

# Marie Schaedel

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## Education

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University of Minnesota, Twin Cities, MN 2018-2023 (expected)  
Ph.D., Applied Plant Sciences, Agroecology  
Minor in Development Studies and Social Change

*Areas of specialization:* soil nitrogen cycling, microbiology, non-rhizobia endophytes, tropical agriculture, microbiome analysis, statistics, plant-microbe interactions

*Thesis title:* Nitrogen cycling under climate-smart forages in East Africa

*Dissertation committee:* Dr. Julie Grossman (advisor), Dr. Satoshi Ishii, Dr. Jessica Gutknecht, Dr. Jacob Jungers

Carleton College, Northfield, MN 2011-2015  
B.A., Biology  
Sigma XI Scientific Research Honor Society

## Scholarship

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### PUBLICATIONS

**Schaedel, M.**, Fudge, R., Grossman, J. (*in press*). “Biological Nitrogen Fixation in Agroecosystems.” Biological Approaches to Regenerative and Resilient Soil Systems, 2<sup>nd</sup> Edition, CRC Press.

**Schaedel, M.**, Hidrobo, G., Grossman, J. (2021). From microns to meters: exploring advances in legume microbiome diversity for agroecosystem benefits. *Front. in Sustain. Food Syst.* 5:668195. DOI: 10.3389/fsufs.2021.668195

Belarmino, E. and **Schaedel, M.** (2019). Seeds of Inequality: Women in Sustainable Agriculture. *Global Open Rights*.

### PRESENTATIONS

**Schaedel, M.**, Paul, B., Mwendia, S., Mutimura, M., Wang, H., Ishii, S., Grossman, J. (2021). Activity and abundance of nitrogen cycling communities associated with climate-smart forages in Rwanda. ASA, CSSA, SSSA Annual Meeting (*poster & presentation*)

Fernandez, A., Moses, M., Candelaria, N., Mohamed, B., **Schaedel, M.**, Hidrobo, G., Rogers, M., Grossman, J. (2021). Maximizing summer cover crop conservation benefits for improved vegetable production. ASA, CSSA, SSSA Annual Meeting. (*poster*)

**Schaedel, M.**, Paul, B., Mutimura, M., Mwendia, S., Grossman, J. (2021). Perennial forage species and soil microbial nitrogen transformations in East Africa: implications for climate-smart agriculture. Ecological Society of America. (*poster*)

\***Schaedel, M.**, Paul, B., Mutimura, M., Mwendia, S., Grossman, J. (2021). Perennial forage crops for improved soil nitrogen cycling in East African smallholder dairy systems. 8<sup>th</sup> World Congress on Conservation Agriculture. (*poster*)

**Schaedel, M.** (2019). N-SYNC: Microbial Nitrogen Cycling under Climate Smart Forages in East Africa. Department Seminar, Applied Plant Sciences, University of Minnesota. (*presentation*)

**Schaedel, M.** (2019). What is a climate-smart forage? Sci-Pride, Applied Plant Sciences, University of Minnesota. (*presentation*)

**Schaedel, M.** (2015). The bacterial wilt disease of plants: studies of effector proteins and plant root response to *Ralstonia solanacearum*. American Society of Plant Biology Conference. (*poster*)

**Schaedel, M.** (2014). Fitness and heritability in *Echinacea angustifolia* and *E. pallida* hybrids. Midwest Ecology & Evolution Conference. (*poster*)

## **Honors and Awards**

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APS Metric Fund Conference Travel Fellowship University of Minnesota, MN	2021
Best Poster Award 8 <sup>th</sup> World Congress on Conservation Agriculture	2021
Cohen Dissertation Improvement Award Department of Horticultural Science University of Minnesota, MN	2021
USDA-North Central SARE Graduate Student Fellowship Project title: <i>Managing Summer Cover Crops to Cultivate Beneficial Soil Communities</i>	2020
Fulbright Research Fellowship Alternate/Finalist	2020
APS Metric Fund Professional Development Fellowship University of Minnesota, MN	2020
Emerging Engaged Scholar Engagement Scholarship Consortium (ESC) ESC Conference 2019, Denver, CO	2019
Pre-Dissertation Travel Award, Interdisciplinary Center for Global Change University of Minnesota, MN	2019
Graduate Research Fellowship National Science Foundation	2018-2021
ICGC Scholar, Interdisciplinary Center for Global Change University of Minnesota, MN	2018

## **Teaching and Mentorship**

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Undergraduate research mentor “Nitrogen cycling under summer cover crops” University of Minnesota, MN	2021
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Undergraduate research mentor “Ecosystem services of summer cover crops” Red Lake Nation Tribal College, MN	2021
Teaching assistant HORT 3131, “Student Organic Farm Management” University of Minnesota, MN	2020
Preparing Future Faculty Certificate Guest lecturer in Agroecology Host institution: Macalester College, St Paul, MN	2020
Teaching assistant FDSY 4101, “Sustainable Food Systems Seminar” University of Minnesota, MN	2020

## **Service and Outreach**

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Committee Chair: Diversity, Equity, & Inclusion Department of Horticultural Science, UMN	2020-present
Council of Graduate Students Representative Applied Plant Sciences Program Rep, UMN	2020-2021
“Reeling in Rhizobia” YouTube Lightning Talk SciPride at the Bell Museum, UMN	2020
Community of Practice Co-Chair Minnesota Campus Compact CoP Topic: <i>Leveraging Research for Change</i>	2019-2020
Graduate Student Representative Faculty Advisory Committee Interdisciplinary Center for the Study of Global Change, UMN	2019-2020
“Soil Art” Market Science, Midtown Farmers Market, Minneapolis, MN	2019
“Horticultural Research and Extension at the UMN” Farm at the Arb, UMN Landscape Arboretum	2019
“Slake Test and Soil Structure”, “Aquaponics Salad Table” Ramsey County Fair, MN	2019
Committee Chair: Community Outreach Applied Plant Sciences Graduate Club, UMN	2019-2020
Graduate Student Representative Collegiate Fees Committee College of Food, Agriculture, and Natural Resources, UMN	2018-2019

Agriculture Extension Volunteer  
Peace Corps, Togo, West Africa 2016-2018

## Professional Experience

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Certificate in Cross-Cultural Leadership 2019  
The Graduate School, University of Minnesota

*Graduate Research Assistant* 2018-2019  
Stakman-Borlaug Center, UMN  
USDA Food for Progress Evaluation, Benin

- Conducted a field assessment of a USDA agricultural development project in southern Benin.
- Assisted with translation, facilitating farmer workshops, conducting interviews, analyzing data, and summarizing the findings in a report to USDA.

*Educational Associate* 2015-2016  
Carleton College, MN

- Managed undergraduate scheduling and training in directed research involving Y2H screening of plant and pathogen protein interactions
- Designed primers, performed RNA and DNA extractions, and used fluorescent microscopy to visualize protein localization
- Conducted independent research relating to auxin production by *Ralstonia solanacearum*
- Assigned papers to undergraduate researchers and lead discussions during weekly lab meeting

*Research Assistant* 2014-2015  
Cowling Arboretum, Carleton College, MN

- Managed species database
- Monitored native plant communities in a tallgrass prairie restoration
- Removed invasive species

*Student Naturalist* 2012-2015  
Cowling Arboretum, Carleton College, MN

- Collected and pressed native plant specimens to contribute to the Carleton herbarium
- Led native plant tours for the student body and the public
- Wrote quarterly articles for student newspaper

*Research Assistant* 2014  
Biology Department, Carleton College, MN

- Conducted independent research on the role of the arbuscular mycorrhizal fungi *Piriformospora indica* in conferring heat shock tolerance to *Arabidopsis* roots

*Farm Hand* 2014  
SEEDS Farm CSA, Northfield, MN

- Contributed to all tasks relating to organic vegetable, poultry, and pig production

*Research Assistant* 2013  
Chicago Botanic Garden, Glencoe, IL  
NSF Research Experience for Undergraduates

- Conducted fieldwork in Western Minnesota to understand population dynamics of native wildflowers in fragmented prairies
- Designed an independent research project to assess the impact of introduced species
- Used R to conduct an Aster analysis of trait heritability and plant fitness

## **Professional Affiliations**

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- American Society of Agronomy/ Crop Science Society of America/ Soil Science Society of America
- Ecological Society of America

## **Skills**

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- Competent in using R for statistical analysis and data visualization
- Proficient in microbiome bioinformatics pipelines in QIIME, Python, and mothur
- Fluent in French