

# Monica G. Pennewitt

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**Objective:** To become a professional in the study of agronomy and plant pathology with the ability to research, scout, diagnose and treat diseases and other yield inhibitors in order to serve fellow agriculturalists in the United States and abroad.

## Education:

**Iowa State University** Ames, IA Expected, December 2023

- Doctor of Philosophy, Plant Pathology
- Committee members: Dr. Greg Tylka (PI), Dr. Leonor Leandro, Dr. Mark Licht, Dr. Gary Munkvold, and Dr. Alison Robertson.
- Effects of novel soybean resistance rotation on population densities and virulence of the soybean cyst nematode (*Heterodera glycines*).
- Impacts of chemical ecology, nematode protectant seed treatments, and transgenic resistance on root-lesion nematode (*Pratylenchus* spp.) biology.

**Clemson University** Clemson, SC December 2021

- Nematode Identification Short Course – learned to identify 29 genera of plant-parasitic nematodes.

**The Ohio State University** Columbus, OH December 2018

- Bachelor of Science in Agriculture, Plant Pathology. Minor in Leadership Studies. Global Distinction.

**Education Abroad: Brazil** Piracicaba, SP, Brazil January-February 2017

- Focused on global agriculture through classes, visiting research sites, production facilities, co-ops, farms, and other industries as a part of Alpha Zeta Partners Honorary Fraternity.

## Research Experience

**Soybean Cyst Nematode (*Heterodera glycines*):** *An integrated approach to enhance durability of SCN resistance for long-term, strategic SCN management – Phase II.*

- Long-term (4 year) microplot study to determine how rotating methods of resistance with novel sources of resistance impact (1) the population density of SCN located in each microplot and (2) how the virulence profile, or ability to reproduce on resistant soybeans, of the specific population within each microplot changes in response to these rotations.
- Collaborated with researchers from the University of Illinois – Urbana Champaign, University of Missouri, and the University of Georgia to plan meetings, coordinate data sharing, and present findings to professional societies.

**Root-Lesion Nematode (*Pratylenchus* spp.):** *A Method for Conducting Hatching Studies with Pratylenchus spp.*

- Created research protocols and conducted hatching studies with *P. brachyurus*, *P. penetrans*, and *P. scribneri*.
- Determined the effects of various organic and inorganic chemical compounds, host root exudates, and root exudates in soil leachates on *Pratylenchus* spp. hatching rates.

**Root-Lesion Nematode (*Pratylenchus* spp.):** *Effects of Nemasect Seed Treatment on Pratylenchus spp.*

- Collaborated and conducted experiments to determine the effects of the biological seed treatment, Nemasect, on hatching, mobility, chemotaxis, and reproduction of *P. penetrans* and *P. scribneri* as a part of a broader mode of action study.

**Root-Lesion Nematode (*Pratylenchus* spp.):** *Effects of soybeans containing a *Bacillus thuringiensis* cry protein on Pratylenchus spp. infection, reproduction, and developmental stages.*

- Used diagnostic and investigative skills to troubleshoot and conduct growth room experiments to determine the effects of transgenic soybeans containing a *Bacillus thuringiensis* cry protein on *P. brachyurus*, *P. neglectus*, *P. penetrans*, and *P. scribneri* populations.
- Completed additional tests to determine the impacts of the transgenic trait on development of nematodes.

## Extension Experience

**Indigo Agriculture Nematology Education Day** Ames, IA November 2022

- Coordinated a hands-on laboratory experience showcasing soybean cyst nematode, root-lesion nematode and root knot nematode for agronomists, salesmen, and other employees of Indigo Agriculture.

**Get the 411 on Agronomy - Student Event** Vinton, IA September 2022

- Spoke to 93 high school students about soybean cyst nematode (SCN), the importance of knowing field infestation levels, and key strategies for management.

**Farm Progress Show Media Interviews** Boone, IA September 2022

- Completed media interviews about SCN management with DTN/Progressive Farmer, Farm Progress magazine, Successful Farming magazine and the Iowa Agribusiness Radio representing the SCN Coalition.

**Farm Progress Show Extension Booth** Boone, IA September 2022

- Interacted with farmers, producers, students, and other individuals at the Plant Health Booth in the Iowa State University tent, discussing pathogens, pests, and current issues being seen in Iowa and across the Midwest.

**Iowa Master Gardener Program** Ames, IA April 2022 & 2023

- Facilitated hands-on learning for 120 individuals with interest in learning more about diagnosing, treating, and managing common pathogens on ornamental, fruit, vegetable, and tree species in Iowa.

**Graduate Student Field Day** Ames, IA August 2019

- Planned and facilitated an extension event as part of the PLP 581X course which focused on plant health above- and below-ground, entomology, and a panel discussion about the impacts of extreme weather events on the agricultural industry.

## **Experience:**

**Undergraduate Teaching Assistant** Ames, IA August 2020 – May 2021

- Assisted in the education of students at Iowa State University by lecturing, setting up lab stations and assisting with hands-on learning for the undergraduate introductory course to plant pathology.

**Soybean Cyst Nematode (SCN) Research Laboratory** Columbus, OH Oct. 2015- Dec. 2018

- Conducted miscellaneous work including homogenizing soil, preparing test plots and resources, blasting soybean roots, and conducted analysis of SCN populations as part of Dr. Anne Dorrance's cover crop study.

**Nutrien Ag Solutions – Agronomic Sales Intern** Midland, OH May – August 2018

- Further developed my expertise within the agricultural field, scouted 4,500 acres, met with 3 farmers and producers each week, and studied the effects of various fertilizer on farmers' productivity.

**Undergraduate Teaching Assistant** Columbus, OH January- May 2018

- Assisted in the education of students by lecturing, grading exams and quizzes for the undergraduate course, Molds, Mushrooms and Mankind.

**Crop Production Services – Agronomic Sales Intern** Midland, OH May – August 2017

- Met with farmers and producers, scouted corn, soybean, wheat and tobacco fields for disease, insect, and disease pressure, and compiled satellite images to improve the use of available technology.

**Valent U.S.A.- Marketing Intern** Wilmington, OH May- August 2016

- Travelled to various research plots, conducted research sampling, attended national sales and marketing meetings, spent time at the research farm and networked with industry professionals.

**Pennewitt Farms- Farmhand** Wilmington, OH Aug 2002- Dec. 2018

- Performed field preparation, planting, and equipment maintenance for a soybean and corn grain farm.

## **Selected Leadership & Involvement:**

**NASA Plant the Moon Competition - Mentor** Iowa State University January – May 2023

- Interacted with 24 teams of students ranging in age from elementary to high school to assist in the planning and execution of their studies focused on overcoming the challenge of producing food on the moon and mars.

**Alternative Breaks – Site Leader** Iowa State University January – March 2023

- Facilitated pre-trip meetings, executed team building and other trainings required to lead 10 undergraduate students on a service trip to Moab, UT to serve with the National Park Service at Arches Nation Park.

**Graduate and Professional Student Senate (GPSS)** Iowa State University January 2021 – May 2022

- Served as Senator and represented the Department of Plant Pathology & Microbiology in the university-wide senate to discuss current issues and work on legislation to ensure student success.

**Zirakparvar Fellow** Iowa State University October 2020 – May 2022

- Updated the Department of Plant Pathology & Microbiology website, wrote news articles about current events, and managed multiple social media accounts.

**Plant Pathology Graduate Student Organization** Iowa State University January 2020 – January 2021

- As the president, I designed and coordinated activities for students, staff, and faculty within the Department of Plant Pathology and Microbiology, including the annual departmental retreat, and additional events.

**CFAES Student Council** The Ohio State University August 2015 – December 2018

- President – May 2017- April 2018, Secretary – May 2016 – April 2017
  - Coordinated and planned events to benefit students within the College of Food, Agriculture and Environmental Sciences, promoted diversity, equity and inclusion among students, and served as the student voice on alumni and executive councils.

**CFAES Celebration of Students Recognition Banquet** The Ohio State University October 2015 – April 2018

- Committee Co-Chair – Sept. 2017- April 2018, Production committee member – Oct. 2015 – April 2016
  - Selected committee members and oversaw the execution of the annual recognition banquet.

**Agriculture Future of America** Kansas City, MO August 2015 – December 2018

- Delegate for the AFA Leaders Conference - learned career and personal development skills and networked with other students and companies from across the country. – 2015, 2016, 2017, 2018
- Crop Science Institute - Sacramento, CA; Raleigh, NC; Des Moines, IA – July 2016 & 2017 & 2018
- Technology Institute - San Antonio, TX – March 2017
- Animal Science Institute - Kansas City, MO – April 2017
- Campus Ambassador for The Ohio State University – April 2017- March 2018
- Student Advisory Team Member – 2018-19
  - Facilitated 185 college students, attended 8 industry meetings, interacted with 10 of the AFA Board Members at dinners, participated in a year-long diversity, respect, and inclusivity training, and planned the Leaders Conference as a member of a 10-person team.
  - Served as Campus Ambassador for Central State University, The Ohio State University, University of Findlay, and Wilmington College.

**Alpha Zeta Partners** The Ohio State University January 2016 – December 2018

- Member of the Honorary Fraternity emphasizing leadership, diversity, service, and citizenship that includes a 6-week study abroad to Brazil, and a lobbying trip to Washington D.C. to discuss agricultural policy.

**Alpha Sigma Upsilon** The Ohio State University March 2016 – December 2018

- Member and officer in the agricultural sorority emphasizing fellowship, citizenship, scholarship, & leadership. Organized outreach for the chapter and created a committee of active alumni as the alumni chair.

**Ohio Soybean Ambassador** Columbus, OH March 2017 – December 2018

- Traveled to different locations within Ohio promoting soybean production and education, led demonstrations using soybean products, and served as a technology fair judge as a part of the Ohio Soy Checkoff Program.

**PHARM: Plant Health and Resource Management Club** The Ohio State University August 2015 – December 2018

- Educated fellow students about plant pathogens and their role in history through the execution of a hunger banquet and panel from various industry experts.

**CFAES Peer Mentor** The Ohio State University August 2016 – December 2018

- Mentored first semester freshmen through group interactions, and served as a teaching assistant.

**Crops & Soils Club** The Ohio State University August 2015 – May 2017

- Coordinated community service events and arranged for the donation of unused plants to be sent to Mid- Ohio Food Bank's Community Garden as the philanthropy chair.

### Collegiate Farm Bureau

The Ohio State University

August 2015 – May 2018

- Participated in Farm Bureau activities on campus, and served as the fundraising chair for the Farm to Fork event that focuses on educating fellow students and people about agricultural topics.

## Published Abstracts

**Pennewitt, Monica G., and Basnet, Pawan**, B. Diers, M.G. Mitchum, A. Scaboo, and G.L. Tylka. 2023. Strategic rotations of resistance genes to combat soybean cyst nematode virulence. (Abstr.) *Phytopathology* 113:S1.1. <https://doi.org/10.1094/PHYTO-113-1-S1.1>

**Pennewitt, Monica** and G.L. Tylka. Effects of organic and inorganic compounds on hatching of *Pratylenchus* spp. *Journal of Nematology*. 2022.

**Pennewitt, Monica** and G.L. Tylka. A method for conducting hatching studies with *Pratylenchus* spp. *Journal of Nematology*. Volume 53: 27-28. 2021.

## Presentations

### **Conference/Meeting Presentations:**

**National Soybean Nematode Conference** Savannah, GA December 2022

- Presentation title: *Strategic rotations of resistance genes to combat soybean cyst nematode virulence.*

Advisor: Dr. Greg Tylka

**Society of Nematologists Annual Meeting** Anchorage, AK September 2022

- Presentation title: *Effects of organic and inorganic compounds on hatching of Pratylenchus spp.*
- 2<sup>nd</sup> Place – Student Oral Paper competition

Advisor: Dr. Greg Tylka

**NC 1197 Nematology Meeting** Ames, IA August 2021

- Presentation title: *An integrated approach to enhance durability of SCN resistance for long-term, strategic SCN management – Phase II.*

Advisor: Dr. Greg Tylka

**NCSRP Research Group Meeting** Virtual March 2022

- Presentation title: *Iowa State Research Update for NCSRP group.*

Advisor: Dr. Greg Tylka

**NCSRP Research Group Meeting** Virtual November 2020

- Presentation title: *Iowa State Research Update for NCSRP group.*

Advisor: Dr. Greg Tylka

**NCSRP Research Group Meeting** St. Louis, MO November 2019

- Presentation title: *Iowa State Research Update for NCSRP group.*

Advisor: Dr. Greg Tylka

### **Poster Presentations:**

**Society of Nematologists Annual Meeting** Gulf Shores, AL/Virtual September 2021

- Poster title: *A Method for Conducting Hatching Studies with Pratylenchus spp.*

Advisor: Dr. Greg Tylka

### **Extension Presentations:**

**University of Costa Rica Exchange Student Field Day** Ames, IA August 2022

- Presentation title: *SCN Management in the Midwestern United States*

**Southeastern FFA Chapter** South Charleston, OH October 2021

- Presentation title: *Agricultural research, graduate school, and career opportunities in plant sciences.*

**Crop Disease Clinic Extension Event** Ames, IA August 2019

- Presentation title: *An integrated approach to enhance durability of SCN resistance for long-term, strategic SCN management (Phase II).*

Advisor: Dr. Greg Tylka

### **Seminar Presentations**

**Lunch & Learn Presentation Series** Ames, IA February 2020

- Ph.D. Proposal Seminar: *Improving Nematode Management in the Midwest.*

Advisor: Dr. Greg Tylka

## **Relevant Coursework:**

Disease of Field Crops	Statistics – Field Plot Techniques & Design
Nematology	Bacterial-Plant Interactions
Team & Organizational Leadership	Public Speaking
Pesticide Science	Foundation of Personal and Professional Leadership
Seed Pathology	Plant Science Extension & Outreach

## **Honors & Awards:**

- Student Oral Paper Competition, 2<sup>nd</sup> Place** Anchorage, AK September 2022
- A student competition held at the annual Society of Nematologist meeting to recognize excellence in research communication by graduate students.
- Bayer Student Travel Award** Anchorage, AK September 2022
- An award given to support students presenting papers (oral or poster) during the 2022 Annual Meeting of the Society of Nematologists.
- Leath Fellowship** Ames, IA January 2019
- An award given to an incoming graduate student, based on merit, in the Department of Plant Pathology at Iowa State University.
- American FFA Degree** Indianapolis, IN October 2017
- An award given to FFA members who have successfully completed their Greenhand, Chapter and State degrees and have accumulated enough community service hours, events, and have an excellent Supervised Agricultural Experience (SAE).

## **Service:**

- WIAA – WISE Go Further Event** Ames, IA April 2023
- Volunteered with the Women in Agriculture and Artificial Intelligence (AI) group at the event sponsored by Women in Science and Engineering to promote the use of technology in modern agriculture and research.
- Girls in Science Festival** Des Moines, IA February 2023
- Volunteered with the USDA booth to teach kids and other attendees about DNA and led participants through a hands-on activity to teach them how to extract DNA from strawberries at the Science Center of Iowa.
- State Science & Technology Fair of Iowa** Ames, IA March 2022
- Interviewed high school students about their novel research projects in the plant sciences category and served as a member of the final selections committee for international travel and state awards.
- Meals for the Heartland** Ames, IA August 2022 & 2021
- Assisted in packaging over 38,000 meals for underprivileged youth and families in need through an event sponsored by the Iowa State University Soybean Research Center.
- Agriculture Future of America (AFA)** Kansas City, MO September 2019, 2020, 2021 & 2022
- Serve as a reviewer for Leaders Conference and Institute applications throughout the year, and spoke on an alumni panel during the Crop Science Institute.
- YWCA** Columbus, OH August 2017 - December 2018
- As a member of Alpha Sigma Upsilon agricultural sorority, I assisted in the planning and coordination of serving meals and hosting events for the women and children housed at the YWCA.
- Ronald McDonald House** Columbus, OH January 2017
- Volunteered at the Ronald McDonald House at Nationwide Children's hospital, making cookies and other baked goods and made tie blankets that were donated to those in need at the home.
- Community Commitment** Columbus, OH August 2016
- Volunteered at a local Columbus Swim club to restore the property and give back to the community.
- Buck-i-SERV** Biloxi, MS January 2016

