Seed Security and Climate Resilience in Northern Malawi

Esther Lupafya

Director, Soils Food and Health Communities (SHFC)

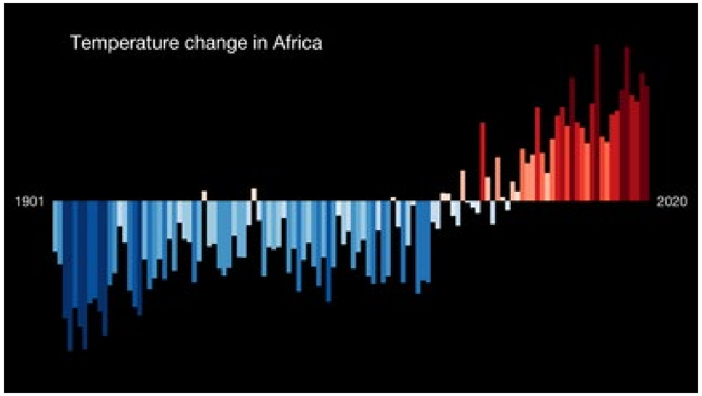
Daniel Amoak

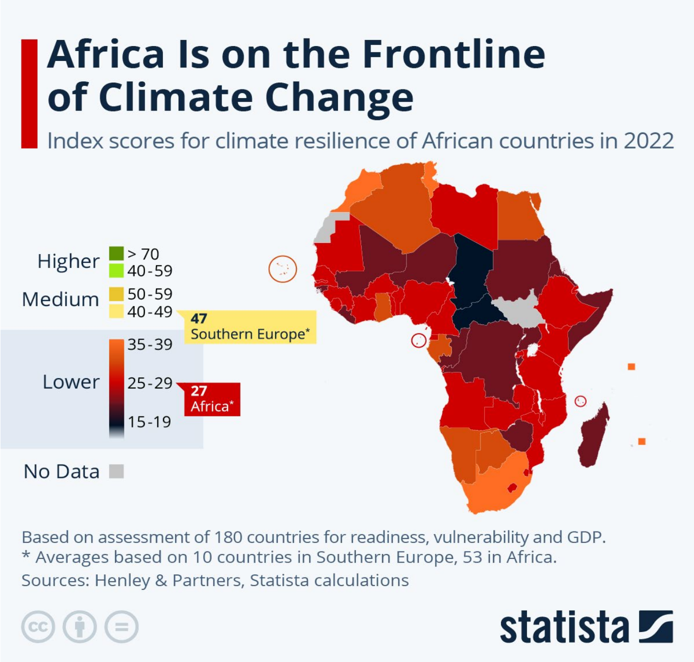
Postdoctoral Fellow, The University of Waterloo

WeCLISH Climate Café, January 24, 2025, Zoom

INTRODUCTION

- Climate change is the 'defining moment of time'
- Marked by spatial disparities





Western

Introduction

- Climate change is driving the rapid decline of pollinator populations in SSA

Contextualizing the research problem

- According to the Global Climate Risk Index, Malawi is a highly vulnerable climatic region (IFAD, 2022)
- Malawi has declared a state of emergency six times in the last 10 years.
  - Cyclone Freddy (2023), Idai (2019), Chedza (2015)
- Nearly 80% of people involved in agriculture
  - Souring seed prices, food insecurity, poor nutrition

Seed insecurity in Malawi

- **Malawi 2018 seed policy discourages the use of open-pollinated seeds**
  - Relational vs transaction
  - Formal sector meets only 20% of seed needs
  - Threat to seed sovereignty

- **Gov't, AGRA focus on 'modernizing' agriculture through promoting hybrid seeds**

FISP

FARM INPUT SUBSIDY PROGRAM

The problem seed insecurity in Malawi

- There has been a notable reduction in overall seed production output and the attrition of landrace cultivation such as sorghum and millet in Malawi (Bezner Kerr, 2014; Vasquez & Andersen, 2023)
- The seed system is gender blind (Puskur et al. 2023)
- Women are more vulnerable to seed insecurity (Galie , 2017; FAO, 2023)

Seed insecurity in Malawi

Research Objective

Examine the influence of seed security on household climate change resilience under prevailing biophysical changes in Malawi.

STUDY CONTEXT: Mzimba District, Malawi

ABOUT SFHC

Farmer-led Research for Food Security, Soil Fertility and Nutrition
SFHC
SOILS, FOOD AND HEALTHY COMMUNITIES
The Soils, Food and Healthy Communities is a participatory, farmer-led organization, using agroecological methods for rural livelihoods in Malawi.
SFHC Farmer Training & Research Centre, Mtwalo Road, Next to Tropha Estates Limited, Post Office Box 36, Ekwendeni, Malawi •soilandfood.org •contact: sfhc@gmx.com

About MAFFA

Malawi Farmer-to-Farmer Agroecology Project (MAFFA)

QUANTITATIVE DATA COLLECTION

- Multi-staged sampling approach
- Sampled 30 village areas
- 1 km radius around the study site
- Systematic sampling of 5^{th} house
- Data collected in 2019

MEASURES

Seed security access scale

Pillar	Questions	Code
Availability	Did you worry you will not save enough planting material for the next season	(0=No 1=Yes)
	Were you unable to grow enough crops due to a lack of planting material	(0=No 1=Yes)
	Did you have no planting material to plant at the onset of the rains	(0=No 1=Yes)
	Did you sell all your planting material saving none for the next season	(0=No 1=Yes)
	Did you have no seeds or planting material to plant the entire season	(0=No 1=Yes)
Access	Did you worry you would not have access to external sources of planting material	(0=No 1=Yes)
	Did you grow limited crop varieties due to a lack of seeds	(0=No 1=Yes)
	Did you receive seed aid	(0=No 1=Yes)
Quality	Did you grow crops using planting material of low quality	(0=No 1=Yes)
	Did you grow varieties that were not well adapted to the conditions of your area	(0=No 1=Yes)
Varietal Suitability	Did you grow varieties that were not preferred by the household	(0=No 1=Yes)
	Did you grow new seed varieties that you have not grown before	(0=No 1=Yes)

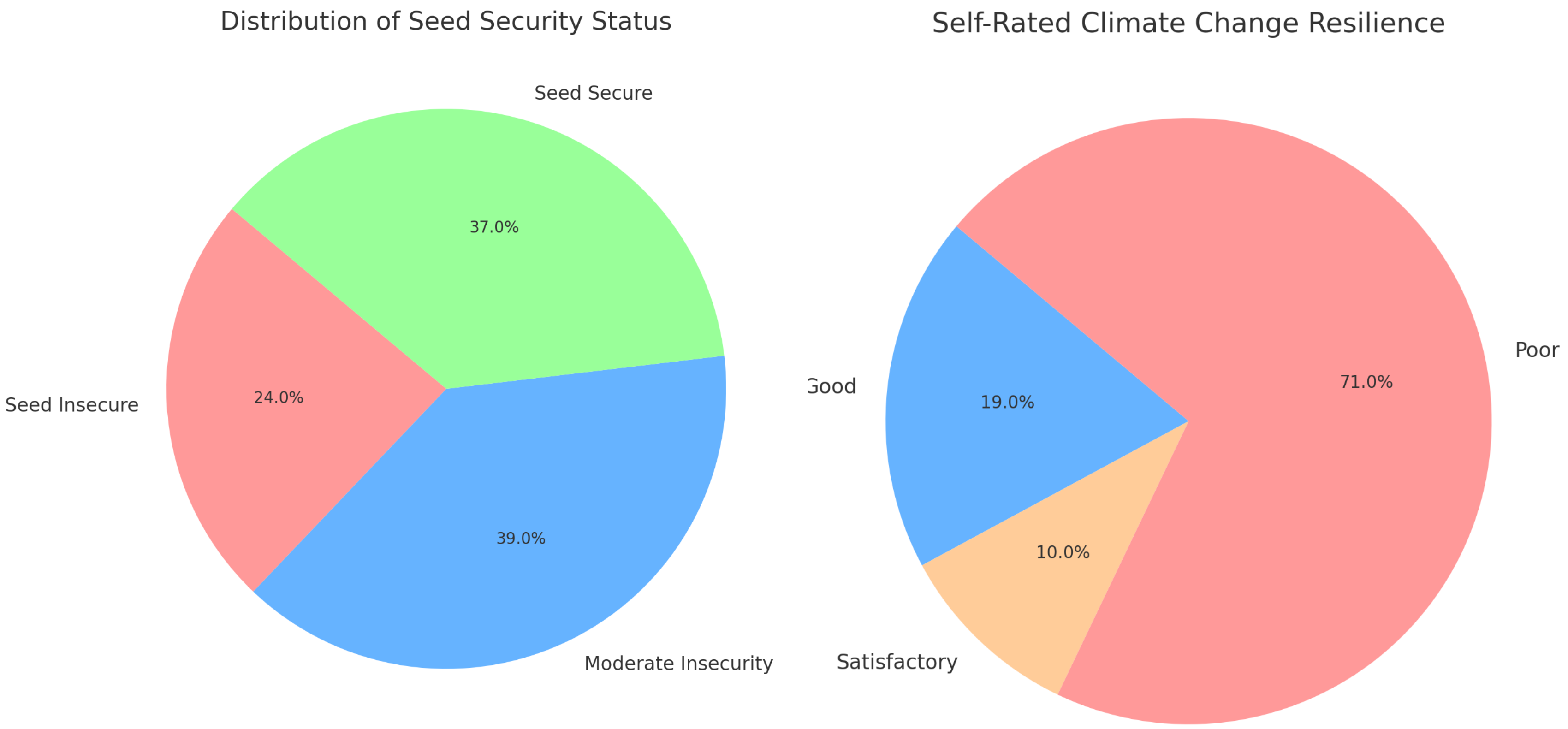
Adapted from the work of Mwangi et al. (2020), which is based on the FAO’s “household seed security concepts and indicators discussion paper” and CIAT’s guide to assessing seed system security.

MEASURE—Resilience to Climate change

- Resilience to climate change in this context was explained to the farmers to mean their capacity to prepare, capacity to recover, and capacity to adapt to climatic stressors (floods, severe storms, droughts, and erratic rainfall), and their access to early warning information (Jones et al., 2018; Mohammed et al.,2022)

- Self-reported measure

Findings



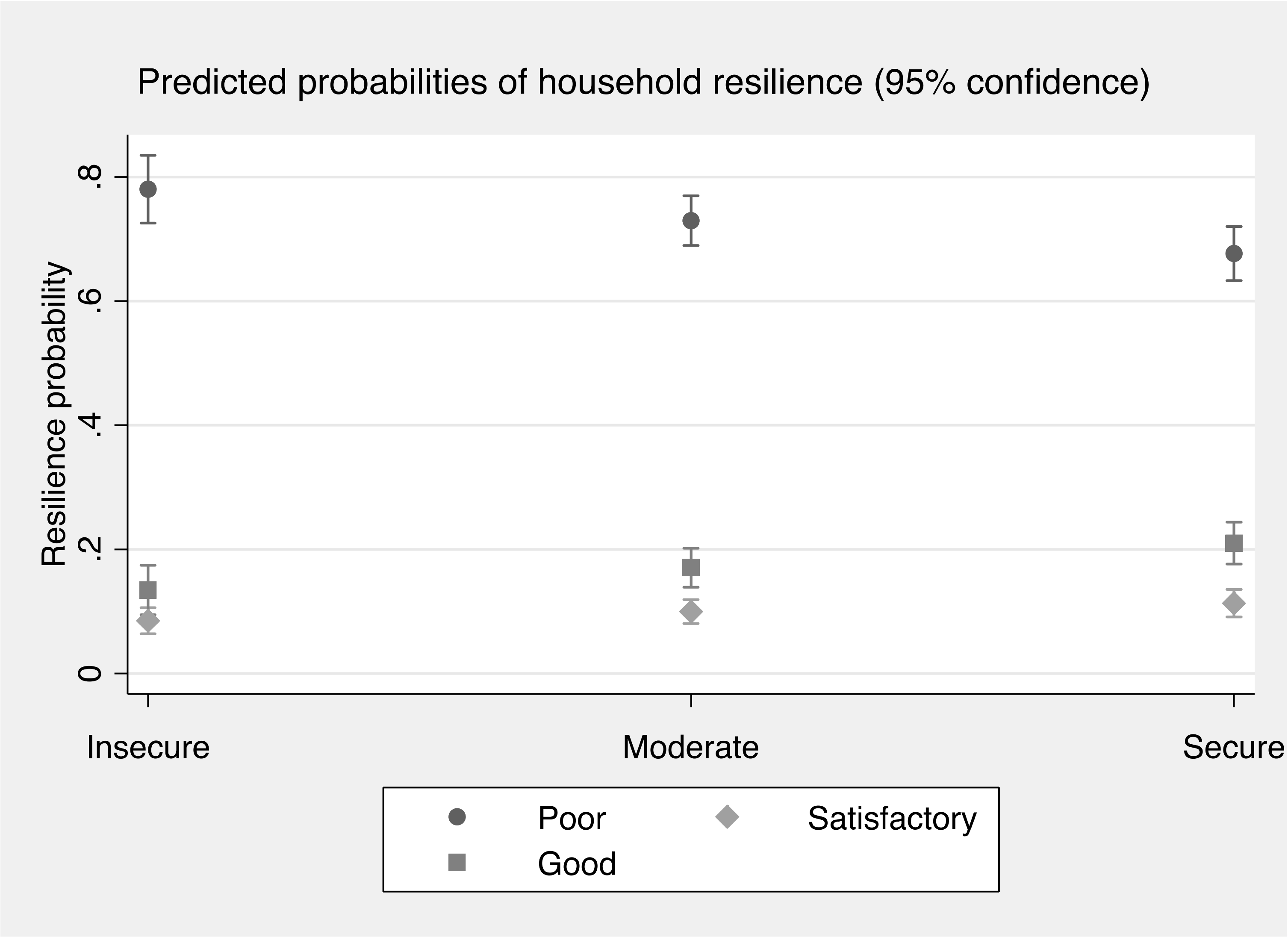
Distribution of Seed Security Status
Seed Secure
37.0%
Seed Insecure
24.0%
39.0%
Moderate Insecurity
Self-Rated Climate Change Resilience
Good
19.0%
Poor
71.0%
10.0%
Satisfactory

Multiple ordered logistic regression predicting climate change resilience

Table 4.5: Multiple ordered logistic regression predicting climate change resilience

	Model 1			Model 2		
	OR	95% CI		OR	95% CI	
Seed Security Status						
Seed insecure	**1.00**			**1.00**		
Moderate seed insecurity	**1.47**	**0.97**	**2.24**	**1.39**	**0.89**	**2.17**
Seed secure	**2.69*** **	**1.77**	**4.09**	**1.89** **	**1.18**	**3.04**
Age						
15-25	1.00			1.00		
26-35	1.31	0.78	2.19	1.03	0.59	1.80
26-45	1.23	0.73	2.09	1.03	0.58	1.83
46-55	1.59	0.92	2.74	1.26	0.69	2.30
Above 55	1.29	0.74	2.23	0.95	0.52	1.74
Gender						
Male	1.00			1.00		
Female	1.23	0.90	1.68	1.01	0.71	1.42
Marital Status						
Single	1.00			1.00		
Married	2.11	0.92	4.85	2.52*	1.02	6.25
Divorced	2.25	0.72	6.95	3.37*	1.01	11.26
Widowed	2.45	0.93	6.41	3.29*	1.12	9.67
Household size						
1-4	1.00			1.00		
5-8	1.24	0.90	1.69	1.09	0.78	1.53

Predictive margins of household seed security status on perceived climate change resilience



Key takeaways

- About a third of farming households (36 %) were seed-insecure, most of them being affected across all four pillars of seed security.
- Urgent need to strengthen and expand seed sourcing channels, including social networks, seedbanks, local markets, and agro-input dealers (De Falcis et al., 2022; Westengen et al., 2023).
- Seed secure farmers are better positioned to address setbacks such as crop loss due to adverse climatic stressors (Cacho et al. 2020)

Routledge
Taylor & Francis Group

Geographical Review

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/utgr20

TOWARDS FOOD SOVEREIGNTY: THE ROLE OF SMALLHOLDER FARMERS' SEED SECURITY IN IMPROVING CLIMATE CHANGE RESILIENCE IN NORTHERN MALAWI

Daniel Amoak, Esther Lupafya, Laifolo Dakishoni & Isaac Luginaah

To cite this article: Daniel Amoak, Esther Lupafya, Laifolo Dakishoni & Isaac Luginaah (08 Apr 2024): TOWARDS FOOD SOVEREIGNTY: THE ROLE OF SMALLHOLDER FARMERS' SEED SECURITY IN IMPROVING CLIMATE CHANGE RESILIENCE IN NORTHERN MALAWI, Geographical Review, DOI: 10.1080/00167428.2024.2335395

To link to this article: https://doi.org/10.1080/00167428.2024.2335395

Published online: 08 Apr 2024.

Thank You

Questions?