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Human resource capacity in conservation and use of plant genetic resources in the SADC region: A review

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Abstract

This review presents the main achievements made by the Southern Africa Development Community (SADC) – Plant Genetic Resources Centre (SPGRC) in training and building capacity in conservation and sustainable use of plant genetic resources since its establishment in 1989. SPGRC was established to conserve landraces, primitive cultivars, and wild relatives of important food crops in response to the rapid erosion of genetic resources as a result of introduced modern crop varieties and the increasing rate of ecological degradation. Results revealed a significant success in training personnel on conservation was achieved when the understanding of the importance for conserving and promoting sustainable use of plant genetic resources was still low. The long-term training was the original idea of the International Board for Plant Genetic Resources (IBPGR) (now Bioversity International) and funding was provided by the Nordic countries coordinated by the Swedish International Development Agency (Sida). The University of Birmingham in the UK provided MSc training on plant genetic resources and use while the short-term capacity building courses were carried out at the Lund University in Sweden and occasionally at SPGRC in Zambia. The combined number of people that graduated to MSc and PhD in conservation and sustainable use of plant genetic resources grew from less than ten in the 1980s to 57 and 6, respectively in 2012 when the Sida project ended. Other donors that contributed in training of personnel in conservation and use of plant genetic resources include: Southern African Network for BioSciences - SANBio (in environmental policy and planning), UN Food and Agriculture Organization - FAO (in plant pre-breeding).

Key words: FAO, IBPGR, SPGRC

Résumé

Cette revue présente les principales réalisations accomplies par le Centre des Ressources Génétiques (SPGRC) de la Communauté de Développement de l'Afrique Australe (SADC), dans la formation et le renforcement des capacités en matière de conservation et d'utilisation durable des ressources génétiques des plantes depuis sa création en 1989. Le SPGRC a été créé pour conserver les variétés locales, les cultivars primitifs, et les plantes sauvages de cultures vivrières importantes en réponse à l'érosion rapide des ressources génétiques comme le résultat de l'introduction de variétés modernes et l'augmentation du taux de dégradation de l'environnement. Les résultats ont révélé un succès important dans la formation du

personnel en matière de conservation. Ceci a été atteint lorsque la compréhension de l'importance pour la conservation et la promotion de l'utilisation durable des ressources génétiques des plantes étaient encore faible. La formation à long terme était l'idée originale de « International Board for Plant Genetic Resources » (IBPGR) (Conseil International des ressources génétiques de plantes) (actuellement Bioversity International) l'Organe international des ressources phytogénétiques (CIRP) (maintenant Bioversity International) et le financement a été fourni par les pays nordiques coordonnées par l'Agence Suédoise de Développement International (Sida). L'Université de Birmingham au Royaume-Uni a fourni la formation en MSc sur les ressources génétiques des plantes et son utilisation, tandis que les cours de courte durée de renforcement des capacités ont été menés à l'Université de Lund en Suède et parfois au SPGRC en Zambie. Le nombre total de personnes qui a obtenu son diplôme de maîtrise et de doctorat sur la conservation et l'utilisation durable des ressources génétiques des plantes a augmenté de moins de dix dans les années 1980 à 57 et 6, respectivement en 2012, lorsque le projet Sida a pris fin. D'autres bailleurs de fonds qui ont contribué à la formation du personnel en matière de conservation et de l'utilisation des ressources génétiques végétales comprennent: Réseau de l'Afrique Australe pour BioSciences - SANBio (de la politique de l'environnement et la planification), de l'Alimentation des Nations Unies et l'agriculture - FAO (dans la plante l'usine de pré-élevage).

Mots clés: la FAO, IBPGR, SPGRC

Background

Research in conservation and sustainable use of plant genetic resources during the project period (1989-2010) and the decline in the number of training opportunities for conservation and use of plant genetic resources since 2011 is a major concern. The present need to conserve and sustainably use plant genetic resources is increasing the need to promote research in conservation and use of plant genetic resources. Research in biotechnology, cryopreservation, tissue culture, characterization, evaluation and pre-breeding, including farmer related studies are among some critical areas for research. SPGRC coordinates a network of 15 national plant genetic resources centres in the SADC region.

Literature review

The changing demands of the organization of the future (Carnal, 2007), the present demands for conservation and the need to improve use of conserved plant genetic resources resulted in new challenges (FAO, 2011). The priority areas set out in the Global Plan of Action for Plant Genetic Resources for Food and Agriculture in 1996 guided the training and development of capacities for personnel in the network. Research and capacity building for plant genetic resources conservation and use relied to a large extent on public support and the main constraints have been the sustainability of projects that were funded from donor sources.

Study description

This review was based on information obtained from SPGRC (in Zambia) and evidence based findings through consultations and meetings with the national plant genetic resources

centers' authorities and various stakeholders from the SADC region. Information for total number of post graduates was adopted from SPGRC reports. Information on beneficiaries of short-courses held in Sweden by Lund University and other specialized courses held at SPGRC was also acquired from annual reports.

Research application

The results on training of staff from Plant Genetic Resources Centers in the network on long-term training in UK and short term capacity building in Sweden is shown in Table 1.

As a result of the capacity building efforts in conservation and sustainable use of plant genetic resources, national genebanks were established in 12 SADC countries and staffed with adequately trained personnel covering the technical areas of *ex situ* conservation, *in situ*/on farm conservation and documentation and information. To date 45,000 germplasm accessions are conserved in the active collections of national genebanks of SADC member states. Of these, 17,000 have been duplicated to the SPGRC base collection. The Democratic Republic of Congo, Madagascar and Seychelles did not benefit much from the project because they joined the Southern African Development Community late towards the end of the project. These three countries need special attention to help them establish their national genebanks and train personnel.

Table 1. SADC region personnel trained in plant genetic resources conservation and use from 1990 - 2012.

Country	Level of training			Total
	Certificate	MSc.	PhD	
Angola	16	3	-	19
Botswana	17	5	1	23
Dem. Rep. Congo	2	-	-	2
Lesotho	16	5	-	21
Malawi	28	7	-	35
Mauritius	11	5	-	16
Mozambique	21	4	1	26
Namibia	16	3	1	20
Seychelles	2	1	-	3
South Africa	13	4	-	17
Swaziland	23	4	1	28
Tanzania	26	5	-	31
Zambia	25	5	1	31
Zimbabwe	26	6	1	33
Total	242	57	6	305

Adopted and improved from Munyenyembe, 2009 & SPGRC annual report 2009.

Efforts are being made in SADC member states to step up the utilization of the conserved materal in the genebenks in crop improvement as a contribution towards enhancing food security in the region and also as contribution to adaption to climate change.

Acknowledgement

We thank the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) for giving us an opportunity to share our findings.

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