

**GRADUATE AND POSTDOCTORAL STUDIES**

**MCGILL UNIVERSITY**



***FINAL ORAL EXAMINATION***  
**FOR THE DEGREE OF**  
**D**

## ABSTRACT

In resource poor farming systems, particularly those subject to environmental stress, agrobiodiversity is an important aspect of local livelihoods, food security, and seed security. Seed security refers to a farmer's ability to access and utilize available seed that is of good physiological quality and appropriate for local ecological and social contexts. The objectives of this thesis focus on understanding how access to different types of crops and varieties, through informal and formal seed systems, can contribute to reversing chronic household seed insecurity and support food production in semi-arid Kenya. In doing so, the research also aims to highlight local crops, varieties, knowledge, management strategies, and social organizations related to seed systems in Tharaka-Nithi C( ch)1 Td4i5tt<03EE> 0.T1 1 Tf 0.00783 Td [(a)A( a)qu-2(na)1(t)-5(h

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failure and heterogeneous rainfall patterns by mixing early and late maturing varieties of pearl millet, a practice followed since time immemorial. However, over time introduced varieties that mature earlier and introduced varieties that provide more yields have replaced the old indigenous varieties. Seed selection practices focus on long panicles and big seed as well as roguing out off-types called mathara.

A qualitative study identifies contemporary challenges of formal seed sector participation and access to seed of modern varieties in Tharaka. Results are discussed in relation to national seed policy, formal seed sector development, and seed system integration in Kenya. Thirty-nine percent of surveyed households reported that they had not grown seed of a modern variety originating from the formal seed sector in the last four seasons. The majority of modern varieties were accessed through reoccurring distribution of free seed, while maize seed was the only crop commonly accessed through agroshop purchase. Most farmers recycle seed that they receive from the formal seed sector.

This research presented a novel measurement of chronic seed insecurity and documents important social aspects of seed systems which contribute to the conservation of agrobiodiversity. The results will be useful to local and regional evaluations of seed security and national seed policies seeking to represent and integrate the challenges and realities of resource poor farmers. The results may also aid special efforts focused on in-situ conservation of the unique cultural and ecological diversity preserved by farmers in Tharaka.

## CURRICULUM VITAE

### UNIVERSITY EDUCATION

- 2011-2015                      **PhD Candidate.** Plant Science.  
McGill University. Montreal, Quebec.
- 2009-2011                      **Master's of Science.** Environmental  
Studies. University of Victoria. Victoria,  
British Columbia
- 2005-2009                      **Bachelor of Science.** Biology  
Ohio Northern University. Ada, Ohio.

### EMPLOYMENT

- April 2015                      **Post-doctoral researcher**  
University of California, Berkeley
- 2009-2011                      **Ecological Processes, Lab Instructor**  
School of Environmental Studies, University of Victoria.
- 2010                              **Ethnoecology, Teaching Assistant**  
School of Environmental Studies, University of Victoria.
- 2008-2009                      **Plant Systematics, Teaching Assistant**  
Biology Department. Ohio Northern University.

### AWARDS

- 2011-2014                      International Development Research Centre Canada  
Fellowship.
- 2011-2013                      Graduate Excellence Award. McGill University.
- 2009-2011                      Pacific Century Award. University of Victoria.

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