

Research Application Summary

**Experiences from implementing regional training in the SADC region: MSc. in plant breeding and seed systems at the University of Zambia**

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**Abstract**

With SADC-ICART support, the University of Zambia designed a plant breeding M.Sc. programme that incorporated both technical and social skills. The programme has graduated 12 M.Sc. students, all of whom are already employed. The paper describes implementation approaches and challenges and lessons learnt.

Key words: Curriculum reform, social skills, plant breeding, technical skills, University of Zambia

**Résumé**

Avec l'appui de la SADC-ICART, l'Université de Zambie a conçu un programme de M.Sc. en reproduction des plantes qui intègre à la fois les techniques et les compétences sociales. 12 étudiants ont obtenu des diplômes dans ce programme de M.Sc., et tous ont déjà obtenu du travail. Le document décrit les approches de mise en œuvre, les défis et les leçons apprises.

Mots clés: Réforme des programmes, les compétences sociales, l'amélioration des plantes, les compétences techniques, Université de Zambie

**Background**

Sub-Saharan Africa is faced with several serious challenges, key among which is hunger and poverty. This is partly due to the low crop productivity with yields of staples crops such as maize averaging 1.2 t/ha against a potential of 12 t/ha, cowpeas yielding 150 kg/ha against a potential yield of 3 ton/ha and sorghum yields are about 0.8 ton/ha when the potential is 7 ton/ha. This low productivity has been linked strongly with the continuous use of unimproved crop varieties by smallholder farmers.

To address this challenge, improved crop varieties for target environments need to be developed. Training in Plant Breeding and Seed Science and Systems will ensure that human resource necessary to develop appropriate crop varieties, develop and produce the seed from these varieties and make it available to the farmers.

This paper describes a regional training programme at the University of Zambia that was designed to train highly skilled middle-level (M.Sc) graduates able to develop new crop varieties and manage seed systems.

## Literature Summary

Agricultural growth is essential for improving welfare of the majority of Africa's poor. As producers, 70% of all Africans and nearly 90% of the poor work primarily in agriculture (World Bank, 2000). Roughly 80% of the continent's poor live in rural areas, and even those who do not, depend heavily on increasing agricultural productivity and value chains to lift them out of poverty.

To enhance productivity of small holder farmers, will in general, encompass strengthening crop improvement to respond to new market demands and environmental changes and address functionality of Innovation systems as a whole. Crop improvement has played a key role in human and economic development of many societies. For example, the Green revolution which led to advancement of several economies in Asia and Latin America was largely a crop improvement based contribution of science to economic development (Conway, 1997). In the context of the Southern African Development Community (SADC) region there is need to strengthen crop improvement and seed systems to enable farmers access improved seed and other production enhancing technologies that are closely linked to markets. This requires strengthening the human resource base by integrating traditional plant breeding approaches, emerging advances in science, social skills and marketing and trade issues in current plant breeding training programmes. Frey (2000) noted that "there needs to be a new paradigm in plant breeding education...that involves private sector in all aspects of the endeavour." Lee *et al.* (2006) recommended that there was need to revitalize existing academic plant breeding programmes to ensure that future generations of plant breeders were well equipped for the emerging challenges.

## Implementation of Programme

The programme was developed through wide stakeholder consultations in the SADC region and beyond through RUFORUM, and built on previous sponsorships of the MSc Agronomy training by the GTZ and the Rockefeller Foundation. Stakeholders in SADC region, and others for eastern Africa, were consulted on the desired profile of an M.Sc. graduate.

Key technical skills, and also social skills for operating a seed system were agreed upon. Subsequently, a team involving university scientists, NGOs and Zambian Farmers Organisation were engaged to design the curriculum, which was later presented to graduate students. Following input from the students, the draft curriculum was then passed through the senate process of the University of Zambia. The new programme incorporated, in addition to genetics and plant breeding principles, elements of biotechnology, seed systems and agribusiness. Where expertise was not available at the University of Zambia (UNZA), this was sourced from outside the University system, Makerere University in Uganda, Moi University in Kenya and Africa University in Zimbabwe. In addition, remedial training was provided for the faculty at UNZA which covered among other topics, development of e-content course modules.

The programme ran for three years with the first year devoted to curriculum review, advertisement of the programme in the SADC region, selection of the suitable candidates and admission of the successful applicants. Upon enrolment students had to be settled through provision of accommodation and selection of courses. A total of 12 MSc students of Plant Breeding and Seed Systems were supported through the programme. The students were from six SADC countries.

Course delivery was done in the first year, during which period research proposals were developed in conjunction with relevant partners (employers and other stakeholders) and home institutions of the students. Relevant partners from the academic and private sector were invited to input into the programme at various points.

Research was conducted in the second year under both University supervisors and appointed local supervisors. Research topics were chosen by the students in consultation with employers and/or relevant partners. Crops covered included maize, sorghum, sweetpotato, finger millet, rice, beans and cotton. The University of Zambia provided the overall coordination function of the programme reporting to SADC and the Partners and consulting with partners on the planned activities.

## **Lessons and Recommendation**

A key challenge was how to ensure acceptance of a curriculum that incorporated not only the technical aspects - plant breeding,

but also social aspects. Once buy-in was achieved and there was positive feedback from students and potential employers where the students were attached for field work, this provided opportunity for wider curriculum reform at the School of Agriculture at UNZA. In addition, participation of Africa University, Moi University and Makerere University enriched the training programme. The non-university partners helped in defining skill needs and field attachment of the students

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