SADC CROP WILD RELATIVES

CONSERVATION AND USE OF CROP WILD RELATIVES IN SOUTHERN AFRICA: KEY RESULTS OF THE ACP-EU CWR PROJECT

Dickson Ng'uni

Zambia Agriculture Research Institute, Mount Makulu Research Station, P/B 7, Chilanga, Zambia. E-mail: dickson.nguni@gmail.com

ACP S&T PROGRAMME

Bioversity International

UNIVERSITY OF BIRMINGHAM

ZARI Zambia Agriculture Research Institute
Researching Soils, Crops and Water in Zambia

University of Mauritius
www.uom.ac.mu | Reduit, Mauritius

SANBI Biodiversity for Life
South African National Biodiversity Institute

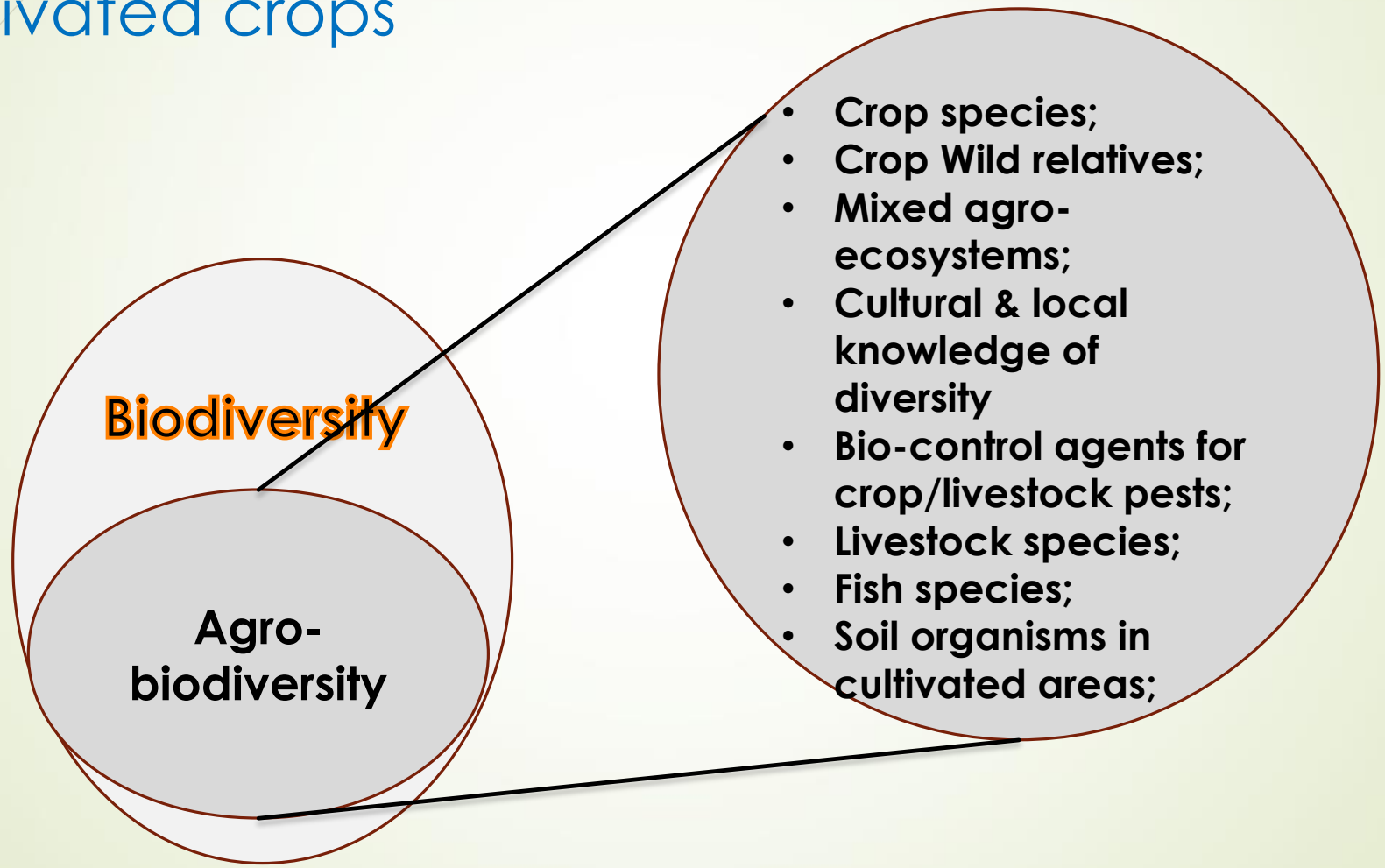
agriculture, forestry & fisheries
Department: Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

PRESENTATION OUTLINE

- Crop Wild Relatives, what they are?
- Value of the crop Wild Relatives
- SADC Crop Wild Relatives Project
- Objectives of the SADC CWR Project
- Key Results of the ACP-EU CWR Project
- Conclusions – Key results
- Acknowledgements

CROP WILD RELATIVES (CWR), WHAT THEY ARE?

CWR are plants **closely related** to crops, include **ancestors** of cultivated crops



VALUE OF CROP WILD RELATIVES

- Are **sources of genes** for crop improvement
  - confer resistance to pests and diseases,
  - improve tolerance to stresses: extreme temp, drought
  - Nutritional quality

SADC CROP WILD RELATIVES PROJECT

- CWR are an important source of trait diversity for crop improvement
- Food and economic security
- CWR are recognized in international legislation e.g. ITPGRFA, CBD Aichi Targets
- Threatened in the wild
- *In situ* and ex *situ* conservation inadequate
- Partnership between environment and agriculture sectors

SADC CROP WILD RELATIVES PROJECT

- In situ Conservation and Use of Crop Wild Relatives in three ACP countries of SADC Region
  - Mauritius, South Africa, Zambia
- 2014-2016
- Led by Bioversity International in partnership with University of Birmingham
- Co-funded by the European Union and implemented through the ACP-EU Co-operation Programme in Science and Technology (S&T II) by the ACP Group of States. Grant agreement no. FED/2013/330-210.

OBJECTIVES OF THE SADC CWR PROJECT

Overall objective

- Enhance the link **between conservation and sustainable use of CWR** in three ACP countries within the SADC region, as a means of underpinning regional food security and mitigating the predicted adverse impact of climate change

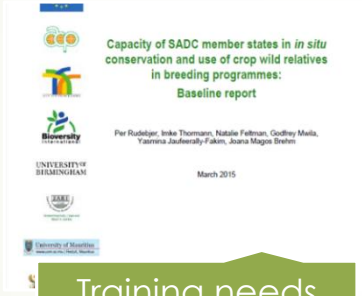
Specific objectives

- **Enhance the scientific capacities** within the partner countries to conserve CWR and identify useful potential traits for use to adapt to climate change.
- **Develop exemplar National Strategic Action Plans** for the conservation and use of CWR in the face of the challenges of climate change across the SADC region

KEY RESULTS OF THE ACP-EU CWR PROJECT

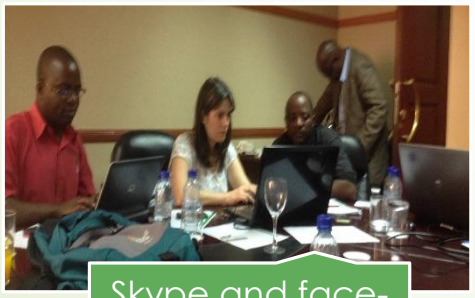
1. CAPACITY BUILDING

To assess and improve capacities on *in situ* conservation and use of CWR in the SADC region

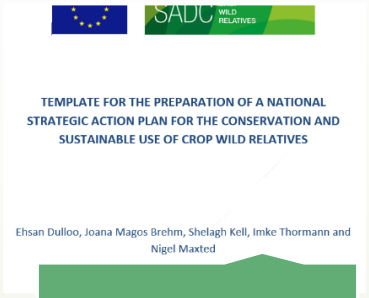


Training needs assessment

Training workshops



Skype and face-to-face meetings



Templates

Online toolkit

1.1 TRAINING NEEDS ASSESSMENT ON CWR IN SITU CONSERVATION AND UTILIZATION

Surveys carried out in participating countries

Key findings:

- Expertise on CWR is limited
- Lack of capacity in taxonomy, ecogeographic survey, seed handling, climate change modelling, data management and analysis
- CWR data quantity and quality are poor and accessing data within the SADC region is difficult
- Lack of policies on CWR

1.2 REGIONAL TRAINING WORKSHOPS

1.2.1 Regional training workshop on in situ conservation of CWR – Mauritius, November 2014

26 participants from 14 SADC countries

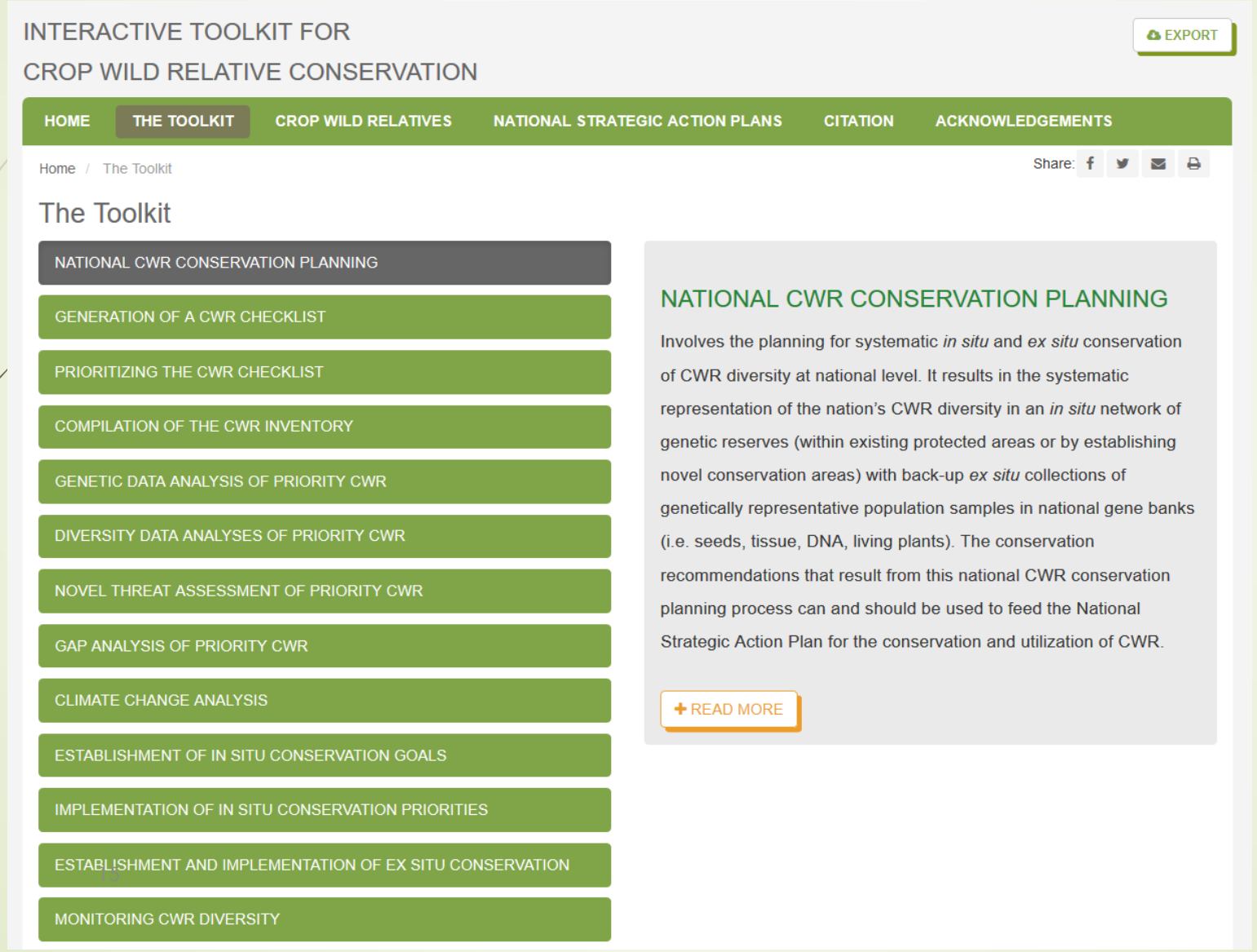
- Creating CWR checklists and inventories
- Prioritization of CWR for conservation
- Conservation status assessment of priority CWR
- Plans for implementation of conservation priorities
- Relevant policy for the conservation of CWR

1.2.2 Regional training workshop on predictive characterization and pre-breeding – South Africa, April 2015

23 participants from 9 SADC countries

- Application of ecogeography to PGR
- Predictive characterization of selected CWR for a specific traits
- CAPFITOGEN tools
- Definition and application of pre-breeding
- Genebank operations critical to pre-breeding programmes

2. DEVELOPMENT OF INTERACTIVE TOOLKIT FOR CWR CONSERVATION



3. PRIORITISATION OF CWR – 3 COUNTRIES

	MAURITIUS	SOUTH AFRICA	ZAMBIA
PRIORITIZATION CRITERIA	Economic Value Use potential Relative Distribution Occurence status IUCN Red list Categories	Socio-Economic Value Use potential Relative Distribution Occurence status IUCN Red list Categories +Nationalcategories	Economic Value Use potential Relative Distribution Occurence status IUCN Red list Categories
PRIORITY CWR	13 in Mauritius 10 in Rodrigues	258 taxa	30 taxa
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*)

Priority Crop wild relative taxa

- Prioritization – 30 CWR taxa

9 *Vigna* spp.

6 *Cucumis* spp.

4 *Oryza* spp.

3 *Dioscorea* spp

2 *Sorghum* spp.

2 *Solanum* spp.

2 *Eleusine* spp.

Other CWR taxa

✓ *Ipomoea* 1,

✓ *Pennisetum* 1.

3. NATIONAL STRATEGIC ACTION PLANS FOR CWR CONSERVATION AND SUSTAINABLE USE

Compile baseline information on CWR diversity of CWR in the 3 countries (checklist, prioritization, ecogeographic survey)

Identify CWR hotspots and priority sites for *in situ* conservation and *ex situ* collection (diversity analysis)

Predict which CWR *in situ* populations and materials from ex *situ* collections have traits adapted to extreme climate conditions (predictive characterization)

Develop exemplar National Strategic Action Plans (NSAP) for the conservation and sustainable use of priority CWR in the 3 countries

SUSTAINABILITY AND INVOLVEMENT OF STAKEHOLDERS

- Strong national stakeholder involvement in NSAP development in all three countries
- Strong advocacy at policy level
- Visibility at international conferences and meetings
- Engagement with farmers- the ultimate beneficiaries
- Endorsement of the National Strategic Action Plans at Government levels

3. National Strategic Action Plan (NSAP) for conservation of priority CWR taxa- Action Points

- ✓ Strategic actions for conservation and use
- ✓ Concrete actions for *in situ* conservation
- ✓ Concrete actions for ex situ conservation and utilization
- ✓ Concrete actions for linking conservation to use
- ✓ NSAP specifies institutional collaboration

CONCLUSION- KEY OUTPUTS

- Strengthening capacity of over 50 participants from SADC Member States in *in situ* conservation and use of CWR
- An interactive toolkit for conservation of CWR published and shared
- Development of checklist and inventory of CWR in the three partner countries;
- Identification of hotspots of priority CWR sites in each country for *in situ* conservation intervention
- National Strategic Actions plans (NSAP) for CWR conservation and sustainable use developed
- A Regional Network of CWR Important sites within SADC region
- Contribute to the attainment of Target 13 of Biodiversity Strategic plan and GSPC target 9.

ACKNOWLEDGEMENTS

European Union

African Caribbean Pacific

Bioversity International

University of Birmingham

Zambia Agriculture Research Institute

THANK YOU!!!