

Plant Pathology Organization

NEWSLETTER

The latest achievements, news, and announcements for the department

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PPO WELCOMES A NEW OFFICER TEAM, HERE ARE THEIR GOALS

The Plant Pathology Organization (PPO) welcomed a new officer team this semester. **Ashley Nelson** (President), **Mayowa Aderoju** (Vice President), **Augustina Arjarquah** (Secretary), **Brooke Benz** (Treasurer), **Jatinder Singh** is (CSO), and **Harkamal Kaur** (Executive Manager) are the new executives of PPO. Their goals are to continue the social and bonding events as well as fundraising that has been established while developing professional development opportunities that will greatly benefit the PPO members. They also are working to rework the administrative side of the club by updating the constitution, creating this regular newsletter, creating active and alumni databases, and establishing routine meeting schedules.

GRADUATE STUDENT SPOTLIGHT

LEANN LUX

My name is LeAnn Lux. I am a graduate student in Dr. Andrew Friskop's Extension Cereal Plant Pathology program. Growing up on a farm in southern Indiana is where my interest in agriculture.



It is also the reason I chose to pursue a degree in plant science from Purdue University. Throughout my time there I had the opportunity to work in a plant pathology lab and I found a passion for research. Upon graduating from Purdue in 2018, I moved to Fargo to begin my graduate program at North Dakota State University working on my dissertation project "Management of Three Economically Important Diseases of Hard Red Spring Wheat in North Dakota" and am planning to graduate in May of 2023. Outside of research activities within the program I enjoy traveling, hanging out with family and friends, and participating in almost any outdoor activity. My advice to graduate students would be to embrace your curiosity and do not be afraid to ask questions."

SHIVREET KAUR

My name is Shivreet Kaur, a M.S. student with Dr. Upinder Gill. Agriculture has been a pillar in my family for many generations. I graduated with a bachelor's degree in agriculture from Punjab Agricultural University, India in 2014.



I joined as a M.S. student in Plant Pathology at NDSU in spring 2021. My thesis titled "Genetic and molecular characterization of leaf rust (LR) resistance in wheat" aims at improving resilience in wheat against rusts. During the course of study, I have published two leading author manuscripts and published three book chapters. Pursuing a master's degree has propelled my mission as a scientist. I aspire to become a leading scientist and plant pathologist motivated to build a research career specializing in this field of study.

In my free time, I love travelling and exploring new places, listening to music and learning new dance forms.

PPO ALUMNI SPOTLIGHT



GAYAN KARIYAWASAM

Gayan Kariyawasam obtained both his Masters and Ph.D. at NDSU and graduated in December 2018. His advisor was Dr. Zhaohui Liu and his project focused on the molecular genetic characterization of Ptr ToxC-TSC1 interaction and comparative genomics of Ptr.

Gayan is now a post-doc in the Friesen lab at the Edward T. Schafer Agricultural Research Center USDA-ARS. His projects have included cloning and functional characterization of *P. nodorum* necrotrophic effector SnTox5 as well as SnTox267 and Snn2, Snn6 and Snn7 expression analysis.

He has completed projects in population genetics of effectors and pangenome effector analysis. He has also re-developed annotations of *P. nodorum* isolates Sn2000 (virulent isolate) and Sn79-1087 (avirulent isolate) as well as compared transcriptions of Sn2000 and Sn79-1087. Outside of science he enjoys traveling and exploring, watching football, bird watching, taekwondo and Latin dancing.

His advice to current graduate students is to work hard, be innovative, always think critically, be passionate about your research focus and make sure to enjoy what you do along the way.

ACHIEVEMENTS & AWARDS RECIPIENTS



Ashley Nelson
2023 ISMPMI Travel
Award



Abbeah Navasca
FFAR Fellowship Finalist



Shivreet Kaur
Gerald O. Mott Award -
American Society of America



2023 Marthre Education Endowment Award



Harkamal Kaur
Student Research Day
2nd Place Oral
Presentation



Mankanwal Goraya
Student Research Day
4th Place Poster
Presentation



Shivreet Kaur
Distinguished Graduate
Student Award of Merit by
The Honor Society of
Agriculture

RECENT CONFERENCES

EUROPEAN CONFERENCE ON FUNGAL GENETICS INNSBRUCK, AUSTRIA

The 16th European Conference on Fungal Genetics (ECFG16) was held in Innsbruck, Austria, on March 5-8, 2023 (<https://www.ecfg16.org/>). Six satellite workshops were scheduled on the first day of the conference. I registered for the Fusarium Workshop and presented our study on the Pangenome Analysis of *Fusarium solani* co-authored with Jatinder Singh, Viviana Rivera-Varas, Dr. Upinder Gill, Dr. Gary Secor, and Dr. Thomas Baldwin. We had a full day of exciting talks from 28 presenters about the latest advancements of *Fusarium* species in secondary metabolism and mycotoxin production, *Fusarium*-host interaction, evolution, taxonomy, and genome dynamics, and gene regulation and signaling. The succeeding days were intended for keynote speakers and plenary and concurrent sessions, encompassing various topics on fungi across the plant, medical, animal, and marine systems. I had a fantastic time visiting posters of passionate researchers worldwide.

One thing I sincerely appreciate is how welcoming the fungal community is. It was a long travel, and I was alone, but I had a great time meeting new friends and catching up with fungi lovers I met at Fungal Genetics Conference last year. Apart from knowing the progress in the fungi world, I also enjoyed the conference venue. Innsbruck is a beautiful place with its historic old town and colorful houses and buildings surrounded by snow-capped mountains. I am very grateful to Dr. Thomas Baldwin, Dr. Gary Secor, and NDSU Plant Pathology for this amazing opportunity. My experience has been incredible, and I am now applying the knowledge I gained from the conference in describing the chromosome-level genome assembly of the unique opportunistic *Fusarium solani* pathogen in sugarbeet. The 32nd Fungal Genetics Conference will take place on March 12-17, 2024 at Asilomar Conference Grounds in California, USA, while ECFG17 will be in Dublin, Ireland, on March 2-5, 2025. #GoBison!

- Abbeah Navasca



RECENT CONFERENCES

BACTERIAL LEAF STREAK CONFERENCE FARGO, ND

In the midst of the harsh Fargo winter, the 2nd Regional Bacterial Leaf Streak (BLS) Meeting was held at North Dakota State University from March 1-3. The conference was a platform for valuable research findings and insights into the pathogen biology, disease epidemiology, and host resistance of BLS. Distinguished researchers and stakeholders from esteemed universities and institutions such as University of Minnesota,

South Dakota State University, the Ohio State University, the University of Saskatchewan, UC Louvain, the US Department of Agriculture, Agriculture and Agri-Food Canada, and the Minnesota Wheat Research and Promotion Council were in attendance. During my presentation at the meeting, I discussed our ongoing work on understanding the diversity of *Xanthomonas translucens* pv. *translucens* across the states of North Dakota, Montana, and Idaho, primarily based on comparative genomic analysis using nucleotide identity, effectors, secretion systems, and CRISPR interspacers. Listening to the diverse research presented, which aimed to understand the BLS disease and its management, deepened my appreciation for the significance of our research efforts. Ultimately, the meeting served as a forum to establish and rekindle collaborations among its participants, arrive at a consensus on what is known about this disease based on existing research, and identify research gaps that require further attention. - **Diel Velasco**



INTERNATIONAL SUGARBEET INSTITUTE (ISI) EXHIBITION FARGO, ND

I have attended expos and career days, but International Sugarbeet Institute (ISI) Exhibition held at the NDSU Fargodome was hands off amazing. I was a judge at the exhibition which gave me the opportunity to interact with different professionals and personnels from various companies like Corteva, BASF, Syngenta, and many more. I look forward to the exhibition next year and . - **Sushmita Kalika-Singh**

Attending the ISI Exhibition was a great opportunity to learn more about the sugar beet industry. The show featured insightful discussions and presentations on the latest technologies, techniques and challenges in sugar beet industry. Its inspiring to see how the industry is evolving and adapting to meeting the demands of consumers, this gave me a deeper appreciation for the hard work and dedication of different stakeholders in the sugar beet industry. - **Khizar Razzaq**

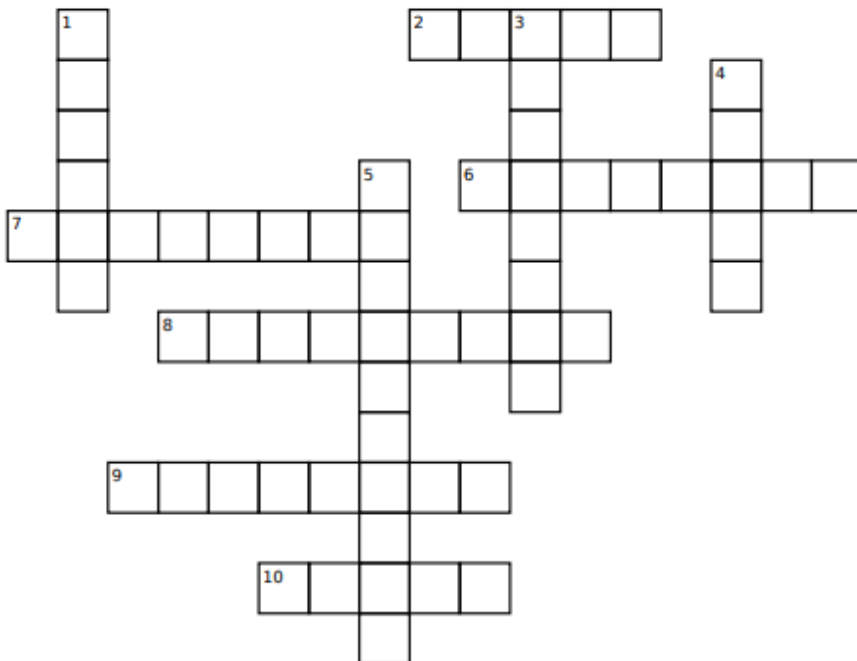


Sugarbeet Team as Judges at the ISI Exhibition

THIS MONTH IN HISTORY...

- Franz Karl Achard - died April 20, 1821. Archard was a French natural philosopher who discovered how to get sugar from beets on an industrial scale. <https://sciencenotes.org/today-in-science-history-april-20-franz-karl-achard/>
- Katherine Esau - born April 3, 1926. She is best known for her research into the effects of viruses upon plant tissues, and her studies of plant tissue structures and physiology. https://www.todayinisci.com/4/4_03.htm
- Luther Burbank - died April 11, 1926. Considered a pioneer of plant breeding. He created more than 800 varieties of plants including the Burbank Potato. https://www.todayinisci.com/4/4_11.htm April 15, 1854
- New York became the first US state to finance studying insects harmful to plants. https://www.todayinisci.com/4/4_15.htm
- Josef Gottlieb Kölreuter - born April 27, 1733. German botanist who pioneered plant hybrids. He was the first to use artificial fertilization in plants and crossbred plants of different species. https://www.todayinisci.com/4/4_27.htm
- Joseph Charles Arthur - died April 30, 1942. American plant pathologist who studied rust fungi, and became the first Department Head for the Department of Botany and Plant Pathology at Purdue University. https://www.todayinisci.com/4/4_30.htm

APRIL CROSSWORD



Down

1. Plant pathologist famed for the gene-for-gene hypothesis
3. Plant Pathogens. Threadlike roundworms.
4. Plant pathogen. Depend on host cell machinery for reproduction.
5. Ability to prevent diseases.

Across

2. Plant pathogen. Spore-producing organisms.
6. Plant pathogen. Unicellular organisms
7. Plant pathogen. Also known as water molds
8. Chemical sprayed to reduce plant pathogen
9. _____ Mixture. First discovered by Pierre-Marie-Alexis Millardet
10. _____ Postulates. Criteria to establish a causal relationship between a microbe and a disease

UPCOMING ACTIVITIES/EVENTS

SUMMER EVENTS TO COME!

KEEP YOUR EYES OUT FOR EMAILS/MESSAGES ABOUT DATES AND TIMES



SOCCER GAME AND BBQ WITH PLANT SCIENCES



MULTICULTURAL DEPARTMENT POTLUCK

PUBLICATIONS

- Kaur, S., Pennington, T., Conley, E. J., Green, A., Kolmer, J., Anderson, J. A., ... & Gill, U. (2022). High Resolution Melting (HRM) based marker development for wheat leaf rust resistance gene Lr34. *Phytopathology*, (ja).
- Lux, L., Halvorson, J., Hansen, B., Mathew, F., Webster, R.W., and Markell, S. 2023. Frog eye leaf spot of soybean. North Dakota State University Extension Publication PP2076
- Marino, D. A., Chittem, K., Shahoveisi, F., Chapara, V., Ruud, S., & del Río Mendoza, L. (2023). Identification of sources of resistance to clubroot (*Plasmodiophora brassicae*) in a collection of *Brassica napus* plant introductions. *Plant Health Progress*, (ja).
- Manan, F., Shi, G., Gong, H., Hou, H., Khan, H., Leng, Y., ... & Liu, Z. (2023). Prevalence and importance of the necrotrophic effector gene ToxA in *Bipolaris sorokiniana* populations collected from spring wheat and barley. *Plant Disease*, (ja).
- Navasca, A. M., Singh, J., Rivera-Varas, V., Geddes, B., Secor, G., Gill, U., & Baldwin, T. (2023). First report and draft genome resource of a unique opportunistic *Fusarium solani* pathogen associated with unknown dark galls in sugarbeet. *PhytoFrontiers*, (ja).
- Ritzinger, M. G., Smith, K., Case, A., Wodarek, J. R., Dill-Macky, R., Curland, R. D., & Steffenson, B. J. (2022). Sources of Bacterial Leaf Streak Resistance Identified in a Diverse Collection of Barley Germplasm. *Plant Disease*, (ja).

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