

# PathogeNews

Department of Plant Pathology  
2024 Annual Newsletter



DEPARTMENT OF PLANT PATHOLOGY

UNIVERSITY of NEBRASKA-LINCOLN



# WE ARE NEBRASKA



Here in the Department of Plant Pathology, we're big on making big impacts. Our passion lies in solving challenges at the microbial level that affect sustainable plant productivity. And we do it all while training the next generation of plant pathologists.

We'd love to hear how an advanced degree in plant pathology from UNL will benefit you.

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DEPARTMENT OF PLANT PATHOLOGY

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**Front cover photo:** This image from the Mangel lab shows *Sclerotinia sclerotiorum* (causal fungus of white mold in soybean and dry bean) apothecia (in a petri dish of sand) releasing their spores in a cloud. Spore release is triggered by lifting the lid of the dish. **Credit:** Rebecca Higgins and Mangel lab members

PathogeNews is an annual publication from UNL's Department of Plant Pathology.  
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Editor: Amber Hadenfeldt

All Lab Highlights were written by each respective PI. All photos are from faculty, staff, and students within the department, or from the UNL digital photo archive.





# Letter

**FROM THE HEAD OF THE DEPARTMENT  
DR. LOREN GIESLER**

Greetings from the Department of Plant Pathology at the University of Nebraska-Lincoln. In 2024, we had a year of continued growth in our lab teams, and our new faculty continued to expand their programs. This continues to be an exciting time of turnover in our department and new program development. Being one of only 11 Departments of Plant Pathology in the U.S., I am so very proud of our faculty, staff, and students who focus on our field of science.

This year, we are providing lab highlights from each program and spotlighting the success of all our team members. Our faculty conduct amazing work that collectively serves our three mission areas of extension, teaching, and research. The continuum of fundamental to applied research is clear among our team, and they all work to serve the greater mission of ensuring a sustainable and ample food and fiber supply to support our growing global population. This marked my sixth year as head of the department, and I continue to be humbled to serve in this capacity. Below are a few highlights from 2024.

- Dr. Thomas Powers was elected as a Fellow to the American Association for the Advancement of Science.
- Dr. James Van Etten was awarded the Louise Pound-George Howard Distinguished Career Award from UNL.
- Dr. Richard Wilson was awarded and named as a UNL Charles Bessey Professor.
- Our department supported 4 Ph.D. and 3 M.S. graduate degrees.
- Our students were recognized with 25+ local and national awards.
- Technologist Tim Harris received the Lambrecht Award – this award is the result of an endowed foundation in memory of Patricia Lambrecht (Technologist for Anne Vidaver).
- Faculty secured over 2.2 M in funding to support their programs in research and extension.
- Madilyn McKay, our Department Graduate Coordinator, received the Department Service Award.

The energy and forward focus in our department continues to be strong, and we built on this with our first-ever full department retreat in the fall 2024. Faculty, staff, and students worked together to build a collective vision of “Food Security for All People,” which we will do through our focused work to understand global challenges associated with sustainable plant productivity in the presence of plant pathogens and microbial communities while building expertise in plant health. Our faculty, staff, and students will contribute to this vision as we grow the next generation of professionals focused on this area of science. I look forward to seeing all that our plant pathology team will achieve to improve our Nebraska agricultural systems and sustainable landscapes for all to enjoy.

Wishing you all the best for the remainder of 2025!



# Letter

**FROM THE PLANT PATHOLOGY GRADUATE  
STUDENT ASSOCIATION PRESIDENT, NAWARAJ DULAL**

The Plant Pathology Graduate Student Association (PPGSA) consists of master’s and Ph.D. students from the plant pathology department. Our students work on a range of plant pathology projects, encompassing a large breadth of plant pathogens and plant diseases. This year has been about enhancing professional development by building connections, engaging with experts from various areas of plant pathology, engaging in extension and outreach activities, and participating in initiatives like the students’ journal club.

In the summer of 2024, students co-hosted a Plant Pathology booth at the East Campus Discovery Days, with the guidance and support of our Plant and Pest Diagnostic Clinic Coordinator, Kyle Broderick. This event provided students with the opportunity to enhance their communication skills and spread plant pathology literacy to the public. This is an excellent platform for students to engage with the community, understand what’s going on with plants in the field and backyard, share their expertise in plant pathology, expand knowledge beyond their research, and inspire and educate young minds about the fascinating world of plant sciences.

The PPGSA brings students together to connect, unwind, and build friendships by organizing a variety of socials, professional development events, and general meetings, both in-person and online when needed. We hosted an ice-cream social at the UNL Daily Store, pumpkin painting on Halloween, and a potluck for Friendsgiving while enjoying fun, lighthearted movies. In addition to social activities, PPGSA is dedicated to supporting students’ academic and professional growth. We hosted three engagement lunches during Fall 2024 focused on thriving in academia, advancing a career in industry, and scientific writing and manuscript preparation. Thanks to Dr. Stephen Wegulo, postdoctoral researchers in our department, and Dr. Brett Lynn for their valuable time and expertise. Another significant program this year was the students’ Journal club coordinated by Eric Parperides and advised by Dr. Teddy Garcia-Aroca. The club is hosted twice a month where a student leads a discussion of a research article of interest and is well received by the students.

All these activities and opportunities would not be possible without substantial effort from the 2024-2025 officer team: Shilu Dahal (Vice-President), David Kihoro Sirengo (Engagement Lunch Coordinator and Treasurer), Nisha Rokaya (Social Chair), Libia Gomez-Trejo (Secretary), Sapana Ghimire (GSA Representative), and Eric Parperides (Journal Club Coordinator).

Many thanks to the officer team, our dedicated faculty who have guided us, supportive staff, and to my fellow graduate students for their meaningful contribution to the club and common purpose.



# DEVELOPING OUR COLLECTIVE VISION AS A DEPARTMENT

On Monday, October 28, the department hosted our first-ever full department retreat for all faculty, staff, and graduate students with the goals of fostering connection and aligning our perspectives around a shared vision for the future. This milestone event brought together the entire department for a day of connection, collaboration, and reflection on our shared vision for the future.

## OUR VISION: Food security for all people

With expert facilitation by Kim Heller of Vezeto Consulting, we engaged in a series of energetic and thoughtful discussions centered around our strategic plan—examining our core values, long-term goals, and priorities as a department. The day was marked by open dialogue, collaborative exercises, and a strong sense of shared purpose.

One of the most meaningful moments came at the close of the retreat when each attendee contributed a written personal mission on a leaf as part of a collective art project. These leaves will be assembled into a tree and displayed in our main office as a lasting symbol of our unity and commitment to our mission.



Looking ahead, we will work to develop action steps to make progress towards our strategic plan throughout 2025. We are deeply grateful to everyone who participated and brought such

enthusiasm and thoughtfulness to the day. This retreat marked an important step in building a stronger, more connected community—one that is well-positioned to advance plant health and food security for all.

## OUR MISSION: with sustainable plant productivity in the presence of plant pathogens and microbial communities while building expertise in plant health



Department members at the Nebraska East Union following our Inagural Full Department Retreat

To understand global challenges associated

# PPGSA IN ACTION

## 2024-25 OFFICERS

- President:** Nawaraj Dulal
- Vice President:** Shilu Dahal
- Treasurer:** David Kihoro Sirengo
- Secretary:** Libia Gomez-Trejo
- GSA Representative:** Sapana Ghimire
- Social Chair:** Nisha Rokaya



ABOVE: 2023-24 PPGSA Officers (left to right): Nawaraj Dulal, Shilu Dahal, Sapana Ghimire, Nisha Rokaya, Libia Gomez-Trejo, and David Kihoro Sirengo



ABOVE: Students helped faculty the Plant Pathology booth at the UNL East Campus Discovery Days Farmers' Market in Summer 2024



ABOVE: Loren and Keryl Giesler hosted students for a day of holiday cookie decorating. RIGHT: Meeting up for ice cream at the UNL Dairy Store.



ABOVE: Students met with department post-docs for an engagement lunch in September 2024





# GRADUATE STUDENT EXPERIENCE IN 2024: LEARNING, EXPLORING, AND CONNECTING

By: Pratibha Karki, David Kihoro Sirengo, and Dr. Tamra Jackson-Ziems

## Spring Break Retreat 2024 (March 10-13, 2024)

The spring break retreat of 2024 was an amazing experience for us graduate students as we embarked on a four-day trip to St. Louis, Missouri, exploring the city's agricultural industry and career opportunities. The following were the highlights of the trip:

- Professional networking and engaging in discussions with St. Louis' agricultural food and technology innovation community at the 39 North plant science development area.
- Exploring cutting-edge plant science research at the Donald Danforth Plant



Graduate students and Dr. Giesler visit Donald Danforth Plant Science Center, St. Louis, Missouri

Science Center, with insights from scientists and a campus tour.

- Touring Bayer Crop Science's high-tech labs and facilities, connecting with industry professionals, and reconnecting with our alumnus, Dr. Margarita Marroquin Guzman

The group also bonded over the artistic wonders of the City Museum, golfing at TopGolf, admired the Gateway Arch, Basilica of Saint Louis, Missouri River, Missouri Botanical Garden, and enjoyed a light walk in the Forest Park. The trip to St. Louis was a fulfilling one, offering us a chance to explore academia and industry firsthand, build meaningful connections, and gain valuable



A group of graduate students and Dr. Loren Giesler in front of Bayer Crop Science during the spring break retreat in St. Louis, Missouri

insights to guide our future paths. Our sincere thanks to the department and PPGSA for the opportunity.

## Plant Disease Tour (June 3-7, 2024)

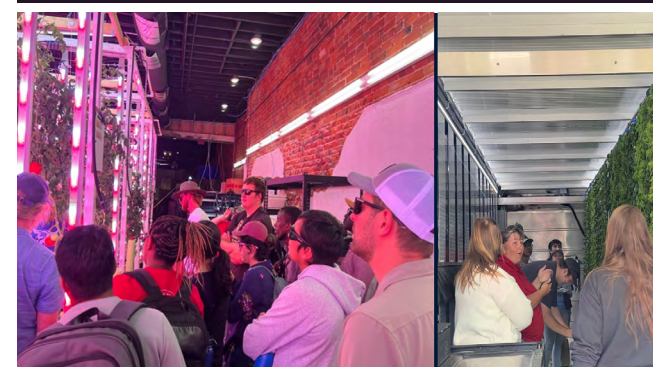
The 2024 Plant Disease Tour was an unforgettable blend of science, adventure, and friendship, offering graduate students from the Plant Pathology and Doctor of Plant Health programs a unique opportunity to explore Nebraska's diverse cropping systems and disease challenges. This summer course, led by Dr. Tamra Jackson-Ziems, alternates between western and eastern Nebraska annually. The year 2024 took us to the north and east parts of the state covering- UNL's Havelock Farm, Avert Vertical Cultivation, Lauritzen Gardens, MidPlains Ag, Lambert's Melon Farm, Ziems Farm, Shamrock Nursery, former O'Neill Ventures hydroponic tomato greenhouse, RDO Farms Potatoes, Zangger Popcorn Hybrids and a fascinating tour of the Ashfall Fossil Beds State Historical Park.

Throughout the trip, students engaged with producers, industry experts, and extension faculty, gaining insights into various crop management and disease threats. Science met hospitality when the visit to the Ziems farm featured a delightful evening filled with fun, food, and an impromptu soccer match. Special thanks to Dr. Tamra Jackson-Ziems, Dr. Stephen Wegulo, Amy Timmerman, Kyle Broderick, Dr. Jim Harbour, Brady Kappler, Bailey Liddick, Tiffany Hemenway, Tim Lambert, Katie Wrede, Paul Seger, Justine Gaukel, and all the producers, scientists, and community members who made this course truly extraordinary. This tour proved that while plant diseases may be serious business, learning about them can be an absolute blast!



Map highlighting the sites visited during the 2024 Plant Disease Tour in eastern Nebraska, including farms, research centers, and historical landmarks

Students learn about Avert Vertical Cultivation and Mid Plains Precision Ag during a visit in downtown Lincoln and eastern Nebraska



Kyle Broderick discusses tree diseases with students at Lauritzen Botanical Gardens in Omaha

Students learn about large-scale potato production at RDO Farms during the 2024 Plant Disease Tour



Amy Timmerman discusses pine wilt disease with students (left). Students explore Shamrock Nursery (right) during the 2024 Plant Disease Tour.



# GROWING OUR DEPARTMENT COMMUNITY

Three years after the Department Community Advisory Group was formed, our 2024 efforts focused on fostering connections within the department and creating opportunities to learn from one another. In March, we organized a presentation on cultural adjustment with Xiping (Kylie) Qiu, a licensed mental health practitioner from UNL's Counseling and Psychological Services. Kylie outlined the stages of cultural adjustment and led a discussion on healthy strategies for managing the adjustment process to prioritize well-being. The event was attended by a mix of faculty, staff, and students who learned how to better support department members in unfamiliar spaces.

In July, the Advisory Group reviewed results of our department's second climate survey. We were happy to hear that we have made significant progress as a community over the past two years. Comments repeatedly indicated a desire for us to continue with current efforts and community events. A popular event that we continued this year was the Culture Talks series. The spring semester Culture Talk focused on education, while the fall session spotlighted language. Both events filled the room to max capacity and gave everyone an opportunity to share their unique experiences and memories.

The Advisory Group continued to facilitate internal department awards. We were excited to see nominations for the Green Thumb award rise from 12 in 2023 to 20 in 2024. Congratulations to the following department members on receiving this award in recognition of their positive impact on our community.

- Mahnoor Asif, Ph.D. student
- Shilu Dahal, Ph.D. student
- Nawaraj Dulal, Ph.D. student
- Hernan Garcia-Ruiz, Associate Professor
- Cooper Hicks, undergraduate student worker
- Pratibha Karki, M.S. student
- Xin Zhi Khoo, M.S. student
- Dylan Mangel, Assistant Professor
- John McKendry, Lab Coordinator
- Amit Mitra, Associate Professor
- Kris Powers, Technologist
- Michael Richter, Ph.D. student
- Clemencia Rojas, Associate Professor
- Nisha Rokaya, Ph.D. student
- David Sirengo, Ph.D. student
- Inanc Soylu, Visiting Scholar
- Sudeep Tiwari, Post-Doctoral Research Associate

Right: Michael Richter receives the 2023 Annual Service Award from Department Head Loren Giesler at International Food Night.

### 2023 ANNUAL SERVICE AWARD

Michael Richter, who graduated with his Ph.D. in Fall 2024, was awarded the second annual department Service Award for his leadership, engagement, and consistent care towards department members. Michael was well known for checking on colleagues and generously sharing his time and talents.



# FRESH FACES



**Roshani Baral**  
Ph.D. Student



**Claudia Barrios**  
Technologist



**Dr. Kwang-Moon Cho**  
Post-Doc



**Bhanu Dangi**  
Technologist



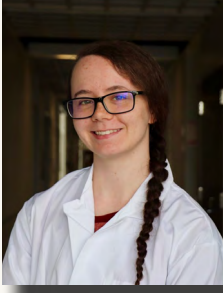
**Janis Fomba**  
Ph.D. Student



**Sujan Gautam**  
Ph.D. Student



**Libia Gomez-Trejo**  
Ph.D. Student



**Kiyara Grosz**  
Technician



**Minji Kang**  
Technologist



**Aryee McCabe**  
Technician



**Kelvin Muchiri**  
M.S. Student



**Dr. Kim Ha Nguyen**  
Post-Doc



**Ben Wheeler**  
M.S. Student



**Ryan Wichtendahl**  
Office Associate



**Jensen Wong**  
Ph.D. Student

Welcome to all new members of our department! We're happy you're here.



## 2024 LAB HIGHLIGHTS

2024 was an exciting year! Read on to learn about what was happening in our labs over the last 12 months.

### WILSON LAB



Left to right: Nawaraj Dulal (Ph.D. student), Jude Almquist (UCARE student), Nisha Rokaya (Ph.D. student), Sudeep Tiwari (post-doc), Dr. Rich Wilson (PI), Ben Wheeler (M.S. student)

This year, we said goodbye to Michael Richter, who both graduated in the Fall and published his first, first-author paper in *PLOS Pathogens* in 2024. UCARE student Josh Giesler also left the lab and moved on to the Ph.D. program at Penn State University, but we welcomed Master's student Ben Wheeler.

In 2024, PI Rich Wilson, was named Charles Bessey professor of Plant Pathology. I also started my first year as co-editor-in-chief of the journal *Fungal Genetics and Biology*. I continued to be an Academic Editor at *PLOS Pathogens*, and a Senior Editor at *MPMI*, where I am coordinating the focus issue "Fine Grain: Molecular, Cellular and Genomic Details of Cereal Crop Diseases."

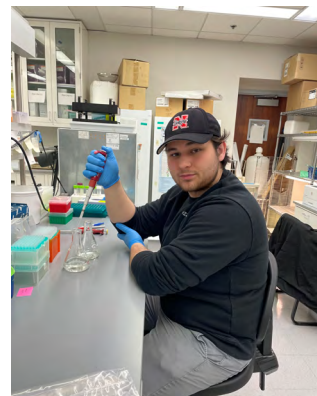
The PI and students gave oral presentations at numerous international meetings and venues in 2024, including at the 32nd Fungal Genetics conference and workshops in Asilomar, California (Wilson, Richter, Rokaya), at the Cellular and Molecular Biology Gordon

Conference in New Hampshire (Dulal), as the opening plenary speaker at the International Rice and Wheat Blast conference in Panama City (Wilson), as the International Keynote Speaker at the Sainsbury Laboratory Summer Conference in Plant-Microbe Interactions for Early Career Researchers, the Sainsbury Laboratory, UK (Wilson), and at seminars in UC-Davis, UW-Madison, and UC-Riverside (Wilson).

Previous work in the lab, a 2023 *Nature Microbiology* paper, was honored with the High Impact Publication Award at the December 2024 Agricultural Research Division Research Day.

We published three papers in 2024.

### ZENG LAB



Undergraduate student researcher, Zach Niemeyer

Plant diseases cause global crop production losses worth hundreds of billions of dollars annually. Plant genetic resistance is the most economical and environmentally sustainable strategy to combat this challenge. However, a significant knowledge gap remains in understanding the molecular mechanisms

underlying plant genetic resistance. Research in Dr. Zeng's lab aims to bridge this gap by investigating the roles of posttranslational

modifications (PTMs) in plant immunity. Over the past year, the lab focused on two key projects. The first examined the distinct roles of plant ubiquitin-activating enzymes (E1s) in immunity, revealing how these enzymes selectively charge a subset of ubiquitin-conjugating enzymes (E2s) to modulate immune responses. The second project explored how a specific RING-type E3 ligase regulates pattern-triggered immunity (PTI) by targeting two essential components of the endosomal sorting complex required for transport-I (ESCRT-I). These findings underscore the critical role of ubiquitination—a major PTM in plant, animal, and human cells—in plant defense against bacterial pathogens. With the conclusion of an NSF grant supporting this research, the Zeng lab is actively pursuing new extramural funding to further its discoveries. Beyond research, Dr. Zeng taught two courses in 2024—PLPT 418 Microbial Genetics and Genomics and PLPT 801 Biology of Plant Pathogens—earning highly positive student evaluations. Additionally, he has been actively recruiting student research assistants, with a new undergraduate researcher, Mr. Zach Niemeyer, set to join the lab in early 2025.

### SIGMON LAB

The Sigmon lab provides research opportunities for undergraduate students through a variety of different projects involving molecular biology, genetics, development and/or phenotyping abiotic and biotic stress responses in maize and sorghum. In 2024, Dr. Sigmon received recognition as a CASNR Honors Faculty Fellow for her work with undergraduate students in the Honors Program. Honors student Kevin Dockery completed his undergraduate thesis titled, "Using CRISPR-Cas9 gene editing to

investigate the function of six inflorescence candidate genes in sorghum." He also presented a poster at the Nebraska Plant Science Symposium and won 2nd place in the undergraduate poster presenter competition. Kevin graduated in May 2024 and has begun his Ph.D. program in Molecular Genetics at the University of Toronto. Claire Snodgrass received UCARE funding to investigate nonhost resistance to common rust in sorghum in collaboration with Dr. Saet-Byul Kim's lab. Claire was also selected for the competitive Summer Undergraduate Research Program at UNMC and is currently applying for graduate programs in biomedical research. Also, Microbiology major Sarah Massman completed an independent research project optimizing a protocol to collect phenotypic responses to common rust inoculation in sorghum during the summer of 2024. Sarah plans to attend a physician assistant program following graduation.

Right: Kevin Dockery celebrates his 2nd place undergraduate poster presenter award at the 2024 Nebraska Plant Science Symposium



### WEGULO LAB

The Wegulo Lab studies the epidemiology and integrated management of wheat diseases including Fusarium head blight (FHB) caused by *Fusarium graminearum* and bacterial streak caused by *Xanthomonas translucens* pv. *undulosa*. The lab has previously also participated in research on the wheat streak mosaic disease complex. Wheat and barley



2024 LAB HIGHLIGHTS

lines in the UNL small grains breeding program are screened for resistance to FHB, stem rust, and leaf rust. Field trials are conducted to evaluate the efficacy of fungicides in controlling head and foliar fungal diseases of wheat including FHB, leaf spots, and rusts. Extension activities include the development and delivery of clientele-targeted educational materials, participation in crop production clinics and field days, and annual wheat disease surveys. The lab is managed by research technologist Julie Stevens and is assisted by several student workers each year. Two new Ph.D. students, Janis Fomba and Sujun Gautam, joined the lab. In July, Wegulo delivered an invited talk at the 20th International Plant Protection Congress (IPPC) in Athens, Greece. The talk focused on the influence of climate change on FHB and associated mycotoxins. In July, Wegulo and Fomba attended the annual American Phytopathological Society (APS) meeting in Memphis, TN. In December, Wegulo attended the annual National Fusarium Head Blight Forum in Austin, TX and Mahnoor Asif graduated with a Ph.D. after spending three and a half years in the lab. Her dissertation title is “Effects of cultivars and fungicides on foliar fungal diseases and Fusarium head blight in winter wheat.”



Wegulo Lab in 2024. From left to right: Janis Fomba (Ph.D. student), Sujun Gautam (Ph.D. student), Dr. Stephen Wegulo (PI), Julie Stevens (technologist), and Mahnoor Asif (Ph.D. graduate)

POWERS LAB



Powers lab traveling panel art show, presented at the hotel gallery in Park City, Utah during the Society of Nematologists annual meeting, August 2024

It was a busy year in the Powers lab. There were four major Nematode projects that kept the ten members of the laboratory active. Entomopathogenic nematodes (EPNs) returned to the lab (Byron Adams received a Ph.D. in 1998 exploring native EPNs in the Nebraska Sandhills) with funding from USDA/NIFA, Nebraska Corn Board, Corteva, and USDA Enhanced Hatch programs. EPNs have a unique endosymbiotic bacterium that releases a range of toxic compounds when the infective juvenile stage of the nematode enters the insect host. Together with North Platte entomologist Dr. Julie Peterson, we are improving diagnostics by increasing the resolution of nematode identification in order to differentiate native nematode strains from commercial EPN nematode products. These EPN studies address questions of nematode strain persistence, infectivity, mortality, and distribution. A second major project, funded by NSF, focuses on the existence of unusually tolerant nematodes that reside in the high pH, high potassium sediments of the Alkaline Lakes in the Western Sandhills.

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Little is known about the nematode’s biology or ecology, and we hope that genomics will help reveal the key to their adaptability. Related species of these nematodes appeared in our third project, spearheaded by Dr. Peter Mullin, that followed the environmental consequences of the toxic effluent released into streams as a byproduct of an ill-conceived ethanol production enterprise near Mead, Nebraska. The fourth project, led by Ph.D. candidate David Sirengo, examines the biology of a native species of dagger nematode, a nematode that is capable of transmitting plant viruses, and has a mutualistic relationship with an obligate endosymbiotic bacterium. As a novel outreach component of our research, Becky Higgins has organized and designed a nematode art show, Unseen and Underfoot, that was displayed in three galleries in 2025. This effort introduced members of the general public to nematodes, the most abundant multicellular animals on earth.

pathogens, and viral genomics. Current projects focus on the early steps leading to gene silencing initiation and suppression; identification and characterization of susceptibility genes to plant viruses, and cellular siRNAs as determinants of defense responses to viral and non-viral pathogens. We implement an interdisciplinary approach that combines biochemical, genetic, genomic, and bioinformatic tools. We use experimental model systems that consist of positive- and negative-strand RNA viruses and model plants *Arabidopsis thaliana* and *Nicotiana benthamiana*, and heterologous host *Saccharomyces cerevisiae*. We are particularly interested in the mechanisms of Maize Lethal Necrosis disease and genome-wide variation in viruses. We have identified hypervariable regions in the genome of potyviruses, poleroviruses, orthotospoviruses, betacoronaviruses, and tobamoviruses. Hypervariable areas in viral genomes mediate adaptation to hosts and vectors without compromising functionality. The computational approach developed is a fundamental tool for profiling viruses of agricultural importance. Our findings have an immense impact on agriculture, such as molecular diagnostics and engineering of genetic resistance to viral diseases in plants. Our lab is housed at the Morrison Life Science Research Center and is part of the Nebraska Center for Virology. For more information, visit the Virus Genomics Laboratory website.

GARCIA-RUIZ LAB



Garcia-Ruiz lab members carrying out research in the lab in the Morrison Center for Virology

Research in our lab is focused on the basic mechanisms of plant-virus interactions, specifically antiviral gene silencing, induction and suppression of gene silencing by plant

ROJAS LAB

The Rojas Lab grew in 2024 and now has ten members with three post-docs (Thiago Maia, Kwang-Moon Cho, and Kim Ha Nguyen), three graduate students (Shilu Dahal, Sapana Ghimire, and Biwesh Ojha), two technicians (Aryee McCabe and Kiyara Grosz), and one



## 2024 LAB HIGHLIGHTS

lab coordinator (John McKendry). We were productive communicating our research findings. Shilu's research advancing the characterization of the antimicrobial activity of the environmental bacterium *Pseudomonas protegens* PBL3 was published in *Phytopathology*. For that project, Shilu received a grant from the National Strategic Research Institute, which is an extraordinary achievement for a graduate student. We also received funding for that project from the Agricultural Research Division and were jointly funded by the National Science Foundation and the National Institute for Food and Agriculture. Shilu presented a poster at the annual meeting of the American Phytopathological Society meeting in Memphis and at the Center for Plant Science Innovation retreat. Biwesh joined Shilu on that project developing methods to assess the mode of action of the *P. protegens* PBL3 secretome and evaluating its spectrum of activity. Biwesh presented a poster on these findings at the UNL Microbiology Symposium.

Thiago and Biwesh collaborated with Dr. Sophie Alvarez at the Proteomics and Metabolomics Core Facility to quantify the secretion of proteins to the apoplast when plants sense bacterial infections. We are ready to submit the manuscript reporting their findings. In the meantime, Kim Ha and Kwang-Moon are dissecting the subcellular trafficking pathways leading to protein secretion. Thiago also mentored two undergraduate students as part of the UNL Summer Research Program: Soren Ryan-Jensen from Centre College in Kentucky and Remi Christensen from UNL.

Sapana is making a lot of progress identifying genes that could confer resistance to bacterial infections when combined with high night temperatures. She presented a poster at the International Symposium of Rice Functional genomics and at the Center for Plant Science Innovation retreat.

Conner discovered that the bacterial effectors from the bacterial pathogen *Pseudomonas*

*syringae* pv *tomato* DC3000 redundantly interfere with the cellular dynamics of the plant immune protein AtNHR2B. Sadly, Conner decided to pursue another career and left the lab. We are grateful for his contributions and wish him well. We are very grateful to Aryee, Kiyara, and John who helped with the proper functioning of the lab and stepped up to assist with additional projects that emerged from curiosity and the natural progress of discovery.



Back row, left to right: Dr. Thiago Maia (post-doc), John McKendry (lab coordinator), Biwesh Ojha (Ph.D. student), Dr. Kwang-Moon Cho (post-doc) Conner Chu (research technician), Aryee McCabe (research technician). Front row, left to right: Sapana Ghimire (Ph.D. student), Kiyara Grosz (research technician), Shilu Dahal (Ph.D. student), Dr. Clemencia Rojas (PI), Dr. Kim Ha Nguyen (post-doc), Remi Christensen (undergraduate student)

## MITRA LAB

Mitra Lab's research focuses on developing disease-resistant transgenic and gene-edited potato, tomato, hop, and pea plants. Their efforts involve the use of multi-domain



Dr. Serkan Tokgoz

downy mildew in hop, and to improve the nutritional quality of pea. Graduate student Serkan successfully completed his Ph.D. in the summer of 2024 and has since joined Kahramanmaraş Sütçü İmam University in Turkey as an assistant professor.

antimicrobial peptides, R gene remodeling, and RNA interference strategies to enhance resistance against zebra chip disease in potato, various viral and bacterial diseases in tomato,

## VAN ETTEN LAB



Dr. Jim Van Etten with collaborators and nominators after receiving the Louise Pound-George Howard Distinguished Career Award

The Van Etten laboratory continues to work on a range of topics associated with the molecular biology, biochemistry, physiology, ecology, genetics, and bioinformatics of viruses that infect certain unicellular, eukaryotic chlorella-like green algae. Chloroviruses are found in freshwater all over the world and they have many interesting and unexpected properties. One

## 2024 LAB HIGHLIGHTS

property is that the chloroviruses are among the largest viruses known, containing as many as 18 tRNA-encoding genes and 450 protein-encoding genes, including many not previously reported in viruses. These genes encode DNA restriction and modification enzymes, hyaluronan and chitin biosynthetic enzymes, polyamine biosynthetic enzymes, ion channels and transporters, and many glycosyltransferases. The proteins encoded by some of the chloroviruses are either the smallest or among the smallest proteins of their class. Consequently, some of the chlorovirus-encoded proteins are the subject of intensive biochemical and structural investigation. Currently there are over 525 publications on the chloroviruses and their gene products. In the past year, our lab published four manuscripts on the viruses. This year's publications were in *Nature Geoscience*, *Journal of Virology*, *Protein Science*, and *Communications Biology*. We have sequenced and annotated about 140 chloroviruses from water samples around the world. We currently have a proposal before the International Committee on the Taxonomy of Viruses (ICTV) to classify the chloroviruses into three genera called Alphachloroviruses, Betachloroviruses, and Gammachloroviruses. Each genus contains multiple species. We continue to try to determine if some of the chloroviruses might be associated with ALS diseases like Lou Gehrig's disease. We discovered that the virus encoded glycans attached to the major capsid proteins are very immunogenetic in human and mice cells this year. Furthermore, many humans have antibodies that react with the chlorovirus glycans. We currently have a NSF-EPSCoR-funded project with the University of Delaware, University of Hawaii, and Roger Williams University (Rhode Island) that involves looking for chloroviruses in the unique alkaline lakes located in western Nebraska. There are only two other places in the world that have lakes similar to the ones in Nebraska. We also have funding from the Stuart Nichols ALS Research Foundation.



# GARCIA-AROCA LAB

At the Fungal Ecology Lab in the Department of Plant Pathology at UNL, we're doing our best to make important discoveries in the intricate world of fungal plant pathogens. We seek to uncover the secrets driving evolution and diversity in fungal populations, not just in Nebraska, but across global ecosystems. Our research focuses on exploring questions about the ecology, evolution, and distribution of soil-borne fungal pathogens in both agricultural and non-agricultural settings. Our approach is to elucidate the genetic variation in pathogen populations, exploring their evolutionary history, and determining the factors constraining their spread, to develop potential ideas or resources that could revolutionize long-term management strategies.



Left to right: Kelvin Muchiri (M.S. graduate student), Xin Zhi Khoo (M.S. graduate), Sofia Martinez (summer intern), Norah Tumusiime (former lab manager/technician), Carlos Valladares (summer intern), and Dr. Teddy Garcia-Aroca (PI)

We are committed to bridging the gap between applied and fundamental research in fungal ecology. In other words, we're not just scratching the surface of fungal pathogen biology and ecology, we are determined to provide insights that can be useful to lay the

groundwork for innovative solutions in the ongoing battle against plant diseases. These are the members of our team: First up, Kelvin Muchiri, who joined our lab in the summer of 2024 and is currently working on a survey of soil-borne and seedling fungal pathogens of soybean in Nebraska. Xin Zhi Khoo, who recently received her M.S. degree and provided evidence to elucidate the historical context and evolutionary patterns of host preference in *Rhizoctonia solani*.

A senior member of our lab, Tessa Fiore (right), a senior undergraduate student majoring in Environmental and Sustainability Sciences. Tessa is working on elucidating the impacts of secondary metabolites produced by *Clonostachys* spp. in the soybean roots.

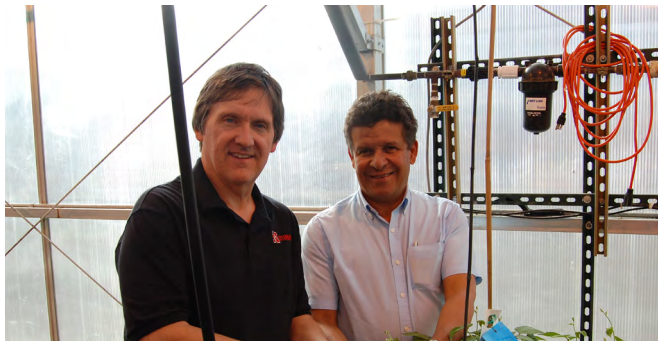


Fresh to our team is Riley Eisenbraun (left), a senior undergraduate student majoring in Biochemistry at UNL. Riley is working on documenting the diversity and fungicide resistance of *Colletotrichum coccodes* associated with Potato Black

Dot and Tuber Blemish in Nebraska and the Midwest. And me, Teddy Garcia-Aroca, who spends a considerable amount of my time teaching, writing grant proposals, forging collaborations, and refining teaching strategies. More importantly, providing our team with ideas or feedback when needed. Over the summer, we also had two interns, Carlos Valladares and Sofia Martinez, who provided support on some of the projects described above. Additionally, we had the support of Norah Tumusiime, who served as our lab technician on the first half of 2024. Norah is currently a full-time student at a

local community college. We are excited to continue our pursuit of knowledge this spring. Our lab is driven by a shared passion for understanding the intricate dance between fungi and their plant hosts. Stay tuned for more exciting updates from the Fungal Ecology Lab as we continue our journey of discovery!

# HARVESON LAB



Drs. Bob Harveson and Carlos Urrea in the PHREC greenhouse

Dr. Bob Harveson is an Extension Plant Pathologist at the Panhandle Research and Extension Center in Scottsbluff, NE. His current appointment involves 50% research and 50% extension, with statewide programming responsibility for specialty crop diseases. His research program has focused on the etiology and applied management of root rot diseases of sugar beets, bacterial diseases of dry beans, and sunflower diseases utilizing the integration of biological, cultural, chemical, and predictive methods. He has conducted additional projects involving several new pulse crops (chickpeas, cowpeas, lentils, and dry yellow peas) as well as potatoes, corn, chicory, and wheat. The plant pathology program has employed field disease surveys and disease diagnostics as cornerstones to establish an extension and research program. The diagnostic

lab at Scottsbluff has processed more than 28,000 total (plant and soil) samples since the fall of 1999. This service has created new publications, generated partial income for technical support, and identified and highlighted important problems, while also providing preliminary data for new proposals that attempt to address these issues with applied research. This service has additionally resulted in more than 25 reports on the occurrence of new diseases in Nebraska.

# JACKSON- ZIEMS LAB



Talon Mues (M.S. student and Extension Instructor) showing a corn leaf to a young participant at an Extension event

2024 was a busy year for our team! We're pleased to announce that Talon Mues moved on from his Technician role in our lab and started his career in Nebraska Extension as an Extension Instructor for Dawson, Buffalo, and Hall Counties (with his main office based in Lexington, NE). He continues to work on the impacts of pivot irrigation on tar spot (and other diseases) for his M.S. project. Congratulations, Talon! We're proud to work alongside you in your new role!



2024 LAB HIGHLIGHTS



Chikoti Mukuma (Ph.D. student, left) and Chris Termunde (M.S. student, right) with their posters at the WICS conference and NC APS, respectively

Brad Tharnish continues in his role as Lab Manager for our team and continues to oversee our annual field trials and other lab activities. The continued spread of tar spot in 2024 and the greatest southern rust epidemic we’ve experienced in Nebraska since 2006 kept Brad and other team members very busy in the field!

Chris Termunde and Chikoti Mukuma continue their research to learn more about crown rot disease of corn, an emerging disease in the Corn Belt catching the attention of growers and industry. Their field trials in western Nebraska and the increased incidence and severity of the disease statewide meant lots of sampling trips and some long-earned successes they both achieved in their projects.

Tamra continues on a busy extension program schedule that is focused on bringing awareness and management solutions to stakeholders and experiential learning opportunities to students. The increase in tar spot, and especially southern rust pressure, in 2024 means the demand for more information has extended into Extension programming this winter.

Members of the team participated in or presented at numerous events this past year, including the North Central APS (Manhattan, KS), Plant Diseases Across Nebraska course in June, as well as several outreach events for Nebraska Extension and industry partners at UNL South Central Ag Lab Field Day, UNL Haskell Ag Lab Family Field Day, and more.

MANGEL LAB

Mangel lab members (left to right): Pratibha Karki (M.S. graduate), Becky Higgins (technologist), Dr. Dylan Mangel (PI), Bhanu Dangi (technologist), and Cooper Hicks (2025 M.S. student)

The past year has been marked by impactful research and growth for the Applied Soybean Pathology Lab. While our team of Rebecca Higgins, Pratibha Karki, and Cooper Hicks remain focused on addressing critical challenges facing Nebraska soybean growers, particularly the management of soybean cyst nematode (SCN) and Sclerotinia stem rot, we became more effective with the addition of team members Bhanu Dangi, Technologist, and Roshani Baral, Ph.D. student.

Throughout the year, we conducted extensive field trials across Nebraska to evaluate management strategies for soybean diseases. These trials not only generated critical data but also strengthened our connection to the growers we serve. Our lab is proud to co-lead the SCN Coalition, a national outreach initiative aimed at empowering growers to adopt proactive management strategies against SCN. Through this collaboration, we are driving awareness and equipping farmers with the tools needed to combat this devastating pest. In parallel, our research on Sclerotinia stem rot is providing insights into effective management practices to minimize yield losses caused by this complex disease. Highlights included presenting findings at field days and industry events, where we shared practical, science-based recommendations that directly inform on-

2024 LAB HIGHLIGHTS

farm decision-making. We were also able to attend the North Central APS meeting in Manhattan, KS and the national APS meeting in Memphis, TN.

In December 2024, Pratibha Karki successfully completed her graduate studies, leaving behind a legacy of impactful research on SCN management. Her contributions have laid the groundwork for ongoing efforts to safeguard soybean yields. As we move into 2025, we are excited to welcome two new graduate students to our team. Cooper Hicks, a former undergraduate researcher in our lab, is staying to pursue his graduate studies, and Olivia Dooley joins us with enthusiasm to tackle new challenges in plant pathology.

As we step into the new year, the Applied Soybean Pathology Lab remains committed to advancing research, fostering collaborations, and empowering growers with actionable insights. With every trial conducted and every grower reached, we reaffirm our mission to protect soybean yields and ensure food security for Nebraska and beyond.

KIM LAB

Left to right: Libia Gomez-Trejo, Minji Kang, Lauren Gabriel, Dr. Saet-Byul Kim (PI), William Anderson, Dr. Ze Tian Fang, and Sangsik Yun

In 2024, the Kim lab experienced several notable events, including the addition of talented individuals, active collaborations, and a new publication.

Libia F. Gómez-Trejo, a Ph.D. student, joined the Kim lab through the C BIO program in March 2024. She has been thoroughly enjoying her nonhost project and actively volunteering for departmental activities. In addition to her research, Libia has received several fellowships, including the Milton E. Mohr Award and the PPGSA Professional Development Award. We are very proud of her accomplishments.

Lauren Gabriel, a senior in the Agronomy and Horticulture department, began working in the lab in September. She has learned various molecular techniques, driven by her interest in molecular biology and plant-microbe interactions. She has decided to pursue her master’s degree in our lab. We are thrilled about this development!

Minji Kang joined the Kim lab in November as a technician. Her primary focus is to explore how maize resistance proteins recognize corresponding effectors and become activated to confer resistance in maize. She is highly motivated, and we are pleased to have her on board at UNL.

We have also collaborated with Dr. Schnable and Dr. Sigmon on our rust projects, and we are working with Dr. Fang, a postdoctoral researcher in Dr. Scott Sattler’s lab, on virus-induced gene silencing in maize and sorghum plants. Additionally, Dr. Song from the Biological Systems Engineering department is collaborating with us to study soil microbiome changes related to rust disease. We published our findings in *PLOS Pathogens*, where we identified the avirulence protein of common rust recognized by the maize resistance protein Rp1-D. This marks the first avr gene cloned in common rust, and Libia contributed to the revision, earning her a place among the authors.

Looking ahead to the spring of 2025, we will focus our research on how plants defend themselves against rust pathogens at the molecular level. Overall, despite the busy schedule in 2024, it was a year filled with significant accomplishments in hiring, and we will continue to succeed in 2025.



## FUNNELL- HARRIS LAB



Members of the Funnell-Harris lab: Keeley Hourigan, Elli Petersen (undergraduate student workers), Pat O'Neill (technician), and Dr. Deanna Funnell-Harris (PI).

The Funnell-Harris lab is focused on describing interactions of fungal pathogens with specific sorghum and wheat host genotypes, especially those with altered lignin, starch, and pigment compositions and concentrations. Sorghum is a climate resilient crop that provides grain and forage but has the potential to contribute to emerging renewable product markets in the U.S. To compete in these markets, compositional improvements to both sorghum grain and forage are needed, as well as an understanding of how these changes affect interactions with fungal pathogens. Stalk rot pathogens are destructive and impact both grain and biomass yields. Many different fungi inhabit stalks without causing disease, but then various stresses such as drought trigger development of stalk diseases. *Fusarium* stalk rot and charcoal rot, caused by several *Fusarium* spp. and *Macrophomina phaseolina*, respectively, result in significant losses of sorghum biomass in the U.S. They can cause plant lodging and impair biomass and grain harvest and are particularly

insidious when water is limited, especially around the time of flowering. We developed a method to simulate reduced water conditions in a greenhouse. Using this technique, we screen sorghum lines altered in lignin synthesis for resistance to pathogens and drought. Lignin is associated with disease resistance. Compounds related to lignin synthesis can have antifungal properties, so their accumulation may slow disease progression. Grain mold disease, which reduces sorghum grain quality, is caused by a complex of diverse fungal pathogens. We examine the role pigments that are deposited in the outer layers of the grain, play in resistance to mold diseases. Tannins impart bird resistance due to their bitter taste, and these polyphenols have antioxidant properties. We are screening lines where tannins are present or absent in the grain to determine whether tannins can reduce grain molds. We are comparing the fungi inhabiting outer layers of the grain, where tannins and pigments are deposited, versus those in the starch-rich inner endosperm. We are also screening for damping off-resistant germplasm that is particularly insidious when sorghum is planted under moist and cool conditions. Identifying lines resistant to seedling diseases, especially those caused by *Fusarium* and *Pythium* spp., under sub-optimal temperatures will allow for earlier planting to utilize spring soil moisture, further augmenting sorghum resiliency. In wheat, the devastating grain disease *Fusarium* head blight (FHB) can cause entire loss of wheat crops during intermittent epidemics. Additionally, the pathogen, *Fusarium graminearum*, produces a toxin that has acute and long-term effects on humans and animals, thus rendering the grain unusable. In his thesis, Shiv Singla demonstrated that wheat lines overexpressing a sorghum enzyme in lignin production had increased resistance to FHB, as compared to susceptible lines lacking the overexpressed gene. He performed transcriptomics and metabolomics to identify potential genes or

metabolic pathways with altered expression that may confer this increased resistance. Findings from Shiv's research can provide information for breeders to develop FHB-resistant wheat varieties in the future.

## TATINENI LAB



L to R: Dr. Mritunjoy Barman (Joint Post-Doc with Dr. S. Mondal), Jeff Alexander (Biological Science Technician and Lab Manager), Dr. Satyanarayana Tatineni (PI), and Chi Hzung (Jensen) Wong (graduate student)

The main focus of Dr. Tatineni's lab research is virus-virus, virus-host, and virus-vector interactions of economically important wheat streak mosaic virus (WSMV), Triticum mosaic virus (TriMV), and High Plains wheat mosaic virus. Since these three viruses are transmitted by a common vector, wheat curl mite, mixed infection of wheat with two or three viruses is common in growers' fields with exacerbated yield loss. Dr. Tatineni's lab is working to understand how these viruses cause disease in wheat and identify the host and vector factors required for the completion of the virus infection cycle and use this information to disrupt the virus infection cycle through biotechnological approaches such as RNA interference and gene editing. To achieve these goals, Dr.

Tatineni and his team are examining viral gene functions through reverse genetics and biochemical and molecular biology approaches and identifying host and viral factors through protein-protein and protein-RNA interaction and bioinformatics studies. The availability of GFP- or RFP-tagged WSMV and TriMV facilitated the examination of viral genes required for wheat curl mite transmission, movement, disease development, superinfection exclusion, synergistic interaction, and resistance mechanism of Wsm1 and Wsm2 genes in wheat cultivars against WSMV and TriMV. Dr. Tatineni's lab developed RNAi-based dual-resistant transgenic wheat against synergistically interacting WSMV and TriMV. Dr. Tatineni and his team are working on: (1) identifying viral determinants involved and mechanisms of synergistic interaction between WSMV and TriMV; (2) mechanisms of superinfection exclusion of WSMV; (3) virus-host interactions of WSMV to identify means of disruption of virus life cycle and control of viral diseases; (4) mechanisms of wheat curl mite transmission of WSMV and virus-vector interactions between WSMV and wheat curl mites to identify ways to interrupt vector transmission; and (5) develop and characterize transgenic wheat for resistance to WSMV and TriMV and pyramid transgenes with natural resistance genes.



# UPDATES FROM THE PLANT & PEST DIAGNOSTIC CLINIC

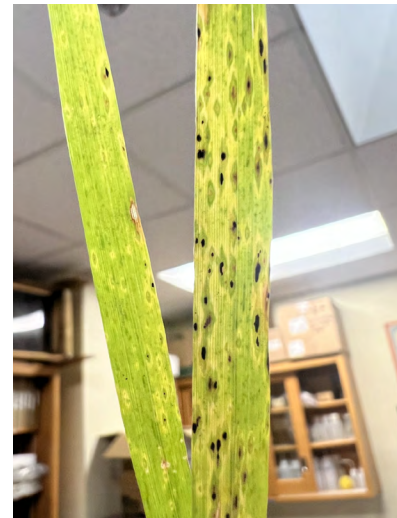


P&PDC Coordinator,  
Kyle Broderick

In many ways, 2024 was a fairly standard year as 1,567 unique samples from twelve different states made their way to the UNL Plant & Pest Diagnostic Clinic. These samples resulted in over 3,500 unique diagnoses. As is always the case, a large majority of the samples (80%) were corn, soybeans, or wheat. The P&PDC continued to serve as the pathologist for the Nebraska Department of Agriculture (NDA) and just under 1/4 (24%) of the samples were a part of NDA inspections of greenhouses, nurseries, and crops tagged for export. As is the hope every year, no major diseases that resulted in regulatory action were identified. Aside from the agronomic and NDA samples, we also received samples from golf courses, vineyards, organic vegetable producers, and commercial greenhouses.

We continued to monitor the spread of tar spot across the eastern portion of Nebraska. This disease is confirmed in over 45 Nebraska counties, largely through a free testing survey that has been offered by the P&PDC for the last 2 years. The survey also brought in a sample of tar spot on orchard grass! In addition to common foliar diseases such as southern rust, bacterial leaf streak, and Fusarium crown and stalk rot was again problematic in many corn fields.

As is always the case with plant pathology – the environment conditions drove disease development. Unfortunately, the dry conditions during June and July led to minimal disease



Tar Spot on Orchardgrass.  
*Phyllachora* sp. had not previously been identified on this weedy grass.



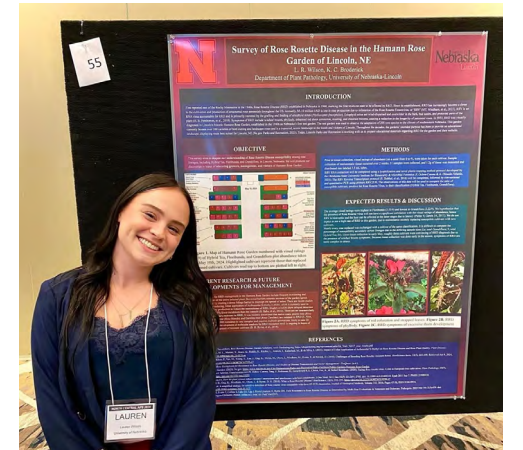
Red streaking in a lower corn stalk. This is common with a crown/stalk rot caused by fungi in the genus *Fusarium*.

development, especially in many dryland fields. At the end of the growing season, things got a little exciting with reports of Corn Stunt in Oklahoma and moving north. This disease complex (caused by 2 different viruses and a phytoplasma) is common in central America though southern Texas, but the leafhopper vector needs tropical climates to overwinter and had not previously been confirmed in Nebraska. Once again, this is a result of environmental conditions; Hurricane Beryl had strong and sustained winds that blew the leafhopper vectors north across large parts of the United States.

Increased attention to the landscape and gardens continued, with the P&PDC seeing a similar number of “non-Ag” samples as in last couple of years. Once again, abiotic problems, most of them drought related were responsible for most of the plant problems. Rose rosette disease (RRD) continued to spread through historic rose and botanic gardens in eastern Nebraska, resulting in hundreds of roses being destroyed or abandoned.

Lauren Wilson, a former undergraduate assistant in the P&PDC, presented on her research regarding the prevalence of RRD at the Hamann Rose Garden in Lincoln, NE. This poster was presented at the North Central APS meeting in Manhattan, KS.

Unfortunately, our “Mobile Diagnostic Booth” was not at the Lincoln Haymarket Farmer’s Market in 2024 due to scheduling conflicts, but the P&PDC once again led booths at UNL Discovery Days with the help of the Plant Pathology Graduate Association. These outreach events are very popular with the public and are often a place where people discover that “plants get sick too.” These events also provide a great opportunity for graduate students to learn more about the work of UNL Extension and communicate their science to the public.



Lauren Wilson with her poster at the North Central APS meeting in Manhattan, KS in June 2024

The winner of “Most Exciting Disease” in 2024 was when we finally saw Beach Leaf Disease, caused by the foliar nematode *Litylenchus crenatae* spp. *mcannii*. While this disease is devastating beach trees and related species in the eastern 1/3 of the United States, it hasn’t been found in Nebraska yet and I was able to focus on the beautiful symptoms!



Beech leaf disease caused by *Litylenchus crenatae* ssp. *mcannii*, on American beech in Maine. Note the interveinal banding on the foliage that is a common symptom of foliar nematodes.



# PLANT PATHOLOGY AWARDS

The Department of Plant Pathology offers annual department-specific awards.

The Robert M. Goss Scholarship honors the legacy of Dr. Robert M. Goss, a pioneering plant pathologist who served as one of the founding faculty members of the Department of Plant Pathology at the University of Nebraska–Lincoln in 1920. Dr. Goss was instrumental in the identification and early research of Goss's bacterial wilt and blight of corn, a disease that continues to impact the largest acreage commodity in Nebraska.

Honoring Dr. Robert Goss, the **Goss Memorial Scholarship** has been actively supporting outstanding graduate students since 1971. It was developed to help defray expenses for students who are presenting research at regional and national/international meetings, attending and participating in relevant workshops, or any other appropriate scholarly activity beyond the normal execution of their research. In 2024, the Goss Award recipients were Nawaraj Dulal and Amany Gomaa.



The **PPGSA Professional Development Award** is used as financial assistance for travel to scientific meetings or to attend workshops and training events. In 2024, there were 12 recipients of the award: Shilu Dahal, Nawaraj Dulal, Janis Fomba, Sapana Ghimire, Amany Gomaa, Libia Gomez-Trejo, Pratibha Karki, Xin Zhi Khoo, Chikoti Mukuma, Eric Parperides, Nisha Rokaya, and David Kihoro Sirengo.



The **Lambrecht Award for Technologists** recognizes the contributions of technologist Patricia Lambrecht to the science of plant pathology, the laboratory of Dr. Anne Vidaver and others, and assistance to the department in mentoring students, technicians, and post-docs in various techniques and practices in plant pathology, especially those connected with bacterial plant pathogens. The award is primarily for the furtherance of the awardee's education, attendance at conferences and meetings, travel to meetings and experimental sites, or other activities. In 2024, the recipient of the Lambrecht Award was Tim Harris, technologist with Dr. Tom Powers.

Congratulations to all recipients of awards and scholarships in 2024!

# GRADUATES



**Serkan Tokgoz**

Ph.D. graduate, May 2024  
Advisor: Dr. Amit Mitra



**Haritha Nunna**

Ph.D. graduate, August 2024  
Advisors: Dr. Satyanarayana Tatineni and Dr. Stephen Wegulo



**Sourav Pal**

M.S. graduate, August 2024  
Advisor: Dr. Amit Mitra



**Michael Richter**

Ph.D. graduate, December 2024  
Advisor: Dr. Richard Wilson



**Mahnoor Asif**

Ph.D. graduate, December 2024  
Advisor: Dr. Stephen Wegulo



**Xin Zhi Khoo**

M.S. graduate, December 2024  
Advisor: Dr. Teddy Garcia-Aroca



**Pratibha Karki**

M.S. graduate, December 2024  
Advisor: Dr. Dylan Mangel

Congratulations to our 2024 Plant Pathology Graduates!





The Department of Plant Pathology is on a trajectory to be a leading institution in our field of science. As we continue to grow our department, there is a consistent need to support faculty, staff, and students in ways that inspire our community and strengthen relationships in order to build connections.

The Plant Pathology Department Excellence Fund has been established to provide opportunities for future students and our department community. It is critical that our students are exposed to a diverse set of experiences to help them become effective leaders. Teamwork, leadership, interpersonal skills, collaborative projects, community outreach, teaching, and communication with diverse audiences are examples of qualities we want our students to grow in by encouraging their participation in rewarding activities.

Please consider donating to this fund to ensure opportunities continue that build our community of professional plant pathologists at UNL. To contribute to this fund, please visit: [go.unl.edu/plantpath-excellence](https://go.unl.edu/plantpath-excellence)



DEPARTMENT OF PLANT PATHOLOGY