

Jonathan M. Binder

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EDUCATION

Royal Holloway, University of London

PhD, Biological Sciences

Egham, Surrey, UK
2022 - 2026 (expected)

- London Interdisciplinary Biosciences Consortium Doctoral Training (LIDo) Partnership student
- Researching microbiological effects on the longevity of agricultural weed (*Alopecurus myosuroides*) seeds in the soil seedbank
- Methods: microbiology, molecular biology, sequencing and bioinformatics, seed germination modelling, machine learning, and biochemistry
- Funding: Biotechnology and Biological Sciences Research Council (BBSRC)/United Kingdom Research and Innovation (UKRI) and Syngenta AG as industry partner

Supervisors:

- Gerhard Leubner-Metzger, PhD - *Professor in Plant Biochemistry*
- Kazumi Nakabayashi, PhD - *Research Assistant in Molecular Seed Biology*
- Thomas Holloway, PhD - *Research Technical Lead, Syngenta*
- Ben Oyserman, PhD - *Global Technical Manager Plant & Soil Health, Syngenta*

The Pennsylvania State University

MSc, Agronomy

State College, PA, USA
2016 - 2019

- Field-based research examined the effects of cereal rye management, dairy manure application method, and timing of fall manure application on nutrient uptake, corn yields, and total forage production
- Research on field-scale lysimeters explored the effects of cereal rye management on surface and subsurface nitrogen and phosphorus transport
- Coursework included topics covering statistics, chemistry, weed science, crop nutrient management, forage management

Supervisors:

- Heather Karsten, PhD - *Associate Professor of Crop Production/Ecology*
- Douglas Beegle, PhD - *Distinguished Professor of Agronomy*

Kyung Hee University, Global Campus

Korean Language Institute (한국어학당)

Suwon, Gyeonggi-do, South Korea
2014 - 2015

- Awarded a post-graduate fellowship from Vassar College to study Korean.
- Took classes 20 hours per week for one academic year
- Achieved Level 6 (out of 6) on the Test of Proficiency in Korean (TOPIK) (한국어능력시험)

Vassar College

BA, Environmental studies

Poughkeepsie, NY, USA
2010 - 2014

- Concentrations in biology and geography
- Coursework included plant biology, genetics, and an experiential course on the American Grasslands
- Participated in a learning and living community on food and farming

PUBLICATIONS

Journal articles

Steinbrecher, T., Bhattacharya, S., **Binder, J.**, Kleemeier, K., Przesdzink, F., Groene, F., et al. Comparative pericarp biomechanics and germination physiology of *Raphanus raphanistrum* and *Raphanus pugioniformis* indehiscient fruits. *Annals of Botany*, mcaf015, 2025. <https://doi.org/10.1093/aob/mcaf015>.

Binder, J. M., Karsten, H. D., Beegle, D. B., and Dell, C. J. Winter annual management to increase nutrient recovery and forage production on dairies. *Agrosystems, Geosciences & Environment*, 4:e20157, 2021. <https://doi.org/10.1002/agg2.20157>.

Binder, J. M., Karsten, H. D., Beegle, D. B., and Dell, C. J. Manure injection and rye double cropping increased nutrient recovery and forage production. *Agronomy Journal*, 112, 2968–2977, 2020. <https://doi.org/10.1002/agj2.20181>.

COMMUNICATION

Presentations

EWRS Invasive Alien Plants and Biological Control Working Groups Workshop, Antalya, Turkey, 2024

Northeast Cover Crop Council Annual Meeting, State College, PA, 2018

ASA, CSSA, SSSA Annual Meeting, Baltimore, MD, 2018

Pennsylvania Double-Cropping Winter Farmer Workshop, State College, PA, 2018

Posters

5th Plant Microbiome Symposium, Amsterdam, Netherlands, 2024

International Seed Science Society Annual Meeting, Paris, France, 2023

British Crop Protection Council Weeds Review, Cambridge, UK, 2022

Northeastern Plant Pest and Soils Conference, Washington, DC, 2018

Northeast Cover Crop Council Annual Meeting, Ithaca, NY, 2017

FUNDING AWARDS

Global Challenges Research Fund

Mar 2025

- Funded by UK Research and Innovation (UKRI)
- £2000 awarded for networking trip to Guatemala
- Collaborating with researchers at Universidad de Valle de Guatemala
- Topics include soil health and fertilizer recommendations for cardamom production

LIDo Program Studentship Award

2022-2026

- Awarded tuition waiver, stipend, and research funds valuing approx. £240,000

WORK EXPERIENCE

Royal Holloway, University of London

Jan 2024-Mar 2024

Visiting tutor

Egham, Surrey, UK

- Taught R programming language for biology students enrolled in a pre-baccalureate program
- Constructed course materials and led computer lab sessions in statistical analysis and data visualization

NIAB East Malling

July 2021-June 2022

Research technician

East Malling, Kent, UK

- Collected and analyzed various data related to precision agriculture and novel sensors
- Verified and develop technologies in concert with startup companies
- Duties included tractor-mounted LiDAR scans of apple orchards, lab-based soil chemical assays, plant leaf and fruit imaging, and data analysis

NRI, University of Greenwich

Sept 2020-July 2021

Research technician

Chatham Maritime, Kent, UK

- Assisted senior researchers and PhD students with projects in entomology and agronomy departments at the Natural Resources Institute
- Responsibilities included maintaining insect colonies, plants, greenhouses, and research facilities

Phospholutions
Research associate

Mar 2019-May 2020
State College, PA, USA

- Developed and expanded understanding of novel phosphorus fertilizers and phosphorus capture and recycle systems
- Responsibilities included literature review, in-house adsorption and desorption studies, creation of protocols, data analysis, and communication with industry and academic researchers

The Pennsylvania State University
Graduate research assistant

Sept 2016-Mar 2019
State College, PA, USA

- Conducted original research for my master's thesis on cereal rye and manure management for dairies in the Northeastern U.S.
- Collected and analyzed soil and crop data, scouted for pests, and presented research findings in academic and industry settings as part of a larger long-term, sustainable dairy cropping system project

Hudson Valley Research Laboratory
Research technician

Sept 2015-Aug 2016
Highland, NY, USA

- Assisted with research at an entomology lab primarily focused on apple pests
- Tasks included fruit damage assessments, microscope work, scouting, and insect rearing as well as upkeep of the research orchard and facility
- Pruned, mowed, managed weeds, and ran tractors and a skid steer
- Completed light construction, plumbing, and tractor maintenance

Vassar College Biology Department Greenhouse
Greenhouse assistant

Sept 2011-May 2014
Poughkeepsie, NY, USA

- Maintained glasshouse and plant collection
- Duties included watering, fertilizing, repotting, sweeping, and weeding

VOLUNTEERING

Durae Sandeul Farm (두레산들 농장)
Farm volunteer

June 2013-Aug 2013
South Korea, Gyeonggi-do, Hwaseong-si

- Participated in a homestay on an organic farm through WWOOF Korea
- Activities included weeding, watering, planting, and harvesting in different vegetable cropping systems according to Korean natural farming (KNF - 한국식 자연농법) practices
- Participated in cultural activities including workshops in traditional music and crafts

SKILLS

Computer - R, Quarto, SAS, Microsoft Office, Git, Bash, \LaTeX

Soft - Problem-solving, flexibility, critical thinking, resourceful

Dexterous - Woodworking, plumbing, electrical

Qualifications - Safe Handling & Application of Pesticides (PA1), Hand Held Applicators on Land & Near Water (PA6AW)