

<sup>1</sup>Georg-August-Universität Göttingen, Germany; <sup>2</sup>Justus-Liebig-University, Giessen, Germany; <sup>3</sup>Rwanda Institute of Agriculture Research, Rwanda; <sup>4</sup>Kawanda Agricultural Research Institute, Uganda; <sup>5</sup>Bvumbwe Agricultural Research Station, Limbe, Malawi; <sup>6</sup>Bioversity International, at AVRDC-RCA, Arusha, Tanzania; <sup>7</sup>Horticultural Research Institute, Tengeru, Tanzania; <sup>8</sup>The World Vegetable Center, Shanhua, Taiwan; <sup>9</sup>The World Vegetable Center, Regional Center for Africa (RCA), Arusha, Tanzania

## The ProNIVA project

- One of ProNIVA's main goals is safeguarding indigenous vegetables biodiversity, improving their utilisation and, thereby, contributing to reduce malnutrition and poverty among small-scale farmers and consumers in four partner countries (Malawi, Rwanda, Tanzania, Uganda).
- ProNIVA stands for "Promotion of Neglected Indigenous Vegetable Crops for Nutritional Health in Eastern and Southern Africa", and was initiated in 2003 by The World Vegetable Center's Regional Center for Africa (AVRDC-RCA) and partners.
- Despite their nutritional importance, utilisation, collection, production and consumption of African vegetables is decreasing, leading to genetic erosion that takes place at a rapid pace.

## The strategy

- Important production and consumption issues of indigenous vegetables perceived by farmers from different districts in four countries have been studied by the ProNIVA project.
- Survey data have been gathered by both individual interviews and focus group meetings (overall about 1000 persons).
- Germplasm accessions of cultivated and wild vegetables have been collected for research and conservation.

## Collecting knowledge

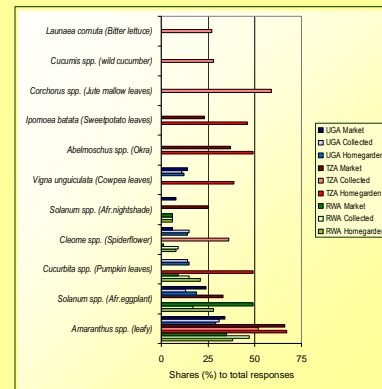
- Considerable differences regarding vegetable diversity available and their sources were found among districts and countries (see figure), as mentioned by the interviewees.
- Main factors perceived for these differences were related to urbanisation, agro-ecological conditions, cultural aspects and individual preferences.
- A high number of vegetables was reported to be collected from un-cultivated areas. The overall number of different indigenous vegetable items consumed was highest in Tanzania, but lowest in Rwanda.
- In general, the vegetable diversity actually produced and consumed by participants was less than the diversity mentioned in the interviews to be available.

## Research region in eastern and southern Africa



## Top traditional vegetables according to country and provenance

Rwanda (RWA), Tanzania (TZA), Uganda (UGA)



Modified from ProNIVA report 2006

## Outlook

- Performing participatory germplasm research after characterization considers consumers' needs, e.g. studying organoleptic preferences.
- Developing new recipes increases, e.g., iron and vitamin A supplies to consumers.
- Market chain studies may improve economic sustainability of growing traditional vegetables.
- Training farmers and professionals strengthens awareness for traditional African vegetables.

## Collecting germplasm

- Germplasm of most important traditional vegetables in the four partner countries has been collected, acquiring 321 accessions from Malawi, 90 from Rwanda, 134 from Tanzania, and 163 from Uganda. Half of the accessions gathered belong to four vegetables (see table).

Vegetable	Malawi	Rwanda	Tanzania	Uganda	Total
<i>Amaranthus</i> spp. (leafy): Amaranthaceae	26	22	9	68	125
<i>Cucurbita</i> spp. (Pumpkin leaves): Cucurbitaceae	52	19	9	2	82
<i>Cleome gynandra</i> (Spiderplant): Capparaceae	25	6	1	36	68
<i>Solanum</i> spp. (African eggplant): Solanaceae	13	13	11	30	67

- Different aspects of diversity in this vegetable germplasm is presently being researched.
- Seed is being increased for further investigation on station and with farmer participation.
- Germplasm is conserved *ex situ*.

## Selected References

- Keller, G.B., Mndiga, H. and Maass, B.L. 2005. Diversity and genetic erosion of traditional vegetables in Tanzania from the farmer's point of view. *Plant Genetic Resources – Characterization and Utilization* 3(3):400-413.
- Weinberger, K. & Msuya, J. 2004. Indigenous vegetables in Tanzania: Prospects and significance. *Technical Bulletin* 31, AVRDC, Taiwan, 70 pp.
- Weinberger, K. & Swai, I. 2006. Consumption of traditional vegetables in central and northeastern Tanzania. *Ecology of Food and Nutrition* 45:87-103.

## Acknowledgements

Farmers in Malawi, Rwanda, Tanzania and Uganda for sharing knowledge and germplasm. All agricultural technicians in the four partner countries and AVRDC-RCA staff involved in data gathering and germplasm collecting. Dr. Tefera Tolera for providing three photos. BMZ/GTZ, DAAD, and Eiselen Foundation for financial support.