Title	Novel Technologies to Enhance Cassava Germplasm Conservation and Sustainable Utilization in Uganda
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Co-Researchers	Dr Susan Balaba Tumwebaze Forestry, biodiversity and tourism, School of Forestry, Environmental and Geographical Sciences, College of Agricultural and Environmental Sciences P. O. Box 7062, Dr Yona Baguma Dr Yona Baguma, (Agronomist, Molecular Biologist) National Crops Resources Research Institute (NaCRRI), National Agricultural Research Organisation (NARO), P. O. Box 7084, Kampala, Uganda. Email: baguma1234@yahoo.com
Purpose:	To examine novel technologies that will be used to enhance cassava conservation and utilization
Project Summary:	Viral diseases are threatening cassava productivity and its genetic diversity in Uganda. Research has demonstrated that phytosanitary measures enhance the health of cassava planting materials and production. This Project will explore thermotherapy using hot water treatment to reduce planting and distribution of infected material and thus sustain *in-situ* and *ex-situ* conservation activities. Cassava landraces are vulnerable to genetic erosion from spread of improved cultivars, accelerated by increased breeding activities and diseases. Although farmers have maintained cassava diversity, traditional conservation practices remain inadequately documented. This proposal will assess whether cassava on-farm conservation activities are influenced by traditional and cultural uses of cassava products. The project is supported by ongoing initiatives to conserve cassava germplasm in Uganda

	using *in-vitro* techniques at the National Agricultural Crops Resources Research Institute (NaCRRI), Namulonge. The project will be implemented at NaCRRI, western and 2idwestern Uganda. The methodology will involve field surveys and laboratory experiments. The project is a graduate training grant and will take up 2 graduate students and 4 interns. Makerere university will directly work with NaCRRI to implement the project.
Country and Specific Location(s)	Uganda: Namulonge, Masindi, Hoima, Nebbi, Arua
Participating Institutions	Makerere University, National Crops Resources Research Institute (NaCRRI)
Start Date	1st July, 2015
End Date	30th July, 2017
Budget	USD 59,459

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Grace Nakabonge holds a PhD in Plant pathology and MSc. in molecular plant pathology from the University of Pretoria, South Africa as well as a BSc. (Hons) degree in Botany/Zoology from Makerere University. She is currently a Senior Lecturer at Makerere University, School of Forestry, Environmental and Geographical Sciences, College of Agriculture and Environmental Sciences. As a Senior Lecturer, she is involved in teaching, research and supervision of graduate and undergraduate students. Nakabonge is also a Conservation consultant at the National Crops Resources Research Institute (NaCRRI) under the NEXTGEN cassava project. She worked as a Teaching Assistant in the Faculty of Forestry and Nature Conservation, Makerere University from 2002 to 2003, as an Assistant Lecturer from 2003 to 2006, and as a Lecturer from 2007 to 2012. She was also Regional Project officer of PROTA (Plant Resources of Tropical Africa) from 2009 to 2012. Grace Nakabonge has conducted research on molecular taxonomy, characterization and identification of plant pathogens focusing on their diagnosis as well as their management. She also has passion working on conservation and domestication of food resources.

Selected publications

Gwali, S., Vaillant, A., Nakabonge, G., Okullo, J.B.L., Eilu, G., Muchugi, A., Bouvet, J.M. (2014). Genetic diversity in shea tree (Vitellaria paradoxa subspecies nilotica) ethno-varieties in Uganda assessed with microsatellite markers. Forests, Trees and Livelihoods. http://dx.doi.org/10.1080/14728028.2014.956808.

Gwali, S., Nakabonge, G., Okullo, J.B.L., Eilu, G., Nyeko P., Vuzi, P. (2012). Morphological variation among shea tree *(Vitellaria paradoxa subsp. Nilotica)* 'ethnovarieties' in Uganda. Genetic Resources and Evolution 59:1883-1898.

Gwali, S., Nakabonge, G., Okullo, J.B.L., Eilu, G., Forestier-Chironc, N., Piombod G., Davrieuxc, F. (2012). Fat content and fatty acid profiles of shea tree (*Vitellaria paradoxa subspecies nilotica*) ethno-varieties in Uganda. Forests, Trees and Livelihoods 21: 267–278.

Gwali, S., Okullo, J. B. L., Eilu, G., Nakabonge, G., Nyeko, P., Vuzi, P. (2012). Traditional management and conservation of shea trees (*Vitellaria paradoxa subspecies nilotica*) in Uganda. Environment Development and Sustainability 14: 347-363.

Kyakulaga, A. H., Mwavu, E. N., Nakabonge, G., Ogwang P. E., Obua, C. (2011). Acute toxicity (LD_{50}) and immunostimulatory activity of the water extracts of *Auricularia* and *Pleurotus* species mushrooms in Wistar rats. African Journal of Pharmacy and Pharmacology, 5:

Gwali, S., Okullo, J. B. L., Eilu, G., Nakabonge, G., Nyeko, P., Vuzi, P. (2011). Folk classification of shea butter tree (*Vitellaria paradoxa subsp. Nilotica*) ethno-varieties in Uganda. Ethnobotany Research and Applications 9: 243-256.

Roux, J., Nakabonge, G. (2009). First report of *Holocryphia eucalypti* on *Eucalyptus grandis* in Uganda. *British Society of Plant Pathology* 19: (Doi: 10.1111/j.1365-3059.2009.02191.x).

Nakabonge, G., Burgess T., Gryzenhout, M., Wingfield, B., Wingfield, M.J., Roux, J., (2008). Population structure of the fungal pathogen *Holocryphia eucalypti* in Australia and South Africa. Australasian Plant Pathology 37: 154-161.

Nakabonge, G., Gryzenhout, M., Roux, J., Wingfield, B., Wingfield M.J. (2007). Genetic diversity of *Chrysoporthe cubensis* in eastern and southern Africa. South African Journal of Science 103: 261–264.

Nakabonge, G., Roux, J., Gryzenhout, M., Wingfield, M.J. (2006). Distribution of *Chrysoporthe* canker pathogens on *Eucalyptus* and *Syzygium* species in eastern and southern Africa. Plant Disease 90: 734–740.

Nakabonge, G., Gryzenhout, M., Roux, J., Wingfield, B., Wingfield M. J. (2006). *Celoporthe dispersa* gen. et sp. Nov. from native *Myrtales* in South Africa. Studies in Mycology 55: 259–271.

Nakabonge G., Cortinas M. N, Roux J, Gryzenhout M, Wingfield, B.D., Wingfield M. J. (2005). Development of polymorphic microsatellite markers for the fungal tree pathogen *Cryphonectria eucalypti*. Molecular Ecology Notes 5: 558–561.

Selected funded projects and grants

- 2003-2006: *Chrysoporthe* and *Cryphonectria* species on Myrtales in Southern and Eastern Africa. Funded by TWOWS (Third World Organization for Women in Science). Principle investigator

- 2008-2010: Susceptibility of *Eucalyptus* Hybrids to Botryosphaeria canker in Uganda. Funded by IFS (International Foundation for Science) Principle investigator
- 2009-2012: Vitellaria paradoxa ssp. Nilotica) varieties for improved nutrition and household incomes in Uganda. Funded by CARNEGIE –Institutional Development Programme. Principle investigator
- 2011-2013: African Women in Agricultural Research and Diversity. Fellowship – CGIAR – Gender and Diversity Programme.
- 2012-2014: Susceptibility of Apple varieties to Apple scab in Uganda. Funded by SIDA. Principle investigator
- 2013: Gene and QLT identification for native disease resistance in maize. Fellowship-DuPont-Pioneer Iowa-USA