

CONTACT INFORMATION	Department of Agricultural and Consumer Economics (ACE) University of Illinois at Urbana-Champaign 414 Mumford Hall Urbana, IL 61801	Phone: +1(312) 804-8550 hadunka2@illinois.edu <a href="#">website</a>
EDUCATION	Ph.D., Agricultural and Applied Economics, University of Illinois Urbana-Champaign M.Sc., Agricultural and Applied Economics, University of Illinois Urbana-Champaign B.Sc., Agricultural Economics, The University of Zambia, Lusaka, Main campus, Zambia	2025 2019 2015
RESEARCH AREAS	Environmental Economics Development Economics	Agricultural Economics Commodity markets
PUBLICATIONS	<p>Wang, J., Konar, M., Baylis, K., Estes, L., <b>Hadunka, P.</b>, Caylor, K., &amp; Xiong, S. (2023). “<a href="#">Potential impacts of transportation infrastructure improvements to maize and cassava supply chains in Zambia</a>” <i>Environmental Research: Infrastructure and Sustainability</i></p> <p>Mulenga, B. P., <b>Hadunka, P.</b>, &amp; Richardson, R. B. (2017) .“<a href="#">Rural householdsâ participation in charcoal production in Zambia: Does agricultural productivity play a role?.</a>” <i>Journal of Forest Economics</i> 26, 56-62.</p>	
IN REVIEW	<p><b>Hadunka, P.</b>, &amp; Baylis, K. (2023) “The effects of invasive pests on food security. Evidence from Zambia” <i>Journal of Environmental Economics and Management</i>.</p> <p>Wang, J., Konar, M., Anderson, P., <b>Hadunka, P.</b>, &amp; Mulenga, B.P. (2024).“Weather extremes drive crop diversification in smallholder agriculture in Zambia” <i>Climate Risk Management</i>.</p> <p>Cecil, M., Estes, L., Caylor, K., <b>Hadunka, P.</b>, Evans, T., Chilenga, A., Gitonga, J., &amp; Wolf, A. (2024).“ Advantages and Limitations of Multiple Sensors for Smallholder Maize Land Surface Phenology Estimation” <i>Remote Sensing of Environment</i>.</p> <p>Lewin, G., Molitor, C., Cohen, J., Cognac, S., Proctor, J., Baylis, K., <b>Hadunka, P.</b>, &amp; Carleton, T. (2024).“Monitoring Maize Yield Variability over Space and Time with Unsupervised Satellite Imagery Features” <i>Remote sensing</i>.</p> <p>Sullivan, J., Baylis, K., <b>Hadunka, P.</b>, &amp; Konar, M., (2024).“ Urban Legend: Disparities in Household Diets and Food Security Along a Rural-Urban Continuum” <i>Global Environmental Change</i>.</p>	
WORKING PAPERS AND RESEARCH IN PROGRESS	<p><b>Hadunka, P.</b> “Staple crop pest damage and natural resources exploitation: fall armyworm infestation and charcoal production in Zambia”</p> <p><b>Hadunka, P.</b>, &amp; Mulenga, B.P. (2024) “Does minimum tillage mitigate the effects of rainfall variability on maize yield? The case of smallholder maize farmers in Zambia”</p> <p><b>Hadunka, P.</b>, Baylis, K., Cardell, L., &amp; Michelson, H. (2024) “What causes adverse outcomes in the maize markets?”</p>	

**Hadunka, P.**, Baylis, K., & Thornton, R. (2022) “Does the providing efficient transportation improve the price knowledge among rural households? Evidence from Malawi”

RELEVANT WORK EXPERIENCE	<p>Principal Investigator, International Growth Center - FRA project: A think tank supervised by Oxford University and London School of Economics, Remote    Dec 2023 - Jun 2024</p> <p>Consultant, International Growth Center, Remote    Jan 2024 - Apr 2024</p> <p>Research and Teaching Assistant, University of Illinois Urbana-Champaign, IL    2017 - To date</p> <p>Teaching Assistant (Part-time) - Machine Learning for Applied Economists, University of Bonn, Remote    Aug 2021 - Sept 2021</p> <p>Data Quality Controller, Musika Development Initiative, World Food Program, and Business Development Services Africa - SME, Zambia    Oct 2016 - Nov 2019</p> <p>Research Intern, Musika, Zambia    Dec 2016 - May 2017</p> <p>Research Intern, Indaba Agricultural Policy Research Institute (IAPRI)    Sep 2016 - Dec 2016</p> <p>Field Supervisor, International Maize and Wheat Improvement Center (CYMMIT)    Oct 2015 - Dec 2015</p>
TEACHING	<p><b>Applied Microeconomics, Environmental Economics, Applied Statical methods Data Analytics - Undergraduate</b></p> <p>University-wide “List of Teachers Ranked as Excellent” (Spring 2021), UIUC</p> <p>University-wide “List of Teachers Ranked as Excellent” (Spring 2023), UIUC</p> <p>University-wide “List of Teachers Ranked as Excellent” (Fall 2023), UIUC</p> <p>University-wide “List of Teachers Ranked as Excellent” (Spring 2024), UIUC</p>
POLICY REPORTS	<p><b>Hadunka, P</b> &amp; Teschemacher, C. (2024) “<a href="#">The effect of Zambia’s Food Reserve Agency on agricultural market outcomes</a>” International Growth Center, Project report.</p> <p><b>Hadunka, P</b> &amp; Janzen, J. (2023) “<a href="#">Weather Shocks and Seasonal Commodity Market Returns: Evidence from Zambia’s Maize Market</a>” University of Illinois at Urbana-Champaign, farmdoc.</p> <p>Kasanda, E., <b>Hadunka, P.</b>, Lubinga, F., Mumba, K., Sakala, M., Arneson, S., Harper, T &amp; Sichilima, T. (2017) “<a href="#">A Needs Assessment of Rural Agribusinesses: The Commercial Viability of SMEs</a>” Musika Development Initiatives, Zambia.</p> <p>Kasanda, E., Chanda, J, <b>Hadunka, P</b> &amp; Sichilima, T. (2017) “<a href="#">The Status of Smallholder Dairy Markets and Farmers’s Perceptions of Formal Markets in Western Province</a>” Musika Development Initiatives, Zambia.</p> <p>Chela, J &amp; <b>Hadunka, P.</b> (2017) “<a href="#">A Qualitative Needs Assessment of Village Chicken Producers in Southern Province</a>” Musika Development Initiatives, Zambia.</p>
EXTERNAL GRANTS	<p>International Growth Center    Evaluating the Food and Reserve Agency (Spring 2024)</p> <p>National Science Fund    University of Illinois (Summer 2023)</p> <p>Travel Grant    Agricultural and Applied Economics Association Annual Meeting (Summer 2022)</p> <p>Travel Grant    Agricultural and Applied Economics Association Annual Meeting (Summer 2023)</p>
FELLOWSHIPS, GRANTS AND ACADEMIC AWARDS	<p>Travel Grant    University of Illinois Urbana-Champaign (Summer 2023)</p>

Travel Grant	University of Illinois Urbana-Champaign (Spring 2023)
Travel Grant	University of Illinois Urbana-Champaign (Summer 2022)
Jean and John Due Fellowship	University of Illinois Urbana-Champaign (Spring 2020)
University Fellowship	University of Illinois Urbana-Champaign (Fall 2019)
Morgan Endowment	University of Illinois Urbana-Champaign (Summer 2020)
Dunn and Linse Fellowship	University of Illinois Urbana-Champaign (Fall 2017)
Best Undergraduate Thesis (got published after graduation),	The University of Zambia (2015)

## PRESENTATIONS

2024: Led a discussion with senior officials from the Presidential Delivery Unit, Ministry of Agriculture, International Growth Center, and Food and Reserve Agency (FRA) on reforming the FRA (Lusaka, Zambia).

2023: Association of Environmental and Resource Economists (Portland, ME) - Section leader

2023: Agricultural and Applied Economics Association Annual Meeting (Washington, DC)

2022: Agricultural and Applied Economics Association Annual Meeting (Anaheim, CA) - Section leader

2022: Center for the Study of Africa Economies-University of Oxford (UK) (virtual)

2022: Midwest International Economic Development Conference (Minneapolis, MN) - Section leader

2022: Sustainability and Development Initiative Conference (Virtual)

2019: Agricultural and Applied Economics Association Annual Meeting (Atlanta, GA)

## SERVICE AND LEADERSHIP

Member of the Diversity, Equity, and Inclusion Committee - Dept. Student Representative 2024

Member of the University of Illinois Urbana-Champaign Graduate Programs Committee (2018 - Present)

Abstract reviewer - Agricultural and Applied Economics Association (Annual meetings) - 2022, 2023

Guest Editor - Frontiers in Environmental Economics (special issue)

## ADDITIONAL INFORMATION

Software proficiency: Stata, R, python, LATEX, GIS, GAMS, Microsoft Office

Languages: English, Tonga (native), Bemba, Lozi, Nyanja, and Shona (Basic)

## PROFESSIONAL REFERENCES

<b>Kathy Baylis, Ph.D.</b> (Chair) Professor University of California, Santa Barbara Dept. of Geography baylis@ucsb.edu	<b>Hope Michelson, Ph.D.</b> Associate Professor University of Illinois Urbana-Champaign Dept. of Agriculture and Consumer Economics hopecm@illinois.edu
<b>Shadi Atallah, Ph.D.</b> Associate Professor University of Illinois Urbana-Champaign Dept. of Agriculture and Consumer Economics satallah@illinois.edu	<b>Joseph Janzen, Ph.D.</b> Assistant Professor University of Illinois Urbana-Champaign Dept. of Agriculture and Consumer Economics jjanzen@illinois.edu

**Staple crop pest damage and natural resources exploitation: fall army worm infestation and charcoal production in Zambia.**

Sub-Saharan Africa (SSA) is home to some of the world's highest deforestation rates. One driver may be negative agricultural shocks that drive households to consume natural resources as a coping mechanism. This paper uses primary household panel data from Zambia to estimate the effect of introducing an agricultural pest, fall armyworms (FAW), on charcoal production. We exploit exogenous variation in the intensity of exposure to FAW across households and years to identify their effect. We find a positive and significant effect of FAW on charcoal production and deforestation. The estimates indicate that the FAW in a village increases the probability of a farmer producing charcoal by 3.48 percentage points, from 22 percent to 25 percent, leading to an increase in deforestation of 13.6 percent. The results also indicate that when methods to mitigate FAW damage are available, farmers are less likely to resort to charcoal production as a coping strategy. Having the ability to reduce the share of maize, diversify the crops produced, use pesticides, or migrate for off-farm employment is associated with successful ways to mitigate the use of charcoal in the face of agricultural production shocks. Farmers' coping strategies in response to FAW attacks reduce charcoal production by 15 to 80 kg during an invasion.

**The effect of invasive pests on food security: An understudied effect of climate change.**

Insect pest invasions have been exacerbated by climate change, threatening global agricultural production and food security. While the direct effect of climate change on agricultural production has received a lot of attention in the literature, less work estimates the indirect effect of climate change on agricultural production and food security through insect pests. In this paper, we use the example of the introduction of Fall armyworms (FAW) to Africa to study the effect of insect pests on agricultural production and food security in the face of climate change. We use a panel of primary farmer data to evaluate the effect of this pest and analyze which characteristics make farmers more vulnerable to food insecurity in the face of an FAW invasion. We find that an increase in FAW severity decreases maize yield by 43.3 percent and can increase food insecurity by up to 9 percent, similar in magnitude of a drought in a 30 year time period. Further, we find that increased temperatures are related to a higher incidence of FAW. When we include this effect, we find that increased pest pressure magnifies the effect of climate change on yield by 5.4 percent. Farmers can mitigate the effects of both FAW and higher temperatures associated with climate change by using early maize varieties and hybrids. Our work points to the importance of considering the indirect effect of climate change on agriculture through insect pests when evaluating both the costs of and adaptation to climate change.

**Rural households' participation in charcoal production in Zambia: Does agricultural productivity play a role?.**

The study uses a nationally representative dataset of smallholder farmers in Zambia to determine the effect of agricultural productivity on households' participation in charcoal production. An instrumental variable probit approach is applied to account for the endogeneity of agricultural productivity in household's charcoal participation decision. We find a negative and significant effect of agricultural productivity on household's likelihood of participation in charcoal production. Results also show that higher education, income, asset value, and participation in off-farm employment opportunities reduce the likelihood of participation in charcoal production. Therefore, interventions seeking to reduce charcoal production in rural Zambia could benefit from improving smallholder agricultural productivity, incomes, asset base, and off-farm employment creation. However, interventions need not lose sight of other important macro-level factors.