

NEMATOLOGY NEWSLETTER

The official quarterly publication of the Society of Nematologists (SON)

Upcoming Events, Deadlines & Reminders

- April 30, SON Abstract Submission Deadline - Pg. 12
- May 1, SON Early-Bird Pricing Deadline - Pg. 12
- July 1, Award Nominations Due - Pg. 15
- July 3, SON Room Block Reservation Deadline - Pg. 12
- August 4-9, Park City, UT Meeting



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From the President



The excitement is starting to build for the upcoming annual meeting of the Society of Nematologist. Many people are in the background organizing symposia/workshops, coordinating with the venue, and coordinating funds to support student travel. I thank the many people that it takes to pull off a SON meeting and look forward to recognizing them at the meeting in Park City, Utah, August 4-9, 2024.

Make sure to apply for a **student travel award**. We are very fortunate to have tremendous industry support to help students attend the meeting. Thanks to Bayer, Corteva, BASF, and Certis Biologicals for funding student travel awards. You will also notice that there is a new award available to students, the Western

Sustainable Agriculture Research and Education travel award. Koon-Hui Wang is coordinating this effort with the goal of attracting students that might not otherwise attend our meeting – all are encouraged to apply. Deadline is **April 1, 2024**.

It is also that time of year to nominate a colleague who you think is worthy of one of the **Society's awards**. We have the membership to support the nomination of another Honorary Member. The honor is reserved for the best of the best and is the highest honor given by the Society. The number of living people in this category of membership may not exceed 2% of the regular and emeritus membership. We are also accepting nominations for Fellow, the Syngenta Crop Protection Award (early/mid career award) and Teaching Excellence Award. Deadline is **July 1, 2024**.

Are you interested in serving SON – **consider running for an office**. We are currently soliciting nominations for Vice President and Secretary. If you want to nominate someone, please ask them first to make sure they are interested – self nominations are also welcome. Send an email to Cynthia Gleason (Cynthia.gleason@wsu.edu) with your nomination. Duties and responsibilities of the SON officers can be found in the Operations Manual. Deadline is **April 4, 2024**.

Finally, I want to give a brief update on the **Cobb Foundation/SON merger**. Board members of both organizations met with a lawyer to discuss a path forward. There do not seem to be any legal barriers to pursuing the merger. Our next step is to look at the SON constitution and identify parts of the document that need to be changed. These proposed changes will be presented to membership 30 days prior to the annual business meeting. At the SON annual business meeting on **Aug 8, 2024** the constitutional changes will be presented to membership, discussion will be encouraged, and then we will have a voice vote on whether or not to proceed. Thanks to Tom Forge and Axel Elling for all of their hard work on this effort.

I hope everyone is well and busy conducting impactful nematology research and education!

Inga Zasada



Research Paper | DOI: 10.2478/jofnem-2023-0040

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Population dynamics of *Meloidogyne graminicola* in soil in different types of direct-seeded rice agroecosystems in Hunan Province, China

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Maria Viketoft.

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Abstract

The rice root-knot nematode *Meloidogyne graminicola* is increasingly widely distributed in China and has had a severe incidence in Hunan Province. It is thus necessary to investigate its population dynamics in paddy fields. This study was conducted to ascertain the effect of direct-seeded rice agroecosystems on the population dynamics of *M. graminicola* and root gall development in rice. The results indicated that the population density of *M. graminicola* in soil was markedly influenced by the agroecosystem, rainfall and temperature. The population density of *M. graminicola* J2, and eggs in the soil and root galls, were significantly larger in the dry aerobic rice agroecosystem and in the rain-fed upland agroecosystem than in the lowland double-rice cropping sequence agroecosystem. As it can affect soil moisture rainfall was the key factor affecting the density of nematodes in both the rain-fed upland agroecosystem and the dry aerobic rice agroecosystem. Field flooding was still an effective way to reduce the population density of *M. graminicola*. In addition, we observed that *M. graminicola* can lay eggs outside rice roots under laboratory conditions. Therefore, we propose a hypothesis that *M. graminicola* lays egg masses within roots when the soil moisture is high, but lays eggs outside when the soil moisture is suitable. By clarifying the population dynamics of *M. graminicola* in different types of direct-seeded rice agroecosystems, this study is conducive to controlling rice root-knot nematodes.

Keywords

Meloidogyne graminicola, population density, agroecosystem, soil moisture, root gall

[HTTPS://DOI.ORG/10.2478/JOFNEM-2023-0040](https://doi.org/10.2478/jofnem-2023-0040)



Research Paper | DOI: 10.2478/jofnem-2023-0053

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Prevalence of pest nematodes associated with soybean (*Glycine max*) in Wisconsin from 1998 to 2021

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Abstract

The prevalence of *Heterodera glycines* and other cyst and vermiform genera was determined from 8,009 soil samples over two decades. Prevalence of cyst nematodes for farms increased from 16% in 1998 to 1999, reaching a peak of 40%, with marked differences among Wisconsin's nine agricultural districts in how much the odds of a positive test increased. Estimates at the sample scale also increased over time but peaked at 29%. Assay of all nematodes beginning in 2012 showed *Pratylenchus*, *Helicotylenchus*, and *Xiphinema* to be more prevalent in Wisconsin soybean fields than cyst nematodes. Prevalence estimates for *Pratylenchus* and *Helicotylenchus* for soybean and rotation crops ranged from 76 to 89% and 58 to 83%, respectively. Species identification of *Pratylenchus* from a subset of the samples revealed six species. The majority of cyst-positive samples were infested with *Pratylenchus*, and count data showed that the number of cyst eggs and juveniles per 100 cm³ soil was 60% lower in samples positive for *Pratylenchus*. The influence was reciprocal, as *Pratylenchus* population densities were 41% lower in samples positive for cyst nematodes, suggesting a competitive interaction. The Wisconsin soybean nematode testing program provides a useful model for estimating nematode prevalence using citizen-based surveys.

Keywords

cyst, *Heterodera glycines*, *Pratylenchus*, soybean, detection, prevalence

The DOI is not currently available. The editorial staff is working to address the issue



Research Paper | DOI: 10.2478/jofnem-2024-0002

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Group Movement in Entomopathogenic Nematodes: Aggregation Levels Vary Based on Context

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Abstract

Maintenance of an aggregated population structure implies within-species communication. In mixed-species environments, species-specific aggregations may reduce interspecific competition and promote coexistence. We studied whether movement and aggregation behavior of three entomopathogenic nematode species changed when isolated, as compared to mixed-species arenas. Movement and aggregation of *Steinernema carpocapsae*, *S. feltiae* and *S. glaseri* were assessed in sand. Each species demonstrated significant aggregation when alone. Mixed-species trials involved adding two species of nematodes, either combined in the center of the arena or at separate corners. While individual species became less aggregated than in single-species conditions when co-applied in the same location, they became more aggregated when applied in separate corners. This increased aggregation in separate-corner trials occurred even though the nematodes moved just as far when mixed together as they did when alone. These findings suggest that maintenance of multiple species within the same habitat is driven, at least in part, by species-specific signals that promote conspecific aggregation, and when the species are mixed (as occurs in some commercial formulations involving multiple EPN species), these signaling mechanisms are muddled.

Keywords

behavior, entomopathogenic nematode, group behavior, Index of Dispersion

[HTTPS://SCIENTO.COM/ARTICLE/10.2478/JOFNEM-2024-0002](https://sciendo.com/article/10.2478/jofnem-2024-0002)

Know Your Nema-folx

Catie Wram, PhD - USDA-ARS



My name is Catie (Catherine) Wram and I serve as a Research Plant Pathologist for the United States Department of Agriculture Agricultural Research Service (USDA-ARS). I am originally from just outside of Des Moines, Iowa. Although I was not a farm kid, I developed a love and curiosity for plants as a high school student working with my dad at a local nursery. I eventually went on to attend Iowa State University (ISU) majoring in Microbiology and Genetics. During my time at ISU, I was introduced to human parasitic nematodes in a medical entomology class. Although human parasites were not for me, I had a newfound interest in nematodes and host/pathogen interactions; so, I sought out an undergraduate research position with Dr. Thomas Baum and his graduate student Dr. Stacey Barnes. Over the almost 3 years I was in the Baum lab, I helped to characterize the Soybean Cyst Nematode effector GLAND4, which localizes to the plant cell nucleus, binds plant DNA, and impacts regulation of known plant defense genes. After graduating from ISU in 2016, I joined Dr. Inga Zasada's lab at USDA-ARS as graduate student with Oregon State University (OSU) in the Botany and Plant Pathology Department. My research at OSU focused on the physiological and cellular responses of *Meloidogyne incognita* and other plant-parasitic nematodes to novel non-fumigant nematicides.

The goal of my dissertation research was to provide foundational knowledge of new non-fumigant nematicides and how their efficacy is impacted by nematode species and population in addition to providing insight into their mode of action through transcriptomics. I also worked on generating nematode genomes for *Radopholus similis* and *Heterodera carotae*.

After completing my PhD in May 2021 I was a postdoctoral research associate in the Zasada lab until May 2022 when I accepted a postdoctoral position with Dr. Will Rutter at the USDA-ARS US Vegetable Lab. In the Rutter lab, I primarily screened sweetpotato germplasm for resistance to *Meloidogyne enterolobii* and *M. incognita* to aid in sweetpotato breeding efforts. Part of my research focus also included generating new ways to make the screening process more efficient. Working with Breeding Insight, Dr. Phil Wadl, and Dr. Benjamin Waldo we were able to develop an automated pipeline that enumerates nematode eggs from microscope images using a convolutional neural network analysis to speed up the phenotyping process. Additionally, I worked on a comparative genomics analysis of long-read *M. incognita* genomes to gain a better understanding of aspects of the host/nematode interaction in pepper.

I started my current position with USDA-ARS in the Mycology and Nematology Genetic Diversity and Biology Laboratory in Beltsville, MD in November 2023. In my new position I hope to continue to conduct collaborative research with an emphasis on utilizing new technologies like -omics and image analysis to address applied nematology problems, like developing tools to help improve the efficiency of screening novel biological and chemical controls. I also hope to prioritize generating genomic/transcriptomic resources for the plant-parasitic nematology community. Feel free to reach out if you have any projects you would like to collaborate on!

Catherine.Wram@usda.gov

SON Committee Updates

-Industry Tour Spring 2024-

The SON Industry and Student/Post-Doc tour is being shaped. The West Coast Crop Protection tour will take place in Fresno and Tulare counties, California, from the 8th to the 10th of April, 2024. In a nutshell, the goal of the tour is to share with the participants about different aspects of University, Government, Growers, and Industry research and activities as well as to increase awareness about the importance of real-world crop protection strategies and developments.

The tour is planned to visit Dr. Andreas Westphal, Nematology Professor from the University of California, Riverside, located at Kearny Ag Center. In addition, we will visit Ray Mireles, the University of California Fruit and Almonds Advisor. The tour will also stop at the USDA-ARS facility, located at the San Joaquin Valley Agricultural Science Center to visit with Dr. Dong Wang, the Water Management Unit team, and other research scientists of the center. Furthermore, the tour will also visit with Dr. Gabriel Torres, from Helena Agri, plus tour around an export fresh market citrus farm in Porterville. In addition, the tour will visit the Innovation Hub-Fresno at Bayer CropScience. There are other tour stops planned, and we are awaiting confirmation from the hosts.

This tour is shaping to be an exciting opportunity for the SON students, post-docs and interested PI's to exchange ideas and gather insights from different perspectives. In addition, the Southeast Crop Protection tour is currently being planned for fall 2024. Stay tuned for the Southeast tour updates. The SON Industry and Student Committees look forward to successful tours.



For further information about the tours please contact the SON Industry or Student committee chair.

First S1092 Multistate Regional Project Meeting



The first meeting of the S-2019 multistate regional project was hosted by Dr. Abolfazi Hajihassani in Ft. Lauderdale, FL. First row: Jon Eisenback, Chang Liu, Paula Agudelo, Will Rutter, Laura Mayorga Santafe, Michelle Lesa, Adrienne Gorny. Back Row: Intiaz Chowdhury, David Moreira Cálix, Rami Kassam, Zane Grabau, Jake Larkin, Johan Desaegeer, Denis Gitonga, Abolfazl Hajihassani. (Photo by J. Eisenback and A. Hajihassani)

<https://nimss.org/projects/view/mrp/outline/18937>

Dr. Billy Crow invited to speak at Virginia Tech.



Nematologists from the School of Plant and Environmental Science at Virginia Tech, Fatima Mony, Jon Eisenback, Aaron Tucker, Sahadat Ali, pose with Billy Crow after his seminar about his career in turfgrass nematology.

Dr. William “Billy” Crow from the University of Florida presented a seminar in the School of Plant and Environmental Science at Virginia Tech on February 21, 2024, entitled, “Turfgrass Nematology: Surviving in a Small Pond,” where he discussed that since Florida is both a top destination for golf and an ideal environment for some of the most damaging plant-parasitic nematodes, it is the epicenter for turfgrass nematology. As an extension nematologist with a focus on integrated pest management he explained how impacts and excellence can be achieved while working in a small field with a targeted clientele using examples from his

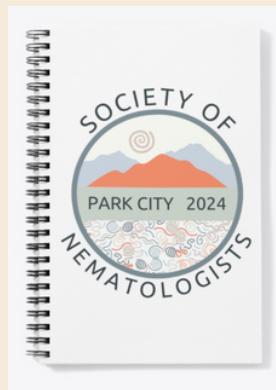
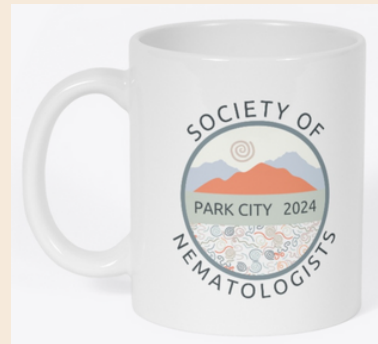
program. Research on 1,3-dichloropropene to manage sting nematode (*Belonolaimus longicaudatus*), led to an effective nematode management tool and increased understanding of sting nematode behavior. Research with abamectin for the management of sting nematode led to the discovery of its efficacy against grass root-knot nematode (*Meloidogyne graminis*) which is now recognized as the primary nematode pest of warm-season turf on golf greens. Research on fluopyram on turf led to its adoption as an effective treatment for sting and root-knot nematodes, and to new understanding of the behavior of lance nematode (*Hoplolaimus galeatus*) and improved diagnostics. This research also led to the discovery of nematicide resistance in plant-parasitic nematodes. Dr. Crow emphasized that working in a small field such as turfgrass nematology can, with focus and flexibility, lead to a successful, impactful, and fulfilling career (edited from an abstract of the presentation).

Upcoming Deadlines for 2024 Annual Meeting

- **April 1, 2024** - Deadline to apply for Student Travel Awards; Nominations due for the John W. Webster Outstanding Student Award
- **April 1, 2024** Cobb Foundation Science and Art deadline
- **April 30, 2024**- Deadline for Abstract submissions (link to submit is emailed to you upon completing meeting registration)
- **May 1, 2024** - Last day to register for the Annual Meeting with early-bird pricing.
- **May 2, 2024** - **Increased registration fees** for the Annual Meeting.
- **July 3, 2024** - Last day for room block reservations at SON 2024
- **August 4 - 9th, 2024** - The 63rd Annual SON Conference in Park City, UT



Cobb Foundation SON 2024 Merchandise!



Cobb Foundation has generated six products featuring the 2024 SON Meeting logo and they can now be purchased through the Spring online store. Be sure to click on each product to see all available color options.

<https://nemacobb.creator-spring.com/>

Call for Officer Nominations

Nominations are open until **April 4th** for officer nominations of Vice President and Secretary. Act quickly if you would like to nominate someone for either of these roles!



Email nominations to Dr. Cynthia Gleason at Cynthia.gleason@wsu.edu

Call for Award Nominations for 2025

The Society of Nematologists recognizes individuals for scientific excellence and contributions to the science of nematology through several awards. A member of the society may nominate one candidate per year for each award. It is important that nominations provide a critical analysis of the nominee's contributions. The Honors and Awards Committee encourages members of the Society to actively seek candidates with outstanding records and nominate them for an appropriate award. These awards will be bestowed at the Society of Nematologists annual meeting in 2025. One candidate is chosen for each award.

Honorary Member of the Society is the highest honor awarded in recognition of meritorious and superlative contributions to the science of nematology. The number of living persons in this category of membership may not exceed 2% of the regular and emeritus membership. No more than one individual per year may receive this award.

Fellow of the Society is granted by the Society to a member in recognition of distinguished contributions to the science of nematology. No more than 0.4% of the living membership may be elected Fellow in any given year. This honor is bestowed upon a member who has excelled in areas of significant research, teaching, extension, administration, or through contributions in service to the Society of Nematologists or the science of nematology above and beyond that of most of its members.

The Syngenta Crop Protection Award is presented by Syngenta, Greensboro, NC, to a person who has made contributions in nematology, not previously recognized, which has led to significant advancement in agriculture. The contributions should have been made within the last 5 years and the nominee should be within 15 years of receiving a Ph.D. degree at the time of the award.

Teaching Excellence Award recognizes a SON member for excellence in teaching nematology. The nominee must have excelled in classroom teaching of a nematology course or through developing innovative nematology teaching materials for use in a classroom-setting (K-12, undergraduate or graduate level).

Nomination Instructions:

The nomination packet must be submitted by July 1, 2024. Any member of the Society may submit nominations and the nomination process is performed in confidence. Each nomination packet should include the following:

1. Nomination statement. This should include the nominee's name, educational background, current and previous positions, and contributions to nematology and agriculture in the scope of the particular award. The statement also must explain and document the significance of these contributions. Each statement must be double-spaced and no more than four pages long.
2. List of publications. A listing of publications separated, if possible, into the following categories: a) peer-reviewed journal publications, b) book chapters or reviews, and c) other publications such as bulletins, laboratory manuals, extension publications, etc. The publication list must be single-spaced.
3. Letters of endorsement. Besides a cover letter, each nomination should also include two letters of endorsement. The letters should be addressed to Nathan Schroeder, 2024 Chair of the Honors and Awards Committee.

Electronic submissions are preferred. Send Word or PDF documents to Nathan Schroeder at nes@illinois.edu. **Nominations must be received by July 1, 2024**

To ensure that duplicate nominations are not submitted or if further information is needed, contact Nathan Schroeder, 2024 Chair of the SON Honors and Awards Committee, at nes@illinois.edu.

Job Announcement

Faculty Position at UF



If you are passionate about nematology and have excellent molecular skills, come join our team!

The University of Florida Entomology and Nematology Department is seeking a tenure-track Assistant Professor of Molecular Nematology. This is a 70% research and 30% teaching position. The research focus will be on nematode-plant and/or nematode-microbe interactions and/or biological control. Teaching duties include a large-enrollment undergraduate intro to nematology course (online) and a graduate course TBD. The anticipated starting date is January 1, 2025.

Apply here: <https://explore.jobs.ufl.edu/en-us/job/530823>
Requisition #530823

The closing date is **May 18th**, 2024.

Please feel free to contact Dr. Billy Crow (wtrc@ufl.edu) with any questions you have regarding this position.

Job Announcement

USDA-ARS



This position is located in the United States Department of Agriculture, Agricultural Research Service, Mycology and Nematology Genetic Diversity Biology Laboratory, located in Beltsville, MD.

In this position, you will conduct research on the development of novel methods for plant-parasitic nematode identification, phylogenetics, and diagnostics using molecular and morphological methods.

You must be a US Citizen or US National.

For more information, visit the job posting for Announcement Number: ARS-D24Y-12338124-ST on USAJobs:

<https://www.usajobs.gov/job/779594500>

Applications must be submitted through USAJobs by April 2, 2024

Job Announcement

Post-Doctoral Position at UMN



Position Summary: A post-doctoral researcher position for a highly motivated researcher is available at the University of Minnesota Southern Research and Outreach Center (SROC) in Waseca, Minnesota. This is a collaborative research with a team of scientists at the SROC and the Department of Agronomy and Plant Genetics, University of Minnesota (UMN).

The research will focus on the soybean cyst nematode (SCN) in pennycress, a newly domesticated winter oilseed cover crop intended to be relay or double-cropped with soybean in Minnesota and the north central USA. The overall goal of the research is to reduce damage caused by SCN in pennycress and soybean. Specifically, the successful candidate will study SCN overwinter survival in pennycress and SCN resistance/susceptibility in pennycress germplasm lines. The successful candidate will perform experiments, keep detailed records, analyze, and synthesize data, present results at local and national meetings, and prepare manuscripts for publication.

<https://hr.myu.umn.edu/jobs/ext/360017>

This position will remain open until filled. Review of the position will start on **April 15**.
PI is Dr. Senyu Chen chenx099@umn.edu

Do you have any updates that you want to share with the nematology community?

- Send it to the **newsletter** editor, Benjamin Waldo (Benjamin.Waldo@usda.gov), by the end of January, April, July or October of the calendar year to be included in the upcoming quarterly issues of NNL in May, August, September and December respectively.
- For immediate announcements on our **social media platforms**, send the content to our social media editor, Zane Grabau (zgrabau@ufl.edu).
- To be put up on our **website** (especially job postings), contact our web editor, Jacki Beacham (societyofnematologists@gmail.com).

Team SON

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Thank you - Sustaining associates

