

UNIVERSITY OF HOHENHEIM

Institute of Agricultural Sciences in the Tropics
Department of Rural Development Theory and Policy

Supervisor: Prof. Dr. Manfred Zeller
Second Supervisor: Prof. Dr. Claudia Bieling



Master Thesis

Introducing neglected drought-tolerant crops to farmers in central and southern Karamoja sub-region of Uganda:

Farmers' perceptions and early empirical evaluation of pigeonpea adoption after a seed distribution project

Submitted by
Schüle, Jan

Student Number: 522740

M.Sc. Agricultural Sciences in the Tropics and Subtropics

Stuttgart-Hohenheim, 15th November 2017

This work was financially supported by the Foundation fiat panis.

ABSTRACT

The rural population of Karamoja, the driest and poorest region of Uganda, traditionally greatly depended on livestock through semi-nomadic pastoralism. Drastic decline of animal numbers over the past decades is seen as the main driver for dependence on rainfed crop production as the mainstay of an increasing share of farm household. Precipitation in this semi-arid climate is generally unreliable, which in combination with poor farming knowledge, environmental degradation, biotic stressors among other factors have been causing frequent crop failures, chronic malnutrition and dependency on humanitarian relief. The potential of transfer of germplasm technologies adapted to the socio-ecological niche for adaptation of agriculture and sustainable food production has little been exploited. The multi-purpose shrub pigeonpea (*Cajanus cajan*) is such an underutilized dryland crop with multiple adaptations and benefits. With its short perennial nature and continuous produce, it is expected to relieve the labor bottleneck during the sowing season and particularly benefit resource-poor farm households. 2kg seed portions were provided by the NGO Welthungerhilfe to 1813 farm households and 450kg to 5 schools in the districts Napak, Moroto and Nakapiripirit in central and southern Karamoja during the sowing season 2017. The thesis gives an evaluation of this project with regard to the initial adoption behavior by participating farmers by capturing their perceptions of pigeonpea, describing the acceptance and identifying constraining and facilitating conditions of adoption about one month after the seed distribution. Analytical hierarchy process and semi-structured interviews served to assess the perceptions. A questionnaire-based survey of 296 farmers and a combination of the hybrid between theory of planned behavior and expected utility theory with technology acceptance model 2 as conceptual framework provided empirical evidence for analysis of determinants of adoption intensity in SPSS using generalized linear model. Farmers' evaluations of pigeonpea are positive and largely realistic, but did not significantly increase adoption intensities. Intention to adopt was 100% and adoption rate was estimated to reach 95% of participants after two months. Adoption intensity (the share of seeds planted) after one month was on average 46%, and among individuals with nutritional aid increased by 37% in comparison with those without. A range of resource constraints like food insecurity, extreme poverty and missing education were identified. Seed consumption was a significant challenge for such households. Individually targeted support of vulnerable households or collective relief programs accompanying seed distributions are recommended to avoid widening disparities. Further assessment of the pigeonpea project is necessary, and strategic expansion of agrobiodiversity approaches in the area is recommended. Substantial evidence for the unique strategic role of pigeonpea in the high-risk agricultural sector of Karamoja is added.