Lydia Tymon, PhD
UC Cooperative Extension, Riverside
and San Bernardino

[redacted]

Education

Washington State University, Pullman, WA
Doctor of Philosophy, Plant Pathology, 2014
Advisor: Dennis A. Johnson
Dissertation Title: Frequency of isolation, determination, and epidemiology of *Alternaria* species on potato in the Pacific Northwest
University of Washington, Seattle, WA
Master of Science, College of Forest Resources, 2009
Co-Advisors: Robert L. Edmonds, Dean A. Glawe
Thesis Title: Identification and classification of Rhododendron powdery mildew fungi in the Pacific Northwest
University of Washington, Seattle, WA
Bachelor of Science, Botany, College of Arts and Sciences, 1998
Overall GPA: 3.50

Research and Work Experience

Environmental Horticulture Advisor (October 2025-present), UC Cooperative Extension, Riverside and San Bernardino Counties
Sr. Director of Bio R&D (August 2024-May 2025), Mast Reforestation, Seattle WA.
Director of Bio R&D (October 2023-August 2024**)**
Bio R&D Scientist (November 2021-October 2023**)**
Duties: Developed and executed experimental projects to address germination and survivorship issues of seeds and seedlings, and to increase drought tolerance; provided support to R&D specialists for project development, deployment, monitoring of larger field projects; responded to questions on biology from leadership or other teams such as nursery production; provided support to client solutions team; managed a team of 2-5 biologist and engineers; networked with potential product vendors to investigate product utility for nursery production and R&D; participated in forestry research cooperatives and submit research proposals; provided IPM support and pest and pathogen diagnostics for Cal Forest and Silvaseed Company nurseries; developed nursery production-focused research projects, authored annual program and customer reports, and communicated project updates and findings to leadership, managed R&D budgets.

Program Leader (February 2021-November 2021, hourly until January 2023), Washington State University Puyallup Research and Extension Center, Puyallup, WA.

Postdoctoral Research Associate (September 2015-January 2019), **Program Leader** (January 2019-February 2021) Vegetable Pathology, Washington State University Northwestern Research and Extension Center, Mount Vernon, WA.
Duties: Develop experiments and projects, and carry out greenhouse, field, and lab-based experiments; collect and analyze data using SAS 9.3 and R; write up results for publication in peer-review journals and extension publications; present results at national scientific meetings and grower meetings; manage and balance program budgets, order lab supplies, write grants to acquire project funding; and a manage lab team of one technician and two summertime-slip employees.

Develop high throughput assays for the detection of FRAC7 fungicide resistance in *Botrytis cinerea* infecting Washington red raspberries and blueberries.

- **Project objective**: **(i)** Develop a plate-based and molecular-based assay for the high throughput monitoring of mutations conferring resistance to FRAC7 fungicides
- **Project responsibilities:** Isolate *B. cinerea* from infected tissues by plating onto selective media using sterile techniques; ascertained suitability of DNA extraction methodologies (kit, magnetic bead, and FTA card extractions) for fungal sclerotia, evaluate an HRM qPCR to identify mutations conferring fungicide resistance in resistant *B. cinerea* isolates; evaluate multiple fungicide delivery methods for fungicide plate assay.

Compare the efficacy of pre-plant incorporated azoxystrobin and *Trichoderma harzianum* applications to drench applications for the management of *B. cinerea* in Washington strawberry and lettuce cropping systems.

- **Project objective**: **(i)** Study the epidemiology and host specificity of *B. cinerea;* **(ii)** test and develop recommendations for the management of the soilborne phase of *Botrytis* grey mold.
- **Project responsibilities:** Rate disease incidence on lettuce and strawberry plants; isolate *B. cinerea* from infected tissues by plating onto selective media using sterile techniques; quantify soilborne inoculum by plating soil onto selective media; assess population structure by host via microsatellite analysis.

Determine the timing of initial infection of potato seed tubers by *Colletotrichum coccodes* and whether a single, early chemigation application of azoxystrobin fungicide can reduce overall disease severity on potato plants and tubers.

- **Project objectives: (i)** Assess timing of infection via soilborne inoculum on two potato varieties using a greenhouse assay; **(ii)** evaluate efficacy and best timing for a one-time, early azoxystrobin in-furrow or soil drench on the same cultivars in the greenhouse and field.
- **Project responsibilities:** Assay potato seed tubers for *C. coccodes* infection prior to planting via plating and PCR assays; prepare and plant seed pieces for greenhouse and field studies; harvest seed pieces to determine timing of infection by *C. coccodes* infection via plating and qPCR assays; harvest plant stems and tubers and rate tissues for disease severity; assess plant tissues for *C. coccodes* infection and colonization with plating assays and determine quantity of *C. coccodes* within plant tissues with qPCR.

Potential of fungal endophytes as antagonists to *Verticillium dahliae* infecting pumpkin mulched with biodegradable plastic in western Washington

- **Project objectives: (i)** Evaluate the effects of biodegradable plastic mulch films on *V. dahliae* soil microsclerotia; **(ii)** survey endophytes associated with pumpkin roots in western Washington; and **(iii)** assess Verticillium wilt potential on pumpkin with and without selected endophytic root associations.
- **Project responsibilities:** Seed and grow seedlings needed for the project; grow out and maintain fungal isolates for inoculations; plant greenhouse and field studies; rate greenhouse and field studies on a weekly basis; collect final harvest data; survey and identify fungal root endophytes associated with cucurbit roots via plating methods and DNA sequencing, respectively; assess endophyte antagonism to *V. dahliae* through plate assays and greenhouse and field trials; calculate area under the pathogen expansion/ disease progress curves and analyze data.

Assessment of crop rotation and lignin-degrading organisms on the survivorship of *Verticillium dahliae* microsclerotia.

- **Project objective**: **(i)** Determine if Verticillium wilt severity and *V. dahliae* microsclerotia survivorship decreases more when lignin-degrading organism (*S. viridosporus*) soil incorporated than with crop rotation alone.
- **Project responsibilities:** Seed and grow seedlings needed for projects; grow out and maintain fungal and bacterial isolates; plant greenhouse and field studies, rate greenhouse and field studies on a weekly basis; collect harvest data, including biomass weights; assess *V. dahliae* soil counts and microsclerotia survivorship via plating methods.

Identification and determination of the disease cycle for a novel *Pseudomonas syringae* (genomospecies I phylogroup 2b) infecting pumpkin leaves and fruit in Western Washington.

- **Project objectives: (i)** Assess haplotypes and genetic relationships of *P. syringae* isolates collected in 2015 and 2016 from cucurbits in Western Washington for comparison with isolates collected from New Zealand; **(ii)** identify selected *P. syringae* isolates causing novel symptoms on pumpkin plants to pathovar; **(iii)** determine the effects of *P. syringae* infection times on fruit disease incidence and severity; **(iv)** establish the contribution of rain pooled on agricultural mulches and soilborne inoculum from cucurbit plant residues, as potential sources of secondary inoculum.
- **Project responsibilities:** Seed and grow seedlings needed for projects; collect environmental *Pseudomonas* sp. isolates and place into pure culture; maintain bacterial isolates for pathogenicity assay inoculations; set up and rate greenhouse and field studies on a weekly basis; re-isolate bacteria from symptomatic tissues; identify and genotype collected bacterial isolates by multilocus sequence analysis and BOX-PCR, determine phylogenetic relationships using MrBayes and PAUP*.

Postdoctoral Research Associate (May 2014-June 2015) University of Idaho, Moscow, ID.
Duties: Design and carry out lab-based experiments, collect and analyze data, set up new laboratory, order lab supplies.
Optimization of a DNA macroarray to detect storage bulb rot fungal and bacterial pathogens in onion.

- **Project responsibilities**: Run PCR and blot protocols to assess for presence of fungal and bacterial onion pathogens.

Evaluation of disinfectant efficacy against *Clavibacter michiganensis* subsp. s*epedonicus (Cms*) surviving on substrates found in potato processing and storage facilities.

- **Project responsibilities**: Maintain *Cms* rifampicin mutants and prepare inoculum of substrates, recover *Cms* isolates from incubated substrates after washing and disinfestation by spiral plating.

Graduate Research Assistant (August 2009- 2014), Washington State University, Pullman, WA.

Evaluation of *Alternaria* species isolates associated with early blight and brown spot symptoms on potato in the Columbia Basin of Washington for variation in pathogenicity, virulence, and fungicide resistance.

Graduate Research Assistant (September 2007- August 2009), University of Washington, Seattle, WA.

Determination of species of powdery mildew fungi collected from deciduous and evergreen rhododendron species.

Peer-reviewed Publications

Tymon, LS, Bophela, K, Martins, SJ, Sepúlveda, LR, Inglis, DA, Coutinho, TA, and CT Bull. Fruit warts and leafspots of cucurbits caused by diverse strains within *Pseudomonas syringae* pv. *aptata*. *In progress*.

Tymon, LS, Bates, AA, and BK Schroeder. Efficacy of disinfectants on *Clavibacter michiganensis* subsp. *sepedonicus* on substrates found in storage containers and equipment. *In progress.*

Downer, R, Manteuffel-Ross, T, **Tymon, LS,** and MM Aghai. 2023, Direct Seeding for conifer regeneration in the Pacific Northwest: a past, present, and future of operational practices. *Journal of Forestry*. https://doi.org/10.1093/jofore/fvad050.

Wang, X, Mattupalli, C, Chastagner, G, **Tymon, LS,** Wu, Z, Jung, S and LW DeVetter. Physical characteristics of soil-biodegradable and nonbiodegradable plastic mulches impact conidial splash dispersal of *Botrytis cinerea*. 2022. *PLos* One. https://doi.org/10.1371/journal.pone.0285094.

Tymon, LS, McPartland, JM, Thiessen, LD, and NW Gauthier. 2022. Powdery Mildew. In: *Compendium of Cannabis Diseases*. https://doi.org/10.1094/9780890546284.02.14.1

Wang, X, Shrestha, S, **Tymon, LS,** Zhang, H, Miles, CA, and LW DeVetter. 2022. Soil-biodegradable mulch is an alternative to non-biodegradable plastic mulches in a strawberry-lettuce double-cropping system. *Frontiers in Sustainable Food Systems*. https://doi.org/10.3389/fsufs.2022.942645.

Tymon, LS, Bradshaw, M, Goetz, M, Braun, U, Peever, TL, and RL Edmonds. Phylogeny and taxonomy of *Erysiphe* spp. On *Rhododendron*, with a special emphasis on North American species. 2022. *Mycologia*. https://doi.org/10.1080/00275514.2022.2090219.

Tymon, LS, Gundersen, B, Spitler, HG, Diehl, BR, and BS Gerdeman. 2021. Wireworm control using insecticide drench treatments for lettuce, 2020. *Arthropod Management Tests*. https://doi.org/10.1093/amt/tsab138.

Devi, P, **Tymon, LS**, Keinath, AP, and CA Miles. 2021**.** Progress in grafting watermelon to manage Verticillium wilt. *Plant Pathology*. https://doi.org/10.1111/ppa.13344.

Tymon, LS, Morgan, P, Gundersen, B, and DA Inglis. 2020. Potential of fungi collected from *Cucurbita pepo* roots grown under three different agricultural mulches as antagonistic endophytes to *Verticillium dahliae* in western Washington. *Microbiological Research.* doi.org/10.1016/j.micres.2020.126535

Tymon, LS, and Gundersen, B. 2020. Evaluation of potato seed fungicide treatments for control of Fusarium dry rot on potato, 2019. Plant Disease Management Report. 14: V189.

Attavar, A, **Tymon, LS**, and CA Miles. 2020. Evaluation of Cucurbitaceae germplasm for resistance to Verticillium wilt and grafting compatibility with watermelon. HortScience. doi.org/10.21273/HORTSCI14631-19.

Szarka, D, **Tymon, LS,** Amsden, B, Dixon, E, and N Gautier. 2019. First report of powdery mildew caused by *Golovinomyces spadiceus* on industrial hemp (*Cannabis indica* x *sativa*) in Kentucky. Plant Disease. Plant Disease, PDIS-01. https://apsjournals.apsnet.org/doi/full/10.1094/PDIS-01-19-0049-PDN.

Tymon, LS and DA Inglis. 2017. Identification and pathogenicity of *Pseudomonas syringae* genomospecies 1 phylogroup 2B causing leaf spots and fruit warts on cucurbits in western Washington, U.S. Journal of Plant Pathology. 99: 1-23.

Grant, MR, **Tymon, LS,** Helms, GL, Thomashow, LS, Keller, CK, and JB Harsh. 2016. Biofilm adaptation to iron availability in the presence of biotite and consequences for chemical weathering. Geobiology. 14: 588-598.

Tymon, LS, Cummings, TF, and DA Johnson. 2016. Pathogenicity and aggressiveness of three *Alternaria* species on potato foliage in the US Northwest. Plant Disease. 100: 797-801.

Tymon, LS, Peever, TL, and DA Johnson. 2015. Identification and enumeration of small-spored *Alternaria* species associated with potato in the US Northwest. Plant Disease. 100: 465-472.

Tymon, LS, Glawe, DA, and DA Johnson. 2015. *Puccinia areolata, P. treleasiana, and P. gemella* on marshmarigold (*Caltha* spp.) in subalpine habitats in Northwestern United States. North American Fungi. doi.10.2509/naf2015.010.004.

Tymon, LS and DA Johnson. 2014. Fungicide resistance of two species of *Alternaria* from potato in the Columbia Basin of Washington. Plant Disease. 98: 1648-1653.

Putnicki (Tymon), LS and DA Glawe. 2009. First report of *Podosphaera alpina f. alpina* on *Tolmiea menziesii* in Washington State and British Columbia. Plant Health Progress. doi:10.1094/PHP-2009-0810-01-BR.

Other Peer Reviewed Publications

Tymon LS and Inglis, DA. *Pseudomonas* diseases on cucurbits in western Washington. WSU Fact Sheet FS335E. https://pubs.extension.wsu.edu/pseudomonas-diseases-on-cucurbits-in-western-washington.

Tymon, LS and DA Inglis. What is an endophyte? 2016. Fact Sheet Report #FA2106-03 at https://ag.tennessee.edu/biodegradablemulch/Documents/what_is_an_endophyte_formatted.pdf.

Tymon, LS, Johnson, DA, and TF Cummings, 2011. The effects of wounding and potato cultivar on pathogenicity and aggressiveness of *Alternaria solani* and *A. alternata*. Proceedings from the WA/OR Potato Conference.

Johnson, DA, **Tymon, LS**, and TF Cummings. 2010. Frequency of *Alternaria* species from early blight type lesions on potato leaves. Proceedings from the WA/OR Potato Conference.

Grants

Tymon, LS, Gill, H, and D Merhaut. Salinity Stress and Botryosphaeria Canker in Woody Trees: Evaluating Disease Susceptibility and Zinc Oxide Nanoparticles for Stress Mitigation. The Britton Fund. 2026. $29,449.

Tymon, LS and R Downer. Advancing Seedling Health: Evaluating chitosan for disease management in forestry nurseries. Western IPM. 2025. $32,916

Tymon, LS and L Hawbaker. Scaling California cone collection and seed processing. Cal Fire Workforce Development Grant. 2024. $592,500

Tymon, LS. The phagostimulant potential of yeast including endemic species for SWD management in PNW blueberries. The Northwest Center for Small Fruit Research. 2021. $99,942

DeVetter, L, **Tymon, LS,** Miles, CA, Peever, TL, and S Jung. Novel strawberry production and disease management systems, WSDA Specialty Crop Block. 2019. $249,963 ($98,799 for Tymon).

Gerdeman, B, Walse, S, **Tymon, LS,** and Holloway, P. Eliminating Pest-Related Trade Barriers for the Alaska Grown Peony Trade Industry. 2018. Technical Assistance for Specialty Crops. $1,376,011 ($18,470 for Tymon)

Tymon, LS, Benedict, C, Gundersen, B, McMoran, D, and T Waters. Controlling latent infections of black dot with early fungicide applications. Northwest Potato Research Consortium, 2019. $24,000.

Tymon, LS, Inglis, DA, and CT Bull. Translational taxonomy: the association of pathovar designation and genetic diversity with the epidemiology of *P. syringae* genomospecies 1 causing cucurbit fruit diseases in the United States. USDA NIFA AFRI Postdoctoral Fellowship. 2017. $164,970.

Tymon, LS, Miles CA, and DA Inglis. Can lignin degrading organisms reduce Verticillium wilt in pumpkin cropping systems? WSU BIOAg Grant Program, 2017. $21,596.

Tymon, LS and DA Inglis. New fungal endophytes: A potential alternative for managing *V. dahliae* in cucurbit cropping systems in western WA. Northwest Agricultural Research Foundation, 2017. $6000.

Inglis, DA and **LS Tymon**. Fungal endophytes: A potential alternative for managing *Verticillium dahliae* in cucurbit cropping systems in western Washington. Northwest Agricultural Research Foundation. 2016. $5400.

Inglis, DA, **Tymon, LS**, and Miles CA. Impact of fungal root endophytes on Verticillium wilt using cucurbits as model hosts. WSU BIOAg Grant Program. 2015. $29,966.

Select Presentations

Tymon, LS. Key Considerations for Selecting your Seedling Stock type. California Forestry and Vegetation Management Conference. January 2025.

Safronoff, J, Spellman, L, Downer, R, Manteuffel-Ross, T, Lampoudi, S, **Tymon, LS**, and MM Aghai. Using x-ray imaging to determine the likelihood of germination in seed lots. Society of American Foresters National Meeting. October 2023.

Tymon, LS. Vegetable Pathology in Vegetable Cropping Systems. WSU Olericulture. October 2019. (invited lecturer).

Tymon, LS. Behind the glass window: What happened to my potato sample? Western Washington Potato Workshop. Mount Vernon, WA. February 2019.

Tymon, LS, Gundersen, B, and CA Miles. Can lignin degrading organisms reduce Verticillium wilt in cucurbit cropping systems? (abstract and poster presentation). WSU BIOAg Symposium. Pullman, WA. February 2019.
Tymon, LS. Symptoms and management of cucurbit fungal and bacterial diseases. Pacific Northwest Vegetable Association meeting. Kennewick, WA. November 2018.

Teaching and Workshops

Diagnosing Plant Problems, Riverside County Master Gardener Trainee Class, February 11, 2026.
Fundamentals of Tree Pruning, Val Verde Unified School District, January 30, 2026.
Plant Pathology, San Bernardino County Master Gardener Trainee Class, November 22, 2025.
Pest Management, Riverside County Master Gardener Trainee Class, October 22, 2025
Phytobacteriology and Endophytes, Snohomish County Master Gardener's Advanced Plant Pathology Class, Everett, WA, February 27, 2019.
PCR Workshop, WSU-NWREC, April 5, 2018.
Phytobacteriology, Snohomish County Master Gardener's Advanced Plant Pathology Class, Everett, WA, February 12, 2015.
Teaching Assistant, Fall 2010, Washington State University, General Plant Pathology (PLP 429)
Teaching Assistant, Fall 2011, Washington State University, General Mycology (PLP 521)

Professional activity and service

Graduate Student Oral Competition Judge, American Phytopathological Society-Pacific Division meeting, 2026.
Chair, Undergraduate Student Task Force, American Phytopathological Society Office of Education. 2017-present.
American Phytopathological Society Member, 2009- present
American Phytopathological Society, Pacific Division Member, 2009- present
Ad hoc reviewer for Plant Disease, Phytopathology, American Potato Journal, European Journal of Plant Pathology, and Journal of Plant Pathology.
American Society of Horticultural Science Member, 2020

Certifications

Washington State Certified Professional Horticulturist, 2007-2010
Pacific Northwest ISA Certified Arborist, 2007-2010
WSDA Licensed Pesticide Applicator, 2007-2025