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Master Thesis related to module

< Farming Systems Research >

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Rainfall variability, food security, climate coping and adaptation strategies of rural communities in Awash River Basin, Ethiopia

submitted by

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Declaration

Herewith I declare under oath that I accomplished this work independently and without outside help; in the document all consulted sources are mentioned as such I have not made use of any other resource.

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Abstract

Climatic risks (e.g. drought and excessive rains) cause substantial decline in crop and pasture yields with severe consequences on the livelihood of smallholder farmers in developing countries. However, few studies have concentrated on the impacts of climatic risks on smallholder agriculture. More so, these studies have neglected climatic risk coping and adaptation strategies employed by rural communities. This study seeks to contribute to this knowledge gap by assessing the impacts of rainfall variability on crop and livestock production and food security as well as exploring coping and adaptation strategies employed by rural communities to counteract the negative impacts of climatic risk in Awash River Basin, Ethiopia. Socio-economic data were collected through a community survey from 43 randomly selected Peasant Associations (PAs). The study employed a Climate Risk Chain Framework to analyse climatic risk impact, resilience and risk management. Using descriptive analysis, we found that droughts and excessive rains are common in the study area and are associated with reductions in teff yields, livestock feed and water. To cope with drought, households relied on eating less preferred foods, borrowed food from friends and relatives, reduced meals eaten per day, sold small livestock, crops and household utensils. In addition, household members engaged in selling dung cake, acquired loans from informal sources and sought employment. Households have adapted to drought by keeping crop residues for livestock, rearing adaptable livestock, mixed cropping and growing short duration crop varieties among others. Lack of information, credit and water are some of the constraints hampering household adaptation efforts. Using Principal Component Analysis, we constructed Drought Resilience Index to measure PA drought resilience. In order to compare drought resilience, we created 3 resilience groups and the results showed that PAs located in the Uplands sub-basin were more resilient to drought than those in the Upper valley sub-basin. The study results suggest the following policy recommendations: To improve household livelihoods, policies and programs that seek to alleviate the constraints (e.g., lack of water, credit and information) should be emphasised. As such farmer trainings and information dissemination should emphasis on: improved water and soil management techniques, rearing breeds adapted to local climatic stress, growing drought tolerant crop varieties and conservation of crop residues. Policy options that seek to facilitate the availability of credit, encourage and strengthen informal social networks are crucial in the area. During drought periods, extra policy interventions should be directed to communities in the Upper valley sub-basins as they are less resilient to drought.

Keywords: climatic risk, impact, resilience, coping, adaptation, Ethiopia