Doctor of Plant Health

Volume 14, Issue 2

December 2025

The DPH Practitioner

"Educating Leaders for Tomorrow's Sustainable Plant Production Systems"

The Plant Health program at the University of Nebraska — Lincoln continues to thrive. While higher education, both locally and nationally, continues to face some steep challenges, the value proposition for plant health practitioners remains strong! We continue to lean into our adopted moto that "...our students make an impact anywhere that plants grow". This broad view continues to offer our graduate education at UNL as a vital building block toward students' knowledge and our plant health residency partners as career catalysts for our students. In that spirit, a heartfelt thank you to our Plant Health Residency Partners in 2025: Power Pollen, Corteva Agriscience, UNL Extension, aerial PLOT, and Vineland Tree Care. On behalf of our future leaders in plant health, thank you!

The Plant Health program was again able to attend the NAICC Annual Meeting in Monterey, CA in January. Our students are so thankful for the generous support from NAICC and the Earle Raun Plant Health Fund that help students connect with our residency partners (an event that facilitated Thomas Davis' internship with aerial PLOT in 2025). Both the Annual Meeting and the location were beneficial to student connection and exploration. Of course, we could not pass up the opportunity for a group of plant health students to visit the largest kelp garden in the world at Monterey Bay Aquarium (such amazing marine life!). The generosity and opportunities offered by NAICC continues as we are currently coordinating a group of students to attend the 2026 NAICC Annual Meeting in Orlando, FL. We are so excited this year to meet up with our friends in the Doctor of Plant Medicine program at University of Florida!!

Like a healthy plant, our program grows! In the following pages, you can find introductions to our seven new students! Their backgrounds and interests are quite diverse and interesting! You will note that some of our students currently do not reside on campus. While we still very much believe in the rich peer experience gained by a vibrant campus cohort, we continue to explore creative opportunities to reach beyond our campus walls. As always, our strength rests on an adaptable program and student-centered learning experiences. In this issue, take note of our "student updates" on their experiences, creative learning and engagement that is happening among our students. These "Plant Health Impact" stories were compiled by IANR Communications team as an effort to help our student market their residency experiences and to showcase the value gained through our plant health residency partners. Maybe your organization would like to be a Plant Health Residency Partner!

Lastly, we congratulate our 2025 December graduate, Thomas Davis! Thomas was co-advised by myself and Dr. Gary Hein and mentored by dedicated committee members: Drs. Tamra Jackson (Plant Pathology), Brian Wardlow (School of Natural Resources), and Brett Lynn (Bayer CropScience). His Doctoral Document, "Advancing precision agriculture through the application of remote sensing technologies in plant health assessment" is the culmination of research, analysis and experience in nitrogen and virus relationships in wheat and nutrient assessment tools in corn. **Congratulations, Thomas!!**

DOCTOR OF PLANT HEALTH
University of Nebraska-Lincoln

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DPH Faculty Members

Kyle Broderick, *Coordinator, Plant & Pest Diagnostic Clinic, Plant Pathology*

Dr. Christian Elowsky, *Assoc. Professor, Agronomy & Horticulture*

Dr. Katherine Frels, *Asst. Professor, Agronomy & Horticulture*

Dr. Loren Giesler, *Professor and Dept. Head, Plant Pathology*

Dr. Tom Burkey, Professor & Interim *CASNR Dean*

Dr. Tamra Jackson-Ziems, *Professor, Plant Pathology*

Dr. Amit J. Jhala, *Professor & Assoc. Dept. Head, Agronomy & Horticulture*

Dr. Kyle Koch, *Assoc. Ext. Educator, Entomology*

Dr. Louise Lynch-O'Brien, *Assoc. Professor, Entomology*

Dr. Martha Mamo, Professor & Dept. Head, Agronomy & Horticulture

Dr. Justin McMechan, Assoc. Professor, Entomology

Dr. Jill Motschenbacher, *Assoc. Professor, School of Natural Resources*

Peter Mullin, *Lecturer, Plant Pathology*

Dr. John Ruberson, *Professor, & Dept. Head, Entomology*

Dr. Christian Stephenson, *Asst. Professor, Agronomy & Horticulture*

Dr. Anne Vidaver, *Emerita Professor, Plant Pathology*

Dr. Brian Wardlow, *Professor, School of Natural Resources*

Dr. Sam Wortman, *Assoc. Professor, Agronomy & Horticulture*

DPH Program Staff

Dr. Jeff Bradshaw, *DPH Director*

Kelly White, *Admin. Asst.*

Welcome to the Doctor of Plant Health newsletter

The Doctor of Plant Health program at the University of Nebraska–Lincoln is an innovative model for educating plant health practitioners. DPH is a professional degree parallel to a medical or veterinary degree, but instead, graduates are prepared to understand and diagnose plant health issues and manage the entire plant production system. Our program provides coursework and internship experiences that prepare you to make a difference in tomorrow's agriculture.

Graduates of the Doctor of Plant Health program are in demand worldwide for their comprehensive knowledge and experience, resulting in 100 percent job placement.

Interested in us? We're interested in you! Contact Dr. Jeff Bradshaw, DPH program director, at jbradshaw2@unl.edu, or call 402-472-3365 for more information. We look forward to visiting with you.

Thank you to all of our Fall 2025, DPH Colloquium Guest Speakers:

Leslie Delserone *(UNL Libraries),* **Aaron Dickinson** *(Vineland Tree Care),* **Justin McMechan** *(UNL Entomology),* **Ali Loker** *(Nestle/Gerber),* **Brett Lynn** *(Bayer Cropscience),* **Tim Mundorf** *(Central Valley Ag),* **Mike Boehm** *(UNL Plant Pathology),* **Megan McConnel** *(Bartlett Tree Experts),* **Ronda Hamm** *(Conner Prairie),* **Tom Clark** *(Genective),* and **Clint Pilcher** *(Corteva Agriscience).*

We appreciate you taking the time to connect with our students.

DPH Alumnus, Dr. Lee Briese, was recently featured in CSA News: https://www.sciencesocieties.org/publications/csa-news/2025/december/day-in-life-lee-briese?utm_source=

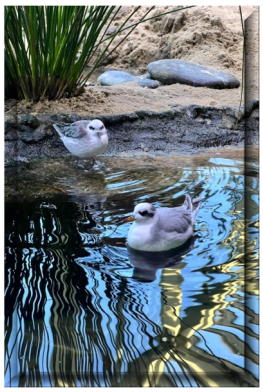
Congratulations to our 2025 Fellowship Recipients:

Genesis Thomas - William J. Curtis Fellowship
Savannah Davidow - William J. Curtis Fellowship
Lilly Buchholz - William J. Curtis Fellowship
Christopher Dourte - William J. Curtis Fellowship
Thomas Wilbur Davis - Raun Fellowship
Alexander Angel - Raun Fellowship
Kenzie Long - William J. Curtis Fellowship *(2026)*

The Mission of the Doctor of Plant Health Program at the University of Nebraska–Lincoln
is to produce plant practitioners with broad expertise and experience across the various disciplines that impact plant health and plant management. These plant practitioners (plant doctors) will integrate from across this expertise to diagnose and solve plant health problems and to develop integrated plant and pest management systems that maximize the system's economic, environmental, and social sustainability.

DPH Students attend NAICC in Monterey, CA

Attendees: Dr. Jeff Bradshaw, Alex Angel, Lilly Buchholz, Thomas Wilbur Davis, Garrett Kuss, and Josh Villazana













Earle S. Raun, Ph.D.

To give, go to nufoundation.org or scan this QR code.

The Earle S. Raun Doctor of Plant Health Graduate Student Support Fund was created to honor Earle Raun's efforts in establishing the University of Nebraska–Lincoln's plant health program and his professional contributions to crop consulting and agricultural education.

In addition to his work at UNL, Dr. Raun created Pest Management Company — the first independent crop consulting firm in the Midwest specializing in research and advice on pest management and crop production — and was instrumental in founding the National Alliance of Independent Crop Consultants and its Nebraska affiliate, the Nebraska Independent Crop Consultant Association. Contributions to this fund will enable UNL to offer fellowships for Doctor of Plant Health students.

For more information, contact Doug Carr at doug.carr@nufoundation.org or Jeff Bradshaw, Ph.D., at jbradshaw2@unl.edu.

University of Nebraska FOUNDATION

Because our students are self -supported, general student support is needed to assist students in pursuing opportunities to travel to professional meetings, inviting outside speakers or to enhance educational opportunities for students in the program.

Your donation truly goes a long way in supporting our students.

Meet Our New Students!

Savannah Davidow is a farmer and biologist from Connecticut. She earned her Bachelor of Arts in Biology with a focus in Ecology from Western Connecticut State University. Her undergraduate research projects ranged from examining environmental salinity and thermal tolerance in Atlantic killifish to conducting field studies in diverse Connecticut ecosystems.

Savannah has extensive agricultural experience working at a multi-crop farm in Connecticut. In this role, she oversaw harvest operations, managed greenhouse production, and led teams in implementing sustainable farming practices. Her leadership experience, combined with her ability to connect science with practice, has strengthened her commitment to advancing integrated, environmentally sound agricultural systems.

Savannah's professional experiences bridge scientific research with applied agricultural practice. As a Conservation and Land Management Intern with the Chicago Botanic Garden and U.S. Forest Service in Moab, Utah, she developed expertise in seed collection, native plant identification, groundwater-dependent ecosystem surveys, and macroinvertebrate analysis.

Savannah's academic training, hands-on research, and farm-scale management experience position her to contribute to the interdisciplinary mission of the Doctor of Plant Health program at UNL. She is particularly motivated by the opportunity to integrate plant health, entomology, and ecological research into solutions that promote resilient and sustainable agricultural systems.

I'm **Christopher J. Dourte**, originally from Los Angeles, California. I am a retired U.S. Army servicemember and Iraq War veteran. A strong commitment to food security and sustainable agriculture shaped my path into plant health. I earned my B.S. in Horticulture with a minor in Entomology from Oregon State University, where I focused on plant–insect interactions and the role of community-based gardening in addressing systemic barriers to food access.

Through my research, I conducted a needs assessment and evaluation of the Seed to Supper program under Dr. Leslie Madsen, which helped highlight opportunities to make gardening-based food security initiatives more inclusive and effective for marginalized communities. These experiences, along with my hands-on knowledge in horticulture and pest management, led me to pursue an interdisciplinary approach to plant health—one that values diagnostics, sustainability, and community engagement.

Now, as a Doctor of Plant Health (DPH) student at the University of Nebraska–Lincoln, I'm expanding my expertise in integrated pest management, plant pathology, soil health, and sustainable production systems. My goal is to apply practical, science-based solutions that improve agricultural resilience and support underserved communities by bridging the gap between academic research and real-world impact.

Todd Steinacher completed his undergraduate at Western Illinois University with a B.S. in Agronomy and his Master's degree in Crop Science from the University of Illinois.

In 2020, he was Illinois' Certified Crop Advisor of the Year, and was the International Certified Crop Advisor of the Year in 2021.

Todd has 20 years of industry experience as a sales agronomist and corn/soybean product manager.

He is currently starting his own company as an agronomic coach to help farmers improve yields, profits, and helping to train the next generation of crop advisors.

Meet Our New Students!

Genesis Thomas is an agricultural scientist from Durham, North Carolina. She earned her Bachelor of Science in Agriculture and Environmental Systems with a concentration in Land and Food Systems from North Carolina A&T State University. #AggiePride

As an undergraduate researcher, Genesis worked with Dr. Louis Jackai on sustainable pest management strategies for harlequin bugs. She also assisted a graduate student on pollinator studies examining which sweet potato varieties were most attractive to beneficial insects. She further expanded her research experience through a summer program at the University of Nebraska–Lincoln, where she worked in Dr. Ed Cahoon's plant biochemistry lab investigating Eceriferum (CER) genes involved in polyacetylene biosynthesis in carrots.

Genesis also gained extensive field and production experience through her work on the university student farm and in the campus greenhouse. These roles deepened her understanding of the connections between plant health, sustainable systems, and applied agricultural practice.

In addition to her research and fieldwork, Genesis founded Aggies Go Green, a student-led organization dedicated to introducing peers from all majors to agriculture through hands-on experiences in farming, beekeeping, and sustainability. Her leadership in creating inclusive spaces for agricultural engagement reflects her passion for representation and accessibility in the field.

Genesis's academic training, research, and leadership experiences position her to contribute to the advancement of global agricultural systems. She is particularly motivated to pursue graduate study that integrates plant health, biotechnology, and sustainability while also inspiring others—especially students who share her background—to see that they, too, belong in agriculture.

Hello! I'm **Kenzie Long**, and I'm excited to share a bit about myself.
I grew up in Gillette, Wyoming, but I now consider Nebraska my home. I was a transfer student to Nebraska Wesleyan University, where I earned a Bachelor of Arts in Biology with a minor in Chemistry. During my time in Lincoln, I have had the opportunity to conduct undergraduate research at the University of Nebraska–Lincoln, focusing on capsaicinoid production in *Capsicum annuum*.

At Wesleyan, I managed the campus greenhouse and helped revive the Green-house Club, fostering a renewed interest in plant care and sustainability among students.

I'm now pursuing the Doctor of Plant Health (DPH) program, drawn by its comprehensive approach to plant disease and management, and the invaluable hands-on experience it offers. I'm also pairing this with a Master's in Plant Breeding and Genetics to deepen my expertise.

My goal is to apply the knowledge and skills I gain toward advancing agricultural research, particularly in improving field crop resilience and productivity.

Scott Womack is an experienced farm manager with a diverse background in orchard and field crop production, specializing in walnuts, almonds, and rice. He has overseen large-scale operations in Northern California, managing all aspects of production from irrigation and fertility programs to pest and disease management, harvest logistics, and crew leadership.

As a licensed Pest Control Advisor (PCA) and Certified Crop Adviser (CCA), Scott brings both regulatory expertise and agronomic insight to his work. His licensure highlights his ability to design integrated crop management programs that align with California's rigorous agricultural standards while supporting long-term soil health and crop productivity. (*continued on next page…)*

Meet Our New Students!

(...continued from previous page) In addition to management, Scott has conducted fertility research in California rice production, focusing on nutrient efficiency, nitrogen source comparisons, and sustainable input strategies. This research background enhances his ability to integrate evidence-based recommendations into practical farm applications.

With hands-on knowledge of orchard crops and rice systems, Scott has developed expertise in precision agriculture, nutrient management, and sustainable farming practices. His ability to combine technical agronomy with practical field solutions has earned him recognition as a trusted leader in crop production across multiple commodities in the Sacramento Valley.

Tyrus Nygudor Mangblin is from Nimba County, Northeastern Liberia. Before joining the Doctor of Plant Health program, he found himself in the academic environments working with students developing their career in agriculture. Based on his passion in working more with students, he was appointed as the Acting Dean of the College of Agriculture, Forestry and Natural Resources Management at the United Methodist University in Liberia.

He is an exceptionally well-experienced Agriculturist, with more than five years' working experience as a practical agriculture teacher and an Extension officer.

He holds a Master's degree in Crop Science from Njala University in Sierra Leone in February of 2024. A Bachelor's degree in General Agriculture from William V. S. Tubman University in Liberia, graduating in June of 2019. An Associate degree in General Agriculture from the Nimba County Community college, now Nimba University, also in Liberia.

Additionally, he holds diplomas and certificates in Horticulture and Irrigation from Agro-Studies-the Agriculture Capacity Building Training program on Kfar Silver University Campus in Ashkelon, Israel.

While he benefited greatly from his education and professional experiences so far, he aspires to become part of the academic community that is studying plant pathology, entomology, agronomy, and leadership; thus, his motivation for pursuing the Doctor of Plant Health program.

Tyrus is interested in working more with farmers and communities, to develop sustainable pest and disease management strategies, improve food security, reduce yield losses, and promoting environmentally sound agricultural practices.

Plant Health Impact: Alex Angel

By Nebraska Institute of Agriculture & Natural Resources

https://instituteofagriculturenaturalresources.exposure.co/plant-health-impact-story-alex-angel

What led you to pursue a Doctorate of Plant Health in the Plant Health Program at the University of Nebraska–Lincoln?
I was drawn to the Doctorate of Plant Health program because I consistently saw a critical gap in the agricultural industry: highly specialized experts often struggle with the bigger picture, while business and policy leaders can miss on-the-ground technical realities. The DPH program at UNL is uniquely designed to bridge that gap. It trains you to be a 'systems thinker,' integrating science, policy, economics, and on-farm application to solve complex problems. It was the perfect program to realize my ambition of facilitating the movement of agricultural technology on a global scale.

Can you describe your research or study area and the specific plant health challenge you're working to address?
My focus is on the strategy and practice of deploying novel agricultural technologies in complex, real-world environments. There is work being done by brilliant people every day to fight bugs, blights, and burrs, and I hope to bring those discoveries to global audiences. I do this by understanding the regulatory, legal, business, and technical landscape underpinning modern Agricultural Biotechnology. (*continued on next page...)*

(...continued from previous page) **Why is this specific plant health practice important, and how could it impact agriculture, natural resources, the environment, or society?**
The reality is that new agricultural innovations are overwhelmingly delivered to growers through the commercial market. By understanding and navigating this market effectively, we can accelerate the adoption of the most impactful tools. This has cascading benefits: it improves the economic stability of producers, reduces the environmental footprint of agriculture, and ultimately contributes to a more resilient and abundant food supply for a growing global population.

What is one experience from your work that you're especially proud of?
I'm particularly proud of the growth and impact I had during my residency with PowerPollen this past summer. The dynamic nature of the seed production season provided an opportunity to expand my role significantly beyond traditional agronomy. While managing a 130-field portfolio, I took the initiative to build the company's first commercial drone imagery program from the ground up, analyzing over 5,100 acres. My most critical function, however, was translating this vast amount of agronomic and geospatial data into over 100 clear, ' go/no -go ' strategic assessments that informed daily operational decisions. It was a defining experience that allowed me to apply my entire skillset, and I'm grateful to PowerPollen for the opportunity to take on such a high level of responsibility.

How have faculty, labs, or facilities at UNL supported your research, practice, or professional development?
The DPH program's greatest strength is its flexibility and its focus on empowering students to seize real-world opportunities. My advisor, Dr. Bradshaw, has been incredibly supportive of my ambitions. This philosophy is backed by tangible support, like the Raun Fellowship, which is funding my study abroad at Brazil's top agricultural university, ESALQ. This trust and flexibility is best exemplified by a one-day trip to Texas to meet with senior business leaders. I was invited by a rancher I connected with online, and the program gave me the freedom to fly down in the morning and be back by nightfall. That's the kind of agile, opportunity-driven learning UNL fosters.

Have you had opportunities to collaborate across disciplines or with industry or Extension? Tell us more about your Plant Health Residency and who you interned with this summer?
"Collaboration is the core of my work. My residency was with PowerPollen, an innovative Iowa-based ag-tech company. As I mentioned, I functioned as a lead agronomist and strategist, working daily with their C-suite, operations teams, and field crews. This experience is part of a pattern of cross-disciplinary work, from helping facilitate a collaboration between PowerPollen and Limagrain, a top European seed company in France, to working with rising Brazilian engineers at ESALQ on sustainable agriculture practices. The DPH program is all about breaking down silos, and my residencies have been the perfect platform to do that."

What are your career goals after completing your DPH?
My goal is to be a leader at the intersection of agricultural technology and international business. I want to be the person who can translate a complex scientific innovation for a board of directors, navigate the regulatory landscape of a new market like Brazil, and understand the agronomic realities a farmer faces in the field. I aim to build a career facilitating the global movement of technologies that make agriculture more productive, sustainable, and profitable.

How has your time in the Plant Health Program helped prepare you for your next steps?
The DPH program has given me a holistic, 'systems-level' toolkit. Instead of learning about just one pest or one disease, I've learned to analyze the entire agricultural ecosystem—the biology, the economics, the policy, and the human element. It was this multidisciplinary perspective that allowed me to step into a dynamic and fast-paced environment this summer and immediately see the strategic connections between a drone image, a soil sample, and a financial outcome.

What advice would you give to someone considering a DPH degree or a related field?
Make them tell you **'No.'** A surprising number of opportunities have opened up for me simply because I had the courage to ask. Schedule that call, ask for that coffee meeting, introduce yourself at a conference. Be genuinely curious about what other people are working on. Every conversation is a chance to learn and build a professional relationship that could open doors you never knew existed.

Outside of your studies, what do you enjoy doing or what keeps you grounded during graduate school?
While I am not working or studying, I spend my time in choir. I have been a bass singer for a number of years, and when directors find out about my range, they reach out I also enjoy fishing and sailing on the reservoirs near Lincoln.

Plant Health Impact: Lilly Buchholz

By Nebraska Institute of Agriculture & Natural Resources

https://instituteofagriculturenaturalresources.exposure.co/plant-health-impact-storynbsplilly-buchholz

What led you to pursue a Doctorate of Plant Health in the Plant Health Program at the University of Nebraska–Lincoln?
I have always had an interest in Agriculture and plant biology. I started my undergraduate as an Agronomy major and switched to plant pathology after taking a few required plant path courses. I then went on to do a Master's in Plant Pathology where I found a love of plant diagnostics. I knew I was not done learning so when talking with professors about my next steps, the Doctor of Plant Health program was brought to my attention, and I knew it would be the right program for me. I am interested in so many aspects of plant health and trying to pick just one topic to study was not what I wanted to do. The Doctor of Plant Health program allows me to gain as much knowledge and experience in all the fields related to plant health as I want.

Can you describe your research or study area and the specific plant health challenge you're working to address?
I am most interested in plant diagnostics. I am currently working on my first internship in the UNL plant and pest diagnostic clinic. I have always found the process of identifying and isolating plant pathogens to be fun and interesting. I have learned so much about agriculture in Nebraska and how to identify and manage some of the most common diseases of corn and soybeans.

Why is this specific plant health practice important, and how could it impact agriculture, natural resources, the environment, or society?
Plant diagnostics is very important to especially to growers but also to everyday people. If crops are lost to disease the grower loses money, and everyone loses out on the resources the crops produce such as food, fuel, and fiber. Quick, efficient, and accurate diagnosis of disease allows growers to treat problems before they get out of hand and result in major losses.

What is one experience from your work that you're especially proud of?
This summer in my internship I feel that I have really grown as a diagnostician. I feel that I have a better idea of the order of diagnosing and am able to identify common disease faster than when I had started. I know I still have a lot to learn but I am proud of the progress I have made this summer and look forward to continuing this work.

How have faculty, labs, or facilities at UNL supported your research, practice, or professional development?
Dr. Bradshaw, our program director, and Kelly White, our administrative assistant, are wonderful people and so helpful in connecting us with anyone we may need to know. Jeff has been especially wonderful at helping us all find internships that fit our career goals. Each student in the DPH program must invite a committee of UNL faculty, staff, and outside professionals to advise us through our program. Networking is very important in the DPH program, so we are always able to meet new people in industry, extension, and academia. In short, everyone is very supportive and helpful when it comes to helping us students achieve our goals.

Have you had opportunities to collaborate across disciplines or with industry or Extension? Tell us more about your Plant Health Residency and who you interned with this summer?
I have been able to work in two labs while in the Doctor of Plant Health program so far. I worked in an Entomology Lab for the first year I was in Lincoln and then started my first internship and am continuing in the diagnostic clinic through the next semester. Both positions have given me the chance to speak with professionals in industry and extension agents. With my internship in the plant and pest diagnostic clinic, we occasionally get sent samples of pest problems. Usually, they are insect problems, but it is nice to keep up with my entomology every now and then. I have also been presented with the opportunity to TA for a Horticulture class in an upcoming semester. There is no shortage of opportunities to learn outside of the classroom in any of the plant health related fields if you want to do so. (*continued on next page…)*

(...continued from previous page) **Have you had opportunities to collaborate across disciplines or with industry or Extension? Tell us more about your Plant Health Residency and who you interned with this summer?**
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What are your career goals after completing your DPH?
I would like to continue in diagnostics. My internships have been a great experience and have allowed me to see what a diagnostician does day-to-day, and I have been thoroughly enjoying it.

How has your time in the Plant Health Program helped prepare you for your next steps?
The Plant Health Program can be designed to fit your specific interests so no matter what you want to do as a career, the program can be shaped to support learning and growing towards that goal. I have been able to choose more diagnostics classes and then choose diagnostics internships that allow me to get the knowledge and experience needed to pursue my goals.

What advice would you give to someone considering a DPH degree or a related field?
I would encourage anyone thinking about the DPH program to really think about what they want to do day to day. A traditional PhD will give you very specific knowledge and experience but if you are more interested in a lot of areas of study, the DPH may be the right choice for you! We are all so happy to talk about the program so if anyone is considering a DPH or just wants to know more about the program, please reach out to use and ask questions!

Outside of your studies, what do you enjoy doing or what keeps you grounded during graduate school?
When I get to be at home, I enjoy watching movies with my husband and our two cats. I am currently trying to get back into reading for fun. I do so much reading for school and at work, but I am trying to read more fun and fictional stuff after hours. I also really enjoy cooking and baking. I do what I can to relax and enjoy my down time.

Plant Health Impact: Thomas Wilbur Davis

By Nebraska Institute of Agriculture & Natural Resources

https://instituteofagriculturenaturalresources.exposure.co/plant-health-impact-story-thomas-wilbur-davis

What led you to pursue a Doctorate of Plant Health in the Plant Health Program at the University of Nebraska–Lincoln?
I just wanted to do what I like and have passion for, which is – ensuring food security. I wanted to actively contribute to something that is of concern to me and to others. So, my path to the Doctorate of Plant Health (DPH) stems from my deep concern about current and future food production challenges. Having completed my BSc in General Agriculture and my MSc in Horticultural Science, I became more aware of the escalating factors threatening global food production such as plant pests, diseases, and climate change. When I made the decision for further studies, there was no better choice than a DPH degree due to its interdisciplinary nature and scope that accommodate different career goals and aspirations across the plant sciences. I was mainly impressed by the fact that students can tailor part of their program (like the residency period) such that it meets their goals.

Can you describe your research or study area and the specific plant health challenge you're working to address?
My research focuses on creating nutrient (fertility) management system that determines optimal nutrient combinations that suppress titers of wheat streak mosaic virus in wheat plants. The approach being used integrates plant pathology, soil fertility, and crop physiology. (*continued on next page...)*

(...continued from previous page) Basically, I'm employing hyperspectral remote sensing technologies for analyzing spectral reflectance indices as biomarkers of physiological stress responses in virus infected and uninfected wheat plants across fertility rates. Then use serological assays and quantitative molecular diagnostic techniques to quantify viral titers in the wheat plants. This analytical framework enables the characterization of nutrient-pathogen-host interactions at the cellular and physiological levels, which is intended to facilitate the development of evidence-based fertility management protocols that effectively reduce viral impact while increasing yield and ensuring environmental safety. This research addresses pressing food security challenges at both national and global scales, given that disease pressure constitutes a primary limiting factor in wheat production systems across the United States and internationally. This work also tackles environmental sustainability issues since it promotes management practices that ensure productivity while minimizing ecological impact. Additionally, I also have ongoing work of similar applied nature with corn that I started in 2024.

Why is this specific plant health practice important, and how could it impact agriculture, natural resources, the environment, or society?
This work is important because, according to the Crop Protection Network, wheat diseases reduced wheat yields significantly across surveyed states in the U.S. in 2024, and the wheat streak mosaic virus complex alone caused millions of bushels in losses. This is a major threat to food production and food security in the face of increasing population. My research directly targets this major threat. My work could impact society by helping to reverse the millions of bushels that are lost as well as the declining wheat production trends and ensure profitability of producers and wheat availability for consumers. In short and clear terms, this work can help reduce the cost of our breakfast!

What is one experience from your work that you're especially proud of?
Engaging with the public - like sharing my work with both the scientific community and the general public is what I'm most proud of. Presenting my work recently at the 2025 American Society of Plant Biologist conference in Milwaukee, Wisconsin was one of experiences. During the conference, I served as a volunteer for Plant Science Saturday, where we engaged kids, farmers, and the general public through hands-on activities that educate and spread knowledge about plants. I also actively participate in field days and outreach programs where I share findings from my research and collaborative work directly with growers and stakeholders. These public engagements afford me the opportunity to learn in some ways, but most importantly, they bridge the gap between academic research and practical application, making plant science accessible to diverse audiences while contributing to both scientific discourse and community education.

How have faculty, labs, or facilities at UNL supported your research, practice, or professional development?
The faculty and advisors have been extremely supportive in all ways possible. Additionally, the facilities at UNL have been essential for my research. I have been using the Arthropod Vectors of Plant Pathogen Lab in the Department of Entomology to perform for molecular work and gotten remote sensing equipment from the Center for Advanced Land Management Information Technologies (CALMIT) / UNL School of Natural Resources. The equipment and facilities have been helpful to my research, which simply cannot be effectively conducted without this support.

Have you had opportunities to collaborate across disciplines or with industry or Extension? Tell us more about your Plant Health Residency and who you interned with this summer?
Since 2023, I've been collaborating with the Arthropod Vectors of Plant Pathogen Lab in the Department of Entomology. In this collaboration, I'm contributing to research work investigating the prevalence of aphid species and their associated strains of Barley Yellow Dwarf Virus through controlled experiments, field trials, and grower field sampling across Nebraska. I also assist conducting bioassays and helping with outreach programs for growers in Nebraska and the general public. For my Plant Health Residency this summer, I interned with aerialPLOT. This internship provided invaluable hands-on experience in precision agriculture technologies. My responsibilities included supporting drone pilots in collecting multispectral imagery across Nebraska and Iowa field sites, processing and analyzing UAV imagery data using specialized software tools and performing digital phenotyping analysis on collected imagery. (*continued on next page...)*

(...continued from previous page) **What are your career goals after completing your DPH?**
My plan is to contribute to ensuring food security. I aim to work in either the public or private sector, where I can apply my knowledge to solve complex agricultural challenges and help farmers optimize their production systems while maintaining environmental sustainability. I would like to use my research to solve real-world problems for farmers. Additionally, I hope to establish a consultancy that will provide services to farmers in the future.

How has your time in the Plant Health Program helped prepare you for your next steps?
The DPH program has provided me with the knowledge that integrates multiple agricultural specializations. Through my research and collaborations, I've gained practical experience in plant pathology, soil fertility, crop physiology, and entomology. I'm also actively attending and contributing to conferences/meetings organized by bodies like the American Society of Plant Biologists, American Phytopathological Society, the National Alliance of Independent Crop Consultants and meeting people who are doing similar things. These experiences have helped me gain insights from researchers, growers, and crop consultants, and are preparing me for my next steps after graduation. So, yes! My time in the program has prepared me to actively contribute to agriculture and food security as well as give me the tools and network needed to achieve my goals.

What advice would you give to someone considering a DPH degree or a related field?
I would advise them to be prepared for intense, interdisciplinary coursework that integrates multiple plant science disciplines. The DPH program is unique because it requires you to think across traditional boundaries. Take full advantage of the experiential learning opportunities, especially the required internship, as this hands-on experience is where you'll truly learn to apply your knowledge in real-world settings. It is also an opportunity to connect with people who are already doing some of the things you are learning! The workload is demanding, but the breadth of knowledge you'll gain prepares you to tackle complex plant health challenges that single-discipline approaches can't address.

Outside of your studies, what do you enjoy doing or what keeps you grounded during graduate school?
Outside of my studies, I really enjoy engaging with the International Student Fellowship (ISF) here at UNL. It's been a good time sharing my Liberian culture with friends from around the world while learning about their diverse backgrounds and traditions. I've participated in several of their cultural exchange events, which create meaningful connections across different nationalities. I've also taken time to join them for Bible study sessions, which I enjoy and find grounding during the demands of graduate school.

Plant Health Impact: Garrett Kuss

By Nebraska Institute of Agriculture & Natural Resources

https://instituteofagriculturenaturalresources.exposure.co/plant-health-impact-story-garrett-kuss

What led you to pursue a Doctorate of Plant Health in the Plant Health Program at the University of Nebraska–Lincoln?
The opportunity to pursue a higher degree that lets me develop a broad and deep understanding of agriculture while still working in industry and building my applied skills.

Can you describe your research and the specific plant health challenge you're working to address?
My residencies so far have been done with Corteva Agriscience focused on field research and developing trials to test the efficacy of new products for federal registration. I have been working with a team in the central valley of California focused mostly on perennial crops such as grapes and almonds.

Why is this research important, and how could it impact agriculture, the environment, or society?
For farmers to continue to be successful we need to continue providing them with cutting edge chemistry and tools to produce better yields and be better stewards of the environment with safer products.

What is one experience from your work that you're especially proud of?
I have enjoyed providing technical support to growers and sales teams. On top of my research, I have also had the opportunity both in classes and internships do work with diagnostic teams to solve issues as they arise.
(*continued on next page...*)

(...continued from previous page) **How have faculty, labs, or facilities at UNL supported your research and professional development?**
UNL is uniquely qualified to have a program such as the DPH specifically because we have such great labs, classes, and instructors in all of the major disciplines. I believe that classes can only get you so far when trying to understand a new topic, so having access to such broad hands on learning opportunities sets UNL apart.

Have you had opportunities to collaborate across disciplines or with industry or Extension? Tell us more about your Plant Health Residency and who you interned with this summer?
One of my favorite parts of the DPH is taking classes and interacting with grad students across disciplines. My average day can include a class in the entomology building then walking to a remote sensing class and ending with a group project in plant pathology. Challenges in today's industry are becoming more complex and the best way to approach them is from a interdisciplinary perspective. This summer I worked out of Bakersfield, California establishing a new satellite research site for Corteva in partnership with an existing UC extension farm. Being a part of this new project was rewarding as well as difficult. Most questions and issues that came up had no precedent and had to be solved as they happened. This led to a lot of work but kept the day interesting and engaging!

What are your career goals after completing your DPH?
I would like to continue working in field research as well as provide technical support to growers, diagnosing problems they might have and work to save fields and yields for farmers.

How has your time in the Plant Health Program helped prepare you for your next steps?
The Plant Health program has prepared me to tackle any problem that might be thrown my way in my future and provided critical skills to research any issue. I may not know the answer too immediately. I have also been able to meet some fantastic people through the program and have developed a relationship with people across the country that I would not have had the chance to meet without the help of the DPH program.

What advice would you give to someone considering a DPH or a related field?
This program is made for people that not only want to know how one thing works, but how everything works together. People that excel in the DPH are problem solvers that seek unconventional solutions. If any of that sounds like you, I would encourage you to reach out!

Outside of your research, what do you enjoy doing or what keeps you grounded during graduate school?
When I am not at work or school you can usually find me near a lake! I love fishing and kayaking and taking any excuse to travel to new places.

Plant Health Impact: Tyler Prow

By Nebraska Institute of Agriculture & Natural Resources
https://instituteofagriculturenaturalresources.exposure.co/plant-health-impact-story-tyler-prow

What led you to pursue a Doctorate of Plant Health in the Plant Health Program at the University of Nebraska–Lincoln?
I initially looked at M.S and PhD programs when I decided I wanted to go back to school. What sold me on DPH over other degree programs was its interdisciplinary and practice-focused approach. As someone with broad academic interests and career goals outside of research, this suited me perfectly.

Can you describe your research or study area and the specific plant health challenge you're working to address?
My focus within the plant health realm is forest and urban trees. Much of my work to date has centered on invasive beetle pests of woody plants, and I love exploring the dynamics of prevention, detection, and control with invasive pests and diseases. I'm also interested in the use of GIS and remote sensing technologies as tools for forest health management.

Why is this specific plant health practice important, and how could it impact agriculture, natural resources, the environment, or society?
Trees provide us with timber resources, of course, but also wildlife habitat, clean air, shade, and aesthetic value. As human activities further shape our planet, novel pests and disease problems will continue to threaten the health of forest ecosystems. (*continued on next page...)*

(...continued from previous page) **Why is this specific plant health practice important, and how could it impact agriculture, natural resources, the environment, or society?**
Trees provide us with timber resources, of course, but also wildlife habitat, clean air, shade, and aesthetic value. As human activities further shape our planet, novel pests and disease problems will continue to threaten the health of forest ecosystems.

What is one experience from your work that you're especially proud of?
I'm the teaching assistant for Dendrology (NRES 201) with Ann Powers. I enjoy walking around East Campus with a gaggle of students who are (mostly) eager to hear me gab on about trees. When I took Dendrology at UNL as a wee undergrad back in 2019, it kickstarted my love for trees. So, it feels very full-circle to me.

How have faculty, labs, or facilities at UNL supported your research, practice, or professional development?
The Regional & Community Forestry faculty in SNR are simply the best. Ann Powers, whom I TA for, has been an amazing source of knowledge, guidance, and connections through the years. Dr. Lord Ameyaw, my co-advisor, has a wealth of forestry expertise and is graciously guiding me through my research practicum. I need also to thank the Nebraska Forest Service for supporting my ability to work with them!

Have you had opportunities to collaborate across disciplines or with industry or Extension? Tell us more about your Plant Health Residency and who you interned with this summer?
This summer, I spent my first plant health residency with Vineland Tree Care in Minneapolis, Minnesota. Specifically, I've been working in Vineland's plant healthcare division under the tutelage of Aaron Dickinson. Throughout the summer, I've had opportunities to implement all sorts of pest and disease treatments including trunk injections, foliar sprays, and root-applied products. Aaron is a big proponent of a soil-first approach to plant healthcare, so AirSpade soil excavations and liquid soil care have also been keystones of my experience. I've enjoyed Vineland's holistic approach to tree health and the chance to work with and learn from some truly fantastic folks.

What are your career goals after completing your DPH?
I want to continue my focus on tree health, either as a consulting arborist, agency forest health specialist, or in some other role!

How has your time in the Plant Health Program helped prepare you for your next steps?
Due to its interdisciplinary approach, DPH has forced me to think outside the forestry box. With formal training in entomology, plant pathology, and soil science, I have the knowledge and tools to relate topics across disciplines and solve problems in new, interesting ways.

What advice would you give to someone considering a DPH degree or a related field?
Do it! DPH has an invaluable niche to fill in plant-related industries. I like the analogy that doctors of plant health are to plant science as veterinarians are to animal science— and we need vets! Just be prepared to explain what DPH is to your friends, family, and coworkers (a lot).

Outside of your studies, what do you enjoy doing or what keeps you grounded during graduate school?
I would be nothing if it weren't for the endless love and support of my incredible wife Amara. I also enjoy cooking, houseplants, and pub trivia.

Congratulations to Jae Horn on completing her Master's in Entomology here at UNL!

Mentored by Dr. Judy Wu-Smart

Student Updates

Josh Villazana: A lot has changed for Josh in the last year. He switched roles from an Agricultural Inspection Specialist with the Nebraska Department of Agriculture to Nebraska Extension's statewide educator as the Pesticide Safety Education Program Coordinator. He is responsible for helping farmers, commercial applicators, chemigation applicators, and industry professionals use pesticides safely, legally, and effectively by designing and delivering certification trainings. To learn more, go to this website https://pested.unl.edu/.

In April, he was awarded the Educational Project Award through the North Central Branch of the Entomological Society of America for a Forensic Bugman education video as Dr. Kyle Lawsen, a forensic entomologist.

A favorite class he took this semester was human dimensions of natural resources taught by Mark Burbach and found what he learned about wicked problems and tragedy of the commons captivating.

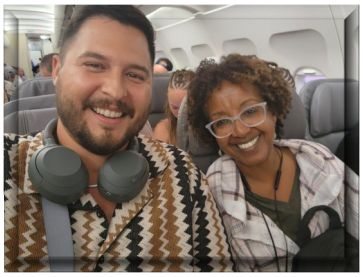
Before he started his new role, he made a pit stop back home in the Rio Grande Valley to meet with some passionate South Texans and their specialty crop farms and Agave fields.

A few highlights in the past year include:

At Ancestral Craft Spirits with owner Leonardo Sanchez, one of the founders of Blasfemus an agave based spirit out of Roma Texas - FEBRUARY

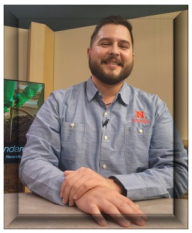
Talking to the public at East Campus Discovery Days about hazards of pesticides & proper PPE. - AUGUST

Presenting pesticide safety practices at the Nebraska mosquito & vector control association @ Sandhills Global Event Center, Lincoln, NE

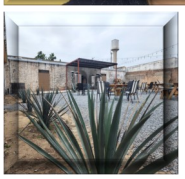


An unplanned flight from the Houston airport with the Agro/Hort Dept. Head Martha Mamo - JULY

Brownsville Wellness Coalition specialty crop farm with Farmer Dave.



In Gulfport, MS with the PSEP team attending the annual National American Association of Pesticide Safety Educators - JULY



EXTENSION
Pesticide Safety
Education Program

Student Updates

Lilly Buchholz: This semester has been a busy one! I took a lot of interesting classes that were a little more out of my typical plant health zone and they proved to be very time consuming. I have also continued working in the Plant and Pest Diagnostic Clinic after my internship ended this summer. I have been loving it and as the samples slow down, I am able to spend more time learning more about specific diseases and diagnostic tools. I also had my first doctoral committee meeting this semester. My committee and I were able to come up with some really great ideas for my doctoral document and goals for the last few semesters of my program.

Outside of school and work, my husband and I took a mini honeymoon to Colorado and spent a long weekend in Estes Park and Denver. We visited the Stanley Hotel that influenced my husband's favorite book and hiked in Rocky Mountain National Park. In November I celebrated my birthday with friends at a redhead party. Everyone came dressed as their favorite redhead character and we played games and had a bonfire. I have created a '30 Before 30' list (30 things I want to do in the year before I turn 30) and I am looking forward to completing it over the next year. It includes things like visiting 5 states, going to different sports games, and eating a footlong corndog. My husband and I visited some friends and family in Minnesota for Thanksgiving and had a really great time! Unfortunately, the Badgers lost to the Gophers, but we still had a good time tailgating in a snowstorm! I am looking forward to winter break and some time to relax. We will be heading home to Wisconsin for the holidays and I can't wait!

In October I had the privilege of competing in the UNL-Bayer Hackathon! I had never heard of a Hackathon before and had no idea what to expect. I had assumed that it would include solving real life agriculture problems and collaborating with other students in related fields. Little did I know that was not the whole idea. I was assigned to a group of students I did not know and given a real-life statistical dataset. I am not familiar with statistical programming so this was a very intimidating project. Thankfully, I had an amazing team of smart and creative people, and we were able to work through the problem over the weekend. We gave our final presentation and won second place overall! I learned a lot from this experience and am thankful to have gotten the chance to work on real life data problems and meet new people.

Chris Dourte: As the first step into my academic and professional career, this has been both a challenging and rewarding semester. My overall experience was great and the transition from new student to husker family was quickly made. I also completed and submitted my thesis at Oregon State University over the term. It is currently awaiting final approval and publication, marking a meaningful milestone as I transition fully into graduate-level training here in the DPH program.

Engaging with faculty and peers across disciplines reinforced how interconnected plant health challenges are, spanning entomology, plant pathology, weed science, and beyond. These discussions highlighted the importance of interdisciplinary solutions to complex food and agricultural issues. While the pace of graduate-level coursework was demanding, it reinforced my confidence and clarified my long-term goals.

Overall, my first term at UNL confirmed that I am in the right place “Go Big Red.” The program has already sharpened my analytical thinking and strengthened my commitment to applied research, extension, and community-focused problem solving in the plant health field as I continue my training.

Student Updates

Garrett Kuss: Fall 2025 has been a whirlwind! As I wrap up my third year of the DPH program, the finish line is coming into view.

I am still finding new firsts and have just returned from my first science societies conference in Salt Lake City, UT, where I met with old colleagues and attended several presentations on developing research in soil science and agronomy. I am constantly reminded of how exciting a time it is to be in agriculture, with all the great innovation happening across the country.

I also chaperoned the agronomy club for the undergrad portion of the conference and cheered them on as they competed in the crops contest and the emerging issues in agriculture competition.

Classes continue to go well. What began as a semester filled with some hesitation (thanks to statistics and nematology courses outside my comfort zone) has turned into one of my favorite schedules yet. My lab skills have grown significantly, and I've had the opportunity to sharpen both my crop diagnostic and statistical abilities through subjects I hadn't revisited in lecture in quite some time.

Outside of classes and conventions, this semester has been filled with celebrations. My advisor, Don Lee, celebrated his retirement after 36 years with the university! I know that I, and many other graduate students over the years, would not be as successful without his professional guidance and infectious optimism. I wish him and his wife, Becky, an incredible retirement!

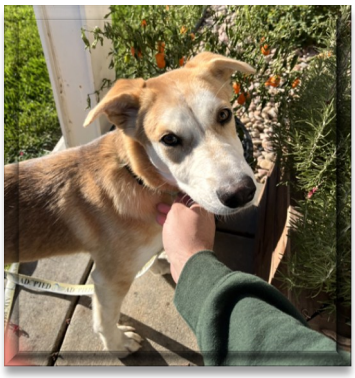
I would love to congratulate Thomas and Jae on successfully defending their doctorate's and master's respectively. Seeing the work they have put in over the years, there was no doubt in my mind they would do fantastic. I can't wait to see what they do next.

As everyone is in their mid-20s, weekends have been filled with weddings, and this fall was no exception. Congrats to all my friends!

Finally, as I prepare for my comprehensive exams and begin work on my doctoral paper, please keep me in mind and reach out with any opportunities in field research or technical support roles you may know of. Graduation is right around the corner, and I'm excited to get to work.

Tyler Prow: This semester was my third serving as TA for the undergraduate Dendrology course. I had a great group of students, and I loved the opportunity to inform and opine about our trees in the Midwest. This was my fourth year guest lecturing in Dendrology about the trees of Hawai'i. How time flies!

I also launched into my research practicum, seeking to corroborate spectral data from our campus ash trees with on-the-ground health assessments. Visual assessments and branch sampling were completed during the fall, and now it's time to process samples and data.



Personally, this semester was a big one as my wife and I welcomed a new puppy into our home. Her name is Dilly (short for Dill Pickle), and she's part German shepherd, part hurricane. She's very sweet and playful, with lots of puppy energy! I'm looking forward to a simpler spring semester and a Husker bowl game!

Student Updates

Alex Angel spent his fall semester balancing coursework, teaching, and a whirlwind of travel that took him from California to Belgium to Spain.

The semester began with a transition out of his summer internship and into preparation for the final stretch of the Doctor of Plant Health program. That preparation included two notable conference appearances.

First, Alex attended the SVG Thrive Global Impact Summit in the Bay Area. The two-day event brought together investors and startup entrepreneurs to discuss the latest in agricultural technology and explore funding opportunities. While on the Stanford campus, Alex spotted something unexpected: corn. It may have been the only corn growing in the region, and he was not about to walk past without documenting it. You can't hide corn from a Husker!

From California, Alex flew to Ghent, Belgium, for the International Society for Biosafety Research biannual symposium. There, he connected with scientists, regulators, and business professionals focused on the global movement and transport of agricultural products. He also made a stop in Spain to meet with colleagues at the University of Barcelona, where he conducted soil sampling and organic matter analysis.

Back in Lincoln, Alex taught two full sections of LIFE 121 this semester. A record 48 students enrolled in his class, and he described this group as some of the liveliest and most fun he has taught in years. On the personal side, Alex completed a long-running goal this fall: visiting every county in Nebraska. The Cornhusker State now joins eleven others on his list of states where he has set foot in every county.

This spring, Alex will enter his final semester in the DPH program. He plans to spend the term overseas, drafting his doctoral document while working on Spanish language acquisition. He sees this international experience as a stepping stone toward a career in international agribusiness.

Thomas Wilbur Davis was recently featured in the latest issue of Phytopathology News

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Awards

I am honored to have been selected as the 2025 recipient of the J. Artie and Arra Browning Plant Medicine and Health Travel Fund. This award supported my participation in the Plant Biology 2025 Conference in Milwaukee, WI, where I presented my work "Field Validation of Emerging Technology for Corn Nutrient Status Assessment." My research compares traditional and emerging methods of assessing nitrogen status in corn, including visual assessments, laboratory tissue sampling, and real-time technologies such as the Picketa System. Presenting these findings allowed me to share evidence-based guidance that can help farmers make better nitrogen management decisions, optimizing fertilizer use while safeguarding productivity and environmental health. In addition to presenting, I volunteered for Plant Science Saturday, a public outreach event at Milwaukee's South Shore Farmers' Market. Engaging with farmers, consumers, and fellow attendees reinforced the importance of ensuring that both high-tech and traditional nutrient assessment methods remain accessible to producers with different resource levels, which is an essential step toward equitable agricultural outcomes. This award came at an important time as I near completion of the Doctor of Plant Health (DPH) program at the University of Nebraska–Lincoln. The professional development, networking, and new knowledge gained at the conference contribute directly to my long-term goal of expanding agricultural consulting, research and Extension services that promote food security and sustainability. I sincerely thank the APS Foundation and the Browning Plant Medicine and Health Travel Fund for making this experience possible.

—Thomas Wilbur Davis, Doctor of Plant Health Candidate, University of Nebraska–Lincoln

Congratulations, Thomas Wilbur Davis!

DOCTOR OF PLANT HEALTH

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