carried out by a consultant and a budget has been allocated to it during the budget revision. The identified consultant is an expert in systematic conservation planning. He has been proposed by the national project partner in South Africa, as he will ensure that the systematic conservation planning approach is employed in this activity, which is widely used in conservation planning in South Africa. Using this approach will facilitate a wider and easier uptake and integration of results into the wider national South African conservation context.

At SADC regional level, the UoB supported by Bioversity developed an approach to the analysis which involves eight main tasks: (i) creation of a partial CWR checklist, (ii) CWR prioritization for conservation, (iii) development of a regional CWR inventory, (iv) diversity analyses (complementarity, ecogeographic and/or a combination of approaches), (v) *in situ* gap analyses (within and between taxa), (vi) *ex situ* gap analysis (within and between taxa), (vii) climate change analysis, and (viii) establish *in situ* and *ex situ* conservation priorities and recommend actions. Tasks i and ii have been completed. A partial checklist was created because it was not possible to obtain a complete list of plant species that occur in the SADC region. Wild relatives of food and beverage crops were prioritized as these are the species most important for food security in the region. Taxa that are of greatest potential for utilization in crop improvement programmes were identified as priorities for conservation planning. This step was based on the available data defining genetic and/or taxonomic relationships between the crop and its CWR (application of the gene pool and taxon group concepts) and/or taxa with known traits of actual or potential use for crop improvement. Ideally, the relative regional threat status of the CWR checklist taxa would be used as an additional criterion for prioritization. However, this was not possible as there is currently no regional Red List available for the SADC region.

Reason for modification for the planned activity: Nothing to report

Results of this activity: The regional CWR checklist includes more than 1900 taxa, of which 127 have been prioritized for further diversity and hotspot analysis. It is envisaged in the final year to prepare peer-reviewed scientific publications based on the data generated in the project. Countries are encouraged to prepare country-specific articles, while UoB and Bioversity will write up the regional analysis of CWR in SADC region for publication.

A3.3 Predict which CWR in situ populations and materials from ex situ collections have traits adapted to extreme climate conditions (e.g. heat, drought) using Focused Identification of Germplasm Strategy (FIGS) or other GIS approaches (R3)

Topics/activities covered: Guidelines for applying the predictive characterisation techniques to carry out this activity have been completed and shared with the partner countries. In South Africa and Zambia, a survey among breeders was carried out to support the identification of priority crops and traits.

Reason for modification for the planned activity: Nothing to report

Results of this activity: Each country has selected their priority crop on which the predictive characterisation will be carried out. South Africa has chosen to work on sorghum, Mauritius on coffee and Zambia on rice.

A3.4 Develop exemplar Strategic Action Plans (NSAP) on in situ conservation and use of priority CWR in three participating countries

Topics/activities covered: UoB and Bioversity jointly developed two Word templates for the NSAP development (see Annex II and III). One template outlines the main NSAP document. It provides guidance to countries in what needs to be included in the NSAP. The second more detailed template is the technical background document template, which complements the main NSAP document. It has been prepared to help countries to gather all the technical details generated in the project and capture this information in a written form. This document will then help countries to prepare the NSAP in a more succinct way.

Each project country has organized its first national stakeholder workshop to kickstart the preparation of NSAP and involve relevant national stakeholders in its development. The workshops were held on 6 August 2015 in Lusaka, Zambia, on 3 September 2015 in Ebene, Mauritius, and on 10 November 2015 in Pretoria, South Africa. Bioversity and UoB staff participated in all three workshops to facilitate the discussions. Mauritius and Zambia have recruited consultants to prepare the NSAP document, while in South Africa, DAFF will work with SANBI and ARC to prepare the NSAP.

Reason for modification for the planned activity: Nothing to report

Results of this activity: 3.4 Indicator 1: Three exemplar CWR NSAPs developed and published (R3)

The two NSAP Word templates have been made available to project partners and the consultants in Mauritius and Zambia, to support the project staff and consultants who will compile the NSAPs. The stakeholder workshops produced roadmaps identifying the single steps, responsibilities and deadlines in the NSAP development process. Work on the first NSAP drafts has started. In Mauritius and Zambia national consultants have been recruited to prepare the NSAP.

A4.1 Facilitate the mainstreaming of CWR NSAP into national and regional policies

Topics/activities covered: In each of the participating countries, efforts are being made to engage with the different stakeholders to ensure uptake of the NSAP. A first National Stakeholder workshop has been organized in each country where policymakers, breeders, (both public sector and private sector breeders), academics, research institutions, local governments, and farmers' representatives have been invited to discuss the preparation the NSAP and to explore their contribution to the NSAP. In each country a road map was developed that documented the process for the preparation, validation and endorsement of the NSAP by their respective government. The project coordinator visited Mauritius and South Africa and held discussions with the policymakers in these countries to raise awareness of the project and ensure that they are committed to helping adopt the NSAP in their respective government. The Zambia Government is also very committed. In Mauritius, the Deputy Permanent Secretary of the Ministry of Agroindustry and Food Security, Mrs C. Jhowry, was invited to be part of the national steering committee and is committed to helping ensure that the NSAP becomes a national document.

In addition, country partners have been influencing national policy fora to include CWR in their policy documents such as National Biodiversity Strategy and Action plan (NBSAP) and other national reports. A specific target for *in situ* and *ex situ* conservation of priority CWR has been included in the South African National Action Plan for the implementation of target 9 of the Global Strategy for Plant Conservation. In both Mauritius and Zambia, the revision of the NBSAP is ongoing and project staff have made contributions to include *in situ* conservation of CWR in the plans.

.***Reason for modification for the planned activity:*** *Nothing to report*

Results of this activity: The *in situ* conservation of CWR has been linked to the NBSAP review in Zambia and Mauritius and to the implementation of the GSPC in South Africa.

A4.2 Develop a range of communication and public awareness materials to promote the conservation and use of CWR among target groups of stakeholders including the general public

Topics/activities covered: A communication and visibility plan prepared in 2014 included a list of communication activities. Progress of the activities in provided in Table 2 below.

During the year, the project coordinator organized two side events to raise awareness of the project. The first side event was held during the 15th Regular session of the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA) on 21 January 2015 at FAO, Rome, Italy. It was entitled "Safeguard our options for tomorrow: the case of *in situ* conservation of Crop Wild Relatives", and was well attended by circa 60 delegates. The second side event was held during the 6th meeting of the Governing Body of the ITPGRFA on 8 October 2015 at FAO, Rome, Italy, and was co-hosted by the secretariat of the CBD. Its title was "Strengthening the *in situ* conservation of PGRFA including Crop Wild Relatives in Protected Area Networks" and was also well attended, attracting the participation of over 50 delegates. Bioversity staff gave talks about the project at the national stakeholder workshops held in the countries, at a regional workshop for the Germination project http://www.projet-germination.org/ held in La Reunion in May 2015, and at the Global Crop Diversity Trust in Bonn, Germany, in December 2015. During the events, numerous project leaflets were distributed and the roll-up banner about crop wild relatives displayed.

Table 2 – Communication activities and means of verification

Activity	Means of verification	Progress
Development of visual identity for the project	Short title and logo developed and used on electronic and print communication outputs as well as in project reports	Completed
Development of project website	Project website available online	Completed http://www.cropwildrelatives.org/sadc-cwr-project/
Media coverage at project inception workshop in Zambia	Video footage of workshop; newspaper articles; newsletters	Completed.
Interviews with local TV channel during the first regional training workshop in Mauritius	Video of interviews available online	Completed. Interview broadcasted on National TV news
Participation in conferences and side events	Official programmes of the conferences; Report of conference and/or side events	Participated in side event at FAO 15th Regular Session of the Commission on Genetic Resources for Food and Agriculture January 2015; Presentations at regional meeting of GERMINATION project, La Reunion, 16-21 May 2015 and at the Global Crop Diversity Trust, December 2015; Participation in side event on the project at the 6th Governing

		Body meeting of the ITPGRFA, October 2015.
Media coverage at second regional training workshop, South Africa	Video footage of workshop; newspaper articles; newsletters	Covered by DAFF News media officials; an article aiming at promoting CWR and the training workshop on predictive characterisation and pre-breeding of crop wild relatives was prepared to be published in Farmer's Weekly Magazine Publication.
Media coverage at final project conference	Video footage of workshop; newspaper articles; newsletters	Not started
Documentary on project activities on in situ conservation of CWR (Zambia)	Documentary	Not started
Development of factsheet in multiple languages	Factsheet available as PDF in English and local languages of partner countries. Electronic version of factsheet used in communication with stakeholders. Printed factsheets distributed at conferences and meetings.	Not started
Development of policy briefs	Policy briefs	Not started
Development of infographics	Infographics on line	Completed - http://visual.ly/importance-crop-wild-relatives The site has received 949 views as at end of December 2015 at the above website. Via Facebook, 1,631 people reached it, and 80 Likes, 53 comments and shares, and 191 post clicks are reported. On Twitter we report 3,313 impressions and 65 total engagements. A banner has been produced and used for workshops and side events
Development of videos and slide shows	Video materials made available	Ideas have been collated
Visibility of project on web sites of organizations with	Websites of the partners	Not yet implemented

interest in CWR		

Reason for modification for the planned activity: Prior to the second regional training workshop in South Africa, an article aiming at promoting CWR and the training workshop on predictive characterisation and pre-breeding of crop wild relatives was prepared to be published in Farmer's Weekly Magazine Publication. Eventually, the article could not be published because there was not enough budget to cover the requested fees for its publication.

Results of this activity: See Table 2

Both side events attracted the participation of over 50 delegates. The presentation about the project delivered at the ITPGRFA GB6 side event is available at http://www.slideshare.net/BioversityInternational/in-situ-conservation-of-crop-wild-relatives-in-the-sadc-region and a blog post was published on the Bioversity website at http://www.bioversityinternational.org/news/detail/crop-wild-relatives-are-they-going-to-end-up-like-the-dodo/

The first national stakeholder workshop in Zambia (6 August 2015) was covered by a news clip and the event was documented by the National Agricultural Information Services (NAIS).

A5.1 Coordinate and manage all aspects of project implementation

Topics/activities covered:

Regular meetings with the project partner coordinators have taken place on a monthly basis via GoToMeeting or Skype, where the progress and implementation of the project are discussed. In each country, national committees have been formed to implement the project.

The interim technical report and financial report for the first year of the project were submitted in April 2015 and were duly approved by the contracting authority after a few revisions. A second contract amendment was made to reflect changes in staffing and to better support countries during the year. As a result of this, the second year Letter of Agreement (LOA) to countries was delayed until July 2015. However the activities in the countries continued unabated.

The mid-term review and second steering committee (SC) meeting were held at Bioversity headquarters, Rome, Italy, on 30 September – 2 October 2015 and useful feedback was received from the SC members. National work plans were revised during the visits of Bioversity staff to the countries and based on discussions at the mid-term review.

Reason for modification for the planned activity: The DAFF deemed it necessary to collaborate with two state-owned enterprises, i.e. the Agricultural Research Council (ARC) and the South African National Biodiversity Institute (SANBI), since the team within DAFF require the guidance, support, skill and technology available within these institutes. The collaboration between DAFF and ARC and between DAFF and SANBI respectively required establishment of service level agreements (SLA). The SLA with SANBI was substituted by a LOA between SANBI and Bioversity. This change became necessary as the administrative procedures within DAFF were taking too much time to allow timely approval and signature of the SLA and subsequent transfer of operational funds to SANBI to fully engage in project work.

The implementation of the action during the first project year has shown that several revisions to the budget were necessary. More travel money was required to increase direct technical and management support in the countries. Staff changes within all project teams required reallocation of budgets, and improvements to allocation of operational money in the countries were made. A budget revision and second contract amendment were submitted and approved.

Results of this activity: Support to project countries has been intensified to keep project work on track.

1.3. Please list activities that were planned and that you were not able to implement, explaining the reasons for these.

No planned activities had to be cancelled.

1.4. What is your assessment of the results of the Action so far? Include observations on the performance and the achievement of outputs, outcomes and impact in relation to specific and overall objectives, and whether the Action has had any unforeseen positive or negative results (please quantify where possible; refer to Logframe Indicators).

The progress of the action so far has been satisfactory overall. Most of the principal action's milestones have been fully achieved (see progress on log frame), as for example the training workshops. In fact the action has fully achieved the first specific objective in terms of having trained 50 national scientists from 14 SADC countries in *in situ* conservation and use of CWR.

Two of the three activities of work package 1 have been fully achieved, with the third activity ongoing until the end of the project. Most of the activities in the other work packages are still ongoing the publication of the interactive toolkit, which has not started yet.

The main difficulties experienced by partners have been the following:

- Changes in staff in all partner organizations have considerably slowed down the progress of activities; in South Africa the national project coordinator resigned within the first year; availability of existing staff in Bioversity, UoB, Zambia, Mauritius and South Africa changed from the original conceptualization of the project.

- Access to relevant data for the preparation of checklists of CWR in the participating countries. This has needed the establishment of collaborative partnerships with key stakeholders in the countries. Such collaborations have not been smooth.

- Administrative procedures in countries for accessing information and obtaining clearances have been a major obstacle.

- Internet connectivity between country partners and Bioversity and UoB has been problematic.

Bioversity and UoB developed alternative strategies to help countries make progress with their activities. Templates for the development of checklists and the collation of CWR occurrence data, as well as Word templates for the development of the NSAPs were developed to help countries. They serve to provide concrete tools to the countries for easier implementation of the activities as well as to harmonize and standardize the formats of the checklist, occurrence data and strategies. These will constitute additional products of the project which shall be distributed widely and will be available to support the development of CWR conservation strategies in other SADC countries and outside the SADC region.

The implementation of the action during the first project year as shown that several revisions to the budget were necessary. More travel money was required to increase direct technical and management support in the countries to counteract the above mentioned difficulties. Staff changes within all project teams required reallocation of budgets and improvements to allocation of operational money in the countries were made.

Please list potential risks that may have jeopardized the realisation of some activities and explain how they have been tackled. Refer to logframe indicators.

A1.3 - Regular email and Skype communication with the countries continued to be a challenge. In South Africa, DAFF email boxes are very small size and often full, so that emails are not properly delivered. Private email addresses are now being used in addition to the official DAFF email accounts to ensure more timely delivery of emails. Support to the countries in project management has been intensified and Bioversity staff visited each project country during the first half of 2015 to specifically discuss work plans, budget revisions and project management issues with the national project teams. These actions shall ensure that the project is kept on track. ZARI has poor and unreliable internet connectivity. The budget revision has therefore included the purchase of an additional modem to improve their internet access. Further clarifications were necessary to identify the project staff in Mauritius with whom email communication should take place and who would need to be copied on emails and who would be present at Skype meetings.

A3.1 - Staff changes in Mauritius have contributed to the delay of work. The scientific staff initially charged with the compilation of the checklist left and had to be replaced.

In South Africa the lack of a memorandum of agreement between the main national stakeholders SANBI and ARC impacted on progress. A service letter agreement (SLA) was set up for collaboration between SANBI and DAFF, but the complicated administrative procedures required by DAFF delayed signature of the SLA beyond an acceptable time frame for continued project implementation. An agreement was eventually made directly between Bioversity and SANBI to confirm SANBI's important role in the project and allow to transfer funds to SANBI.

If relevant, submit a revised logframe, highlighting the changes.

Not required

Please list all contracts (works, supplies, services) above 10.000€ awarded for the implementation of the action during the reporting period, giving for each contract the amount, the award procedure followed and the name of the contractor.

Nothing to report

1.5. Please provide an updated action plan [3]

Activity	Year 3												Implementing body
	1	2	3	4	5	6	7	8	9	10	11	12	
Submission of interim reports and financial report to contracting authority for the year 2015													Bioversity
Activity 1.3: Support on-the-job training in the SADC region													Bioversity, UoB
Activity 2.1: Develop science, technology and innovation toolkits for the conservation and use of CWR in three ACP countries of SADC													UoB

[3] This plan will cover the financial period between the interim report and the next report.

Activity 2.2: Pilot test the draft toolkit in each participating country in SADC region												UoB
Activity 3.1 Deploy CWR database and populate database with country information												Bioversity
Activity 3.2 : Identify CWR hotspots and priority sites for *in situ* conservation												All Countries
Activity 3.3: Implement predictive characterization activities												All Countries
Activity 3.4: Develop exemplar National Strategic Action Plans (NSAP)												All Countries
Activity 4.1: Mainstream the CWR NSAP into national and regional policies												All Countries
Activity 4.2: Communication and public awareness materials												Bioversity and countries
Activity 5.1: Final dissemination workshop and steering committee meeting												Bioversity

2. Partners and other Co-operation

2.1. How do you assess the relationship between the formal partners of this Action (i.e. those partners which have signed a partnership statement)? Please provide specific information for each partner organisation.

Bioversity has a long history of fruitful and successful collaboration with UoB, namely in collaborating in two EC-funded European projects 'European Crop Wild Relative Diversity Assessment and Conservation Forum (PGR Forum)', and 'Novel characterization of crop wild relative and landrace resources as a basis for improved crop breeding (PGR Secure)', both coordinated by UoB; and co-developing and co-publishing *in situ* conservation methodologies. This successful collaboration is being continued in the current action.

Bioversity is hosting monthly meetings with responsible coordinators from all partners, via online meeting tools such as Skype and GoToMeeting, which support the strengthening of the collaboration and relationships. More frequent visits to the countries have further supported strengthening the partnerships in each of the partner countries.

2.2. How would you assess the relationship between your organisation and State authorities in the Action countries? How has this relationship affected the Action?

In this Action, the buy-in of the state authorities is very important, as they are the main target and beneficiaries of the action. The Action will allow the partner countries to build and improve relationships with the State authorities by facilitating the mainstreaming of CWR NSAPs into national and regional policies. State authorities in the partner countries are made aware and get involved in the project through the national project coordinator and its team. The national stakeholder workshops held in all partner countries have further contributed to raising awareness and engaging stakeholders.

The Ministry of Agroindustry and Food Security (MOAFS) of Mauritius has been involved in the project since the start of its implementation. Representatives from the Ministry were invited to be part of the national Steering Committee in Mauritius. The deputy Permanent Secretary of the MOAFS attended the mid-term review meeting in Rome, Italy. This demonstrated continued support to the project. In South Africa, the project partner is the State Authority. The Zambia Agriculture Research Institution (ZARI) is a public research institution within the Ministry of Agriculture and Livestock. Being a research institution, ZARI is responsible for the development and improvement of technologies such as crop varieties of different crop species for addressing food and nutritional security. Consistent with the overall national agricultural policy, ZARI is mandated to conserve and promote sustainable use of plant genetic resources for food and agriculture which include crop wild relatives, whose conservation and use is the focus of the Action. It is for this reason that national endorsement of the Action received overwhelming support.

2.3. Where applicable, describe your relationship with any other organisations involved in implementing the Action:

- **Associate(s) (if any)** None
- **Sub-contractor(s) (if any)** Bioversity and UoB collaborated with Newtvision to help develop the interactive toolkit. Their collaboration has been very important to achieve that objective.
- **Final Beneficiaries and Target groups** In each of the countries the final beneficiaries were invited to participate in the first stakeholder workshop
- **Other third parties involved (including other donors, other government agencies or local government units, NGOs, etc)** In Mauritius the Indian Ocean Commission was invited to attend the first national stakeholder workshop and they became very supportive of the work on CWR. One of the recommendation of the workshop was to hold another stakeholder workshop in Rodrigues Island (dependency of Mauritius) to engage with local stakeholder there. They accepted to sponsor this extra workshop which will be held in 2016.

2.4. Where applicable, outline any links and synergies you have developed with other actions.

The tailored toolkit that will be used to improve capacity in conservation and use of CWR and to help project countries developing their NSAP will be produced based on an existing resource book produced by the UoB and published by FAO (available at: http://www.fao.org/fileadmin/templates/agphome/documents/PGR/PubPGR/ResourceBook/TEXT_ALL_2511.pdf).

The descriptors used in the templates for collating the checklist and inventory of CWR have been produced in two previous projects, the 'European Crop Wild Relative Diversity Assessment and Conservation Forum (PGR Forum)' project and the UNEP/GEF *'In situ* conservation of crop wild relatives through enhanced information management and field application' project. The template formats based on the descriptors have been developed within the FP7 funded 'Novel characterization of crop wild relative and landrace resources as a basis for improved crop breeding (PGR Secure)' project.

A link has been made with the Species Survival Commission of the International Union for Conservation of Nature's (IUCN SSC) Sub-Committee for Species Conservation Planning, with the IUCN SSC Mascarene Island Plant Specialist Group and the Mauritian Wildlife Foundation in order to jointly develop conservation strategies for CWR in Mauritius. Also a link with IUCN/SSC Crop Wild Relative Specialist group has been established which can help raise awareness of the project globally.

Zambia, through ZARI, is one of the six SADC countries that participated in a regional project through the SADC Plant Genetic Resources Centre (SPGRC)/Food and Agriculture Organization (FAO) for the development of the national strategy for conservation of PGRFA focusing on six priority crop species, namely sorghum, pearl millet, cowpea, beans, groundnuts and cassava. The strategy is a framework for developing and implementing policies that promote PGRFA conservation and its sustainable utilization, streamlining and prioritizing activities, addressing capacity needs, identifying relevant stakeholders, leveraging complementarities and assigning responsibilities given limited human and financial resources. This project aims at addressing this identified gap through the development of national strategies for PGRFA and enhancing linkages with seed systems and extension delivery services. The anticipated outcome of implementation of the strategies developed will be increased food production and security, thereby helping to mitigate the anticipated adverse impacts of climate change on agriculture and food production. There is a complementary relationship between this project on *in situ* conservation and use of CWR and the FAO supported project that developed the national strategy with focus on six priority crop species. The *in situ* conservation and use project will address the existing gap that relates to the national strategic action plan for the conservation and use of CWR for enhanced food security.

GERMINATION is a regional project on genetic resources in the South West Indian Ocean region, funded by EU/CIRAD of Reunion. GERMINATION funded the participation of two people from Comoros and Madagascar to participate in the first regional training workshop on *in situ* conservation of CWR. One project staff from Mauritius participated in the Final Seminar of Phase 1 of the Germination Project from 18 to 22 May 2015, Saint Pierre, La Réunion.

2.5. If your organisation has received previous EU grants in view of strengthening the same target group, in how far has this Action been able to build upon/complement the previous one(s)? (List all previous relevant EU grants).

Bioversity participated in the EU funded FP7 project entitled 'PGR Secure' which developed products that are being used in this action. The methodologies for developing conservation strategies for CWR were applied to the partner countries. Similarly the experience gained on predictive characterization in the PGR Secure project was used to carry out the training workshop on predictive characterization and pre-breeding in South Africa in April 2015.

3. Visibility

How is the visibility of the EU contribution being ensured in the Action?

EU, ACP and S&T logos together with written acknowledgement of the funding and the grant contract number are included on all public awareness materials, such as the project leaflet and the project website.

Bioversity organized two side events to raise awareness of the importance of CWR in general and of the ongoing SADC Crop Wild Relatives project in particular. The first took place on occasion of the 15th regular session of the CGGRFA, at FAO, Rome, Italy, on 21 January 2015. The side event was entitled "Safeguard our options for tomorrow: the case of *in situ* conservation of Crop Wild Relatives". The second side event took place during the 6th meeting of ITPGRFA's GB, at FAO, Rome, Italy, on 8 October 2015. Both events were well attended by over 50 delegates, project leaflets were distributed during both meetings and side events, and the roll-up banner on CWR was displayed.

GERMINATION, a regional project on genetic resources in the South West Indian Ocean region, funded by EU/CIRAD of Reunion invited a Bioversity representative to participate in the Final Seminar of Phase 1 of the Germination Project from 18 to 22 May 2015, Saint Pierre, La Réunion. The Bioversity representative delivered a presentation about the importance of CWR and the SADC project.

The project has been promoted among the members of the IUCN SSC Crop Wild Relatives Specialist Group as an EU-funded project.

The Ministry of Agro-Industry and Food Security in Mauritius has been involved in the project since the start of its implementation. Various departments of this Ministry and other NGOs like Mauritius Wildlife Fund (MWF) working on genetic resources and their conservation have at some point been present in the meetings and workshop. This project has also helped to enhance interactions with CIRAD of La Reunion.

South Africa has included collaboration with the SADC Crop Wild Relatives Project in their national action plan to achieve Target 9 of the Global Strategy for Plant Conservation.

The European Commission may wish to publicise the results of Actions. Do you have any objection to this report being published on the EuropeAid website? If so, please state your objections here.

We do not have any objections.

Annexes

Annex I: Gene pool and taxon group concept

The gene pool (Harlan and de Wet 1971) and taxon group (Maxted et al. 2006) concepts provide classification systems for the relationship between crops and their wild relatives.

Gene pool: Within each crop complex there is a potential pool of genetic diversity available for utilisation and a gradation of that diversity dependent on the relative crossing ability between the crop itself and the primarily non-domesticated species in the primary, secondary or tertiary gene pool of the crop, defined as follows:

- Gene pool 1a – cultivated from of crop
- Gene pool 1b - wild or weedy forms of the crop and all the closely related taxa, able to freely interbreed with the crop and give rise to fully fertile progenies

- Gene pool 2 - taxa more remotely related to the crop, but still capable of crossing with it and producing some fertile hybrids
- Gene pool 3 - taxa remotely related to the crop and naturally incapable of interbreeding with the crop

For many taxa the crossability is not known. The taxon group concept makes it possible to classify taxa even for species for which we have little or no genetic diversity data. The taxon group categories are as follows:

- Taxon Group 1a - crop
- Taxon Group 1b - same species as crop
- Taxon Group 2 - same series or section as crop
- Taxon Group 3 - same subgenus as crop
- Taxon Group 4 - same genus as crop
- Taxon Group 5 - different genus to the crop

Harlan J, de Wet J (1971) Towards a rational classification of cultivated plants. Taxon 20: 509-517.
Maxted N, Ford-Lloyd BV, Jury SL, Kell SP, Scholten MA (2006) Towards a definition of a crop wild relative. Biodiversity and Conservation 14: 1-13.

Annex II: Template outlining the main NSAP document. It provides guidance to countries in what need to be included in the NSAP. See separate PDF file NSAP_template_27July2015.pdf

Annex III: Technical background document template, which complements the main NSAP document. Aimed to help countries to gather all the technical details generated in the project and capture this information in a written form. See separate PDF file NSAP_technical_background_template_27July2015.pdf .

Name of the contact person for the Action: Ehsan Dulloo……

Signature: ……

Location: ……

Date report due: ……..……

Date report sent: …….