

The 67th Annual Conference on Soilborne Plant Pathogens and
The 52nd California Nematology Workshop

March 23-24, 2022

<http://soilfungus.wsu.edu>

**ALL TIMES LISTED ARE FOR THE LOS ANGELES, CALIFORNIA TIME ZONE, WHICH IS PACIFIC DAYLIGHT TIME
(PDT; UTC-7 hours)**

Wednesday March 23, 2022

- 7:30-7:45 am Practice for presenters. Presenters will be sent a separate zoom link (email from Timothy Paulitz)
- 7:45 -8:00 am Please click the meeting link so you can open up zoom and troubleshoot any issues before the event starts. We plan on starting promptly at 8 am. Presenters will be sent a separate link; there is a Zoom link for the main meeting each day for everyone else.
- 8:00-8:15 am **Opening Remarks:** Tim Paulitz
- 8:15-9:15 am Session Moderator: Timothy Paulitz, WSU.
- Keynote talk regarding career retrospectives of soilborne pathogens:**
Krishna Subbarao. UC Davis. Successes and failures in our understanding and management of soilborne pathogens. kvsbbarao@ucdavis.edu
- 9:15-10:45 am **Session I.** Session Chair: Peter Henry, USDA-ARS, Salinas. peter.henry@usda.gov (Six 15-minute talks below)
- How does soil health management impact survival of soilborne plant pathogens? Kelley Paugh, UC Davis. krpaugh@ucdavis.edu
- Avirulence of *Fusarium oxysporum* f. sp. *fragariae* race 1 in strawberry cultivars with *FW1* resistance is mediated by Secreted in xylem (SIX) 6 gene. Christine Jade Ermita, UC Davis. cdermita@ucdavis.edu
- Are there host-specific mechanisms that promote *Ralstonia* fitness inside diverse plant hosts? Nathalie Aoun, UC Davis. naoun@ucdavis.edu
- Nematodes associated with Asian vegetables in Central Florida with the focus on molecular identification of *Meloidogyne* species. Hung Xuan Bui, University of Florida. hungbui@ufl.edu
- Mitigation of Pacific shoot-gall disease in California putting greens. J.O. Becker and J. Baird, UC Riverside. obecker@ucr.edu
- Synthetic microbial consortia protect wheat against a soilborne fungal pathogen. Chuntao Yin, USDA-ARS, Brookings. Chuntao.Yin@usda.gov
- 10:45-11:00 am **Break**
- 11:00 am-1:15 pm **Session II. STUDENT PRESENTATIONS.** Session Chair: JP Dundore-Arias, CSU Monterey Bay. jdundorearias@csumb.edu (Nine 15-minute talks below)

Tim Paulitz and JP Dundore-Arias announce the winners of the student competition (5 minutes).

Integration of differential soybean resistance into *Sclerotinia sclerotiorum* apothecial risk prediction models. Richard Webster, University of Wisconsin. rwebster@wisc.edu

An integrated approach for controlling Verticillium wilt in strawberry. Jack Koster, Cal Poly- San Luis Obispo. jkoster@calpoly.edu

Influence of temperature and soil moisture on germination of sclerotia of soil borne fungus *Athelia rolfsii* and application of a hydrothermal time model to predict sclerotia germination. Santosh Sanjel, University of Florida. ssanjel@ufl.edu

Spatiotemporal dynamics of *Fusarium oxysporum* f. sp. *vasinfectum* race 4 in field and growth chamber experiments. Roy Davis II, Texas A&M. davi64345@tamu.edu

Using wild peanut to improve stem rot resistance in cultivated peanut- starting from resistance identification in allotetraploid peanuts. Yun-Ching Tsai, University of Georgia. yct@uga.edu

Management of *Phytophthora nicotianae* in boxwood using biofumigation approaches. Sandhya Neupane, Tennessee State University. sandhya.neupane1986@gmail.com

Impact of a select set of chemical contaminants found in recycled wastewater on soilborne plant pathogens. Nathan McLain, UC Riverside. nmcla001@ucr.edu

Host plant resistance for management of Macrophomina crown rot in California strawberry. Yu-Chen Wang, Cal Poly- San Luis Obispo. ywang94@calpoly.edu

Survey of late-season soilborne pathogens of strawberry in Watsonville-Salinas, California. Mary Steele, Cal Poly- San Luis Obispo. msteel03@calpoly.edu

3:00-5:00 pm **Meeting of the California Nematology Workgroup (separate meeting).** via ZOOM.

Thursday March 24, 2022

7:45-8:00 am Presenters will be sent a separate zoom link (email from Timothy Paulitz.

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8:05-8:15 am Gerald Holmes. Cal Poly Strawberry Center Overview. Cal Poly- San Luis Obispo. giholmes@calpoly.edu

8:15-9:15 am Session Moderator: Andreas Westphal, UC Riverside- Parlier. andreasw@ucr.edu

Keynote talk regarding career retrospectives of soilborne pathogens:

Joe Noling, University of Florida. Lifetime achievements and nematode management considerations for Florida growers farming subtropical fine sands. jnoling@ufl.edu

9:15-10:50 am

Session III. Chemical, Biological, and cultural control of soilborne diseases. Session Chair: Kelley Paugh, UC Davis. krpaugh@ucdavis.edu (six 15-minute talks and one 5-minute talk below)

Looking at different approaches to limit the spread of soilborne plant pathogens in nurseries. Wolfgang Schweigkofler, Dominican University of California. wolfgang.schweigkofler@dominican.edu

Greenhouse pathology in California: disease management and diagnostics in vegetable seedlings and ornamental crops. Johanna Del Castillo Múnera, UC Riverside. jdelcastillo@ucdavis.edu

Effects of water scarcity-driven irrigation practices on disease management in California processing tomato. Justine Beaulieu, UC Davis. jbeaulieu@ucdavis.edu

Plant disease management of castor Fusarium wilt complex. Shalini Yerukala, UT Knoxville. syerukal@vols.utk.edu

The long-term efforts to develop improved walnut rootstocks. Andreas Westphal, UC Riverside. andreasw@ucr.edu

Field evaluation of transgenic Easter lily bulbs for management of lesion nematode, *Pratylenchus penetrans*. Becky Westerdahl, UC Davis. bwesterdahl@ucdavis.edu

(5 min talk) Can we predict cyst nematode suppression in a soil? James Borneman, UC Riverside. borneman@ucr.edu

10:50-11:05 am

Break

11:05-12:45 pm

Session IV. Soilborne Strawberry Diseases. Session Chairs: Gerald Holmes and Shashika Hewavitharana, Cal Poly- San Luis Obispo. gjholmes@calpoly.edu, shewavit@calpoly.edu (Twelve 7-minute LIGHTNING talks below)

Biology and management of Phytophthora diseases of strawberry. Marcus Marin, University of Florida. marin.m@ufl.edu

Enhanced detection of *Fusarium oxysporum* f. sp. *fragariae* and evaluation of survival of DNA of major soil-borne pathogens after fumigation. Mike Matson, USDA-ARS Salinas. michael.matson@usda.gov

A multilocus sequence typing assay for improved identification of *Fusarium oxysporum* strains. Ningxiao Li, UC Davis. ngxli@ucdavis.edu

Effect of soil inoculum density of *Fusarium oxysporum* f. sp. *fragariae* and *Macrophomina phaseolina* on development of Fusarium wilt and charcoal rot. Akif Eskalen, UC Davis. aeskalen@ucdavis.edu

Integrated management of Fusarium wilt in organic strawberries. Joji Muromoto, UC Santa Cruz. joji@ucsc.edu

Site-specific fumigation strategy for strawberry. Frank Martin, USDA-ARS Salinas. Frank.Martin@ars.usda.gov

The outlook for non-fumigant methods to control strawberry disease caused by *Macrophomina phaseolina*. Peter Henry, USDA-ARS Salinas. peter.henry@usda.gov

Biology and management of *Macrophomina* on Florida strawberry. Natalia Peres, University of Florida. nperes@ufl.edu

Influence of root or crown inoculation on *Macrophomina phaseolina* colonization of strawberry. Lindsey Pedroncelli, UC Riverside. lpedr004@ucr.edu

Summary of chemigation trials for control of *Macrophomina* crown rot. Gerald Holmes, Cal Poly-San Luis Obispo. gjholmes@calpoly.edu

Conventional and organic input testing for *Fusarium* and *Macrophomina* suppression. David Holden, Holden Research & Consulting. calcropdoc@yahoo.com

The effect of fumigation on soil microbiome and suppression of *Verticillium* wilt in strawberry. Shashika Hewavitharana, Cal Poly- San Luis Obispo. shewavit@calpoly.edu

The Conference on Soilborne Plant Pathogens would like to thank our corporate sponsors for their support (from 2020 sponsorships). Their contributions went to cover student scholarships.



Minutes of the Nematology Workgroup Meeting, online 3:00 pm to 5:00 pm, March 23, 2022

Participants - Workgroup members: J.O. Becker, H. Ferris, A. Hudson, S. Nadler, A. Ploeg, S. Siddique, S. Subbotin, B. Westerdahl, A. Westphal, V. Williamson, and guests.

The Nematology Workgroup meeting was held from 3:00 to 5:00 PM on March 23, 2022. In addition to members of the workgroup, several guests participated in this online event. A total of 28 participants met to discuss nematology topics. After the welcome and opening remarks by the chair (Westphal), a vote on the new chair of the committee was held. Westphal was re-elected unanimously. He accepted the election and thanked the committee for the vote of confidence.

Several members presented on their current activities. Antoon Ploeg (Dept. Nematology, UC Riverside) summarized his studies on *Meloidogyne floridensis*. He showed comparisons of infection on vegetable crops with differing host status to southern root-knot nematodes (RKN). *M. floridensis* flourished on southern root-knot nematode-resistant plant lines. The work is conducted in the UC Riverside Nematology containment facility. Ole Becker (Dept. Nematology, UCR) reported on the history of this 35-year old USDA APHIS- and CDFA-approved facility. He described how it is used to research nematodes not widely present in California (typically A or Q-rated pathogens). He gave a glimpse into studies of *Belonolaimus longicaudatus*, *Anguina pacifica*, and other species. This facility is an invaluable resource also used by researchers not housed on the UCR campus.

Amanda Hudson, a Project Scientist at UC Davis, reported on her work with compost tea and resistance-breaking RKN in tomato crops. Especially the interaction of these nematodes and Fusarium wilt is a focus in her current position. She is collaborating with Cassandra Swett, an Assistant Vegetable Cooperative Extension Specialist. Shahid Siddique, an Assistant Professor in the Department of Entomology and Nematology (DEN) at UC Davis, reported on molecular mechanisms of RKN infection of tomatoes. He outlined his plans on molecularly investigating the infection process of resistance-breaking RKN lines.

Steve Nadler, Professor and Chair of DEN at UCD, introduced his efforts on taxonomy and systematics. He reported that the Entomology and Nematology Department is currently recruiting a new faculty member in agricultural nematology. Becky Westerdahl (UCD) is chairing the search committee that includes several CE specialists. The search is now ongoing. Howard Ferris, Emeritus Nematology Professor (UCD), reported on **Nemaplex** (<http://nemaplex.ucdavis.edu>) and especially **Nemabase**, his online resource for nematode-crop associations. Workgroup members applauded his efforts in putting these databases together and emphasized the importance of the online platform.

Andreas Westphal (Dept. Nematology, UCR) gave a brief overview of his work in rootstock development for nut tree crops. He also showed his work on nematode management with chemical and biorational methods.

Heather Scheck (CDFA) introduced herself as the new State Principal Plant Pathologist/Nematologist, who replaced CDFA's Senior Plant Nematologist, John Chitambar. He

retired after 34+ years of service. Heather reported on current revisions of the Pest rating system (https://www.cdfa.ca.gov/plant/regs_pestrating.html), a helpful tool when dealing with plant pathogens, including nematodes. Sergei Subbotin, Senior Plant Nematologist at the Plant Pest Diagnostics Branch, CDFA, gave a brief overview of his activities in identifying plant-parasitic nematodes. He added many taxonomic descriptions to his list of publications. Several California-new nematode species were detected. Sergei interacts with important nematology groups worldwide.

Other guests of the meetings also introduced themselves and described their interest in nematology. These introductions include Melody Meyer-Jertburg (Driscoll), who works in her position on plant disease problems. Many other participants were students who reported how they got interested in the nematology field.

At 5:00 PM, the meeting concluded and was adjourned.