

# Siwook Hwang

(they/them)

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## Education

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|-------------------------------------------------------------------------------|-----------|
| Colorado State University, CO                                                 | 2019-2024 |
| <i>Ph.D. in Ecology</i>                                                       |           |
| International Sustainable Development Studies Institute, Chiang Mai, Thailand | 2015-2016 |
| <i>Undergraduate Study Abroad</i>                                             |           |
| Kalamazoo College, MI                                                         | 2013-2017 |
| <i>B.A. in Biology, with honors</i>                                           |           |

## Awards and Honors

|                                                          |           |
|----------------------------------------------------------|-----------|
| Lee Sommers Excellence in Leadership Award               | 2024      |
| Foundation for Food and Agriculture Research Fellowship  | 2020-2023 |
| Perennial Agriculture Project Research Fellowship        | 2019-2022 |
| Programs of Research and Scholarly Excellence Fellowship | 2019      |

## Research and Work Experiences

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Postdoctoral Research Associate, Dept of Soil, Water, and Climate, University of Minnesota, MN                                                                                                                         | 2025-present |
| <i>Assisted field sampling and subsequent lab analyses to measure soil health effects of Kernza in the final year of the four-year trial.</i>                                                                          |              |
| <i>Analyze integrated environmental datasets spanning five years to assess management impacts on soil function and ecosystem services.</i>                                                                             |              |
| <i>Synthesize findings into multi-authored manuscripts as lead and co-author for submission to peer-reviewed journals.</i>                                                                                             |              |
| Independent Consultant, AgoroCarbon Alliance, Remote                                                                                                                                                                   | 2025         |
| <i>Designed and executed a 37-state survey of seeding practices in rangelands and pastures, from instrument design to analysis.</i>                                                                                    |              |
| <i>Identified and engaged subject-matter experts (USDA grazing specialists, extension faculty, coalition leaders), securing responses across all target states to inform program guidance.</i>                         |              |
| Graduate Research Assistant, Dept of Soil and Crops Sciences, Colorado State University, CO                                                                                                                            | 2019-2024    |
| <i>Planned and organized greenhouse and field studies</i>                                                                                                                                                              |              |
| <i>Designed, built, and created a protocol for <math>^{13}\text{C}</math>-CO<sub>2</sub> pulse labeling chamber.</i>                                                                                                   |              |
| <i>Performed soil DNA extraction, processed and analyzed 16S/ITS amplicon sequencing data, modified a protocol for root exudate collection, processed and analyzed untargeted metabolomics data resulting from LC-</i> |              |

*MS/MS, performed integrated statistical analysis of multi-omics dataset, performed estimation of legume N transfer via the <sup>15</sup>N leaf-feeding method*

Research Associate, Natural Resources Ecology Laboratory, Colorado State University, CO 2017-2019

*Performed microbial biomass extraction, soil enzyme assays, and size-based fractionation of soil samples for various projects*

*Managed and analyzed data generated from lab assays*

Intern, The Land Institute, KS 2017

*Supported establishing field studies, collecting phenotypic data, maintaining plots, and processing samples*

*Participated in seminars led by TLI scientists*

Research Assistant, Grossman Lab, University of Minnesota, MN 2016

*Performed general lab and field duties including soil sieving, glassware cleaning, soil sampling*

*Carried out a summer undergraduate research project including soil enzyme assays and PLFA analysis*

## **Publications**

Hwang, S., Koziol, L., Mason, L., Grant, L., Wrighton, K.C., Crews, T.E., Fonte, S.J., *in prep.* Soil labile carbon pools of perennial and annual cereals respond differently to legume intercropping – <sup>15</sup>N leaf labeling study.

Hwang, S., Brummer, J.E., Crews, T.E., Grant, L., McGivern, B.B., Wrighton, K.C., Fonte, S.J., *in review.* Perennialization and intercropping effects on wheat rhizosphere communities.

Hwang, S., Brummer, J.E., Crews, T.E., Grant, L., McGivern, B.B., Wrighton, K.C., Fonte, S.J., 2026. Perennialization and intercropping effects on cereal rhizosphere communities. *Applied Soil Ecology*. doi:10.1016/j.apsoil.2025.106757

Hwang, S., Machmuller, M.B., Gaudin, A.C.M., Fonte, S.J., 2024. A teosinte and modern maize hybrid use different carbon allocation strategies in response to cover crop residue nitrogen. *Plant and Soil*. doi:10.1007/s11104-024-06494-0

Osborne, B.B., Soper, F.M., Nasto, M.K., Bru, D., Hwang, S., Machmuller, M.B., Morales, M.L., Philippot, L., Sullivan, B.W., Asner, G.P., Cleveland, C.C., Townsend, A.R., Porder, S., 2021. Litter inputs drive patterns of soil nitrogen heterogeneity in a diverse tropical forest: Results from a litter manipulation experiment. *Soil Biology and Biochemistry* 158, 108247. doi:10.1016/j.soilbio.2021.108247

## **Presentations**

Hwang, S., Brummer, J., Crews, T., Grant, L., McGivern, B., Wrighton, K., Fonte, S.J., Novel perennial cereal grains Kernza and perennial wheat harbor distinct rhizosphere microbial communities compared to annual durum wheat, presented at biennial Soil Ecology Society meeting 2024, Grand Rapids, MI.

Hwang, S., Machmuller, M.B., Gaudin, A.C.M., Fonte, S.J., Teosinte and Modern Maize Increase Belowground C Allocation in Different Ways in Response to Organic N Amendment, presented at ASA, CSSA, SSSA International Annual Meeting 2023, St. Louis, MO.

Hwang, S., Root exudate update, presented at the October 2022 Perennial Agriculture Project meeting, Salina, KS.

Osborne, B.B., Soper, F., Nasto, M., Hwang, S., Machmuller, M., Sullivan, B.W., Asner, G., Cleveland, C.C., Townsend, A., Porder, S., Litterfall inputs drive patterns of soil nitrogen heterogeneity in a diverse tropical forest, presented at the December 2019 American Geophysical Union Fall meeting, San Francisco, CA.

Hwang, S., Grain Crop Hybridization, Root Exudates, and Soil Microbes: A Nitrogen Story, presented at the October 2019 Perennial Agriculture Project meeting, Lawrence, KS.

Hwang, S., Machmuller, M.B., Wallenstein, M.D., Going Back to the Roots: Evaluating the influence of ancient and modern maize on microbial nutrient cycling, presented at the May 2019 Soil Ecology Society meeting, Toledo, OH.

Hwang, S. and Machmuller, M.B., Going Back to the Roots: Evaluating the influence of ancient and modern maize on microbial nutrient cycling, presented at the February 2019 Front Range Student Ecology Symposium, Fort Collins, CO.

## **Outreach and Teaching**

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|------------------------------------------------------------------------------------------------------------------------------|-------------|
| Introduction to Soil Science, Colorado Mesa University                                                                       | Fall 2024   |
| Guest lecture: "Nitrogen cycling: where does it come from, where does it go?"                                                |             |
| ECOL 592: Academia for Ecologists, Colorado State University                                                                 | Spring 2024 |
| Organizing instructor: designed syllabus, selected readings, hosted guest speakers, and led discussions on academic careers. |             |
| SOCR 421: Agroecosystem Management, Colorado State University                                                                | Spring 2023 |
| Teaching assistant: coordinated logistics; co-wrote and graded exams; delivered guest lectures.                              |             |
| SOCR 681: Graduate Foundations for Soil and Crop Sciences, Colorado State University                                         | Spring 2023 |
| Guest lecture: "Managing finances in grad school"                                                                            |             |

## **Professional Development**

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|----------------------------------------------------------------------------|-----------|
| Inclusive STEM Teaching Program, University of Minnesota                   | Fall 2025 |
| Six-week course on reflective practice, bias, and inclusive course design. |           |
| BZ 560: Teaching and Communicating Science, Colorado State University      | Fall 2023 |
| Pedagogy, science communication, and inclusive teaching.                   |           |

## **Mentoring**

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|-----------------------------------------------------------------------------------------------------------------|-------------------|
| FFAR fellowships program                                                                                        | Fall 2024-present |
| Mentor to a Ph.D. fellow; quarterly meetings focused on research planning and professional development.         |                   |
| Undergraduate research assistant                                                                                | Spring 2024       |
| Trained student in microbial biomass extraction and other lab work; supported data analysis for course project. |                   |

## **Professional Societies**

|                                 |              |
|---------------------------------|--------------|
| Soil Ecology Society            | 2019-present |
| Soil Science Society of America | 2023-present |