ISPP INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY

PROMOTING WORLD-WIDE PLANT HEALTH AND FOOD SECURITY

INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY

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Editor: Daniel Hüberli (**email**)

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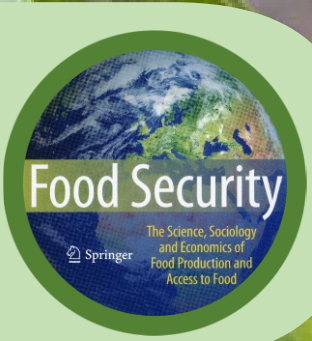

ISPP PRESIDENT'S GREETINGS FOR 2025

YONG-HWAN LEE, ISPP PRESIDENT

Happy New Year! As we welcome another promising year, I extend my heartfelt wishes for health, happiness, and success to you and your loved ones.

The past year has highlighted the vital role of plant pathology in ensuring global food security, particularly amid the increasing challenges posed by climate change. I am immensely proud of our community's collective efforts in advancing research, fostering innovation, and strengthening global cooperation to address plant health threats.

I also want to acknowledge the unwavering support of our volunteers, Executive Committee, Secretariat, and Subject Matter Committees, whose dedication and hard work have been instrumental in driving the ISPP's initiatives forward. Your contributions ensure that our society continues to thrive as a global hub of scientific excellence and collaboration.

As we embark on this new year, let us stay committed to our shared mission of promoting plant health, supporting sustainable agriculture, and nurturing the next generation of plant pathologists. Together, we can create a more resilient and food-secure future.

ISPP now holds 100% ownership of the *Food Security* journal, marking a significant milestone for our society. I extend my deepest gratitude to Dr. Serge Savary, Editor-in-Chief, and his dedicated editorial team for their exceptional leadership, hard work, and commitment to advancing scientific research in food security. Your efforts have made the journal a leading platform for sharing impactful research that addresses global food system challenges.

I also want to take this opportunity to acknowledge Dr. Daniel Huberli for his decade of outstanding service as an Editor of the ISPP Newsletter. His dedication and professionalism have kept our community well-informed and connected. Thank you, Dr. Huberli, for your invaluable contributions over the past 10 years.

As we move forward, let us continue building on this momentum, working together to ensure a sustainable, food-secure future. May this new year bring fresh inspiration, scientific breakthroughs, and continued success for all.

Thank you for being an essential part of our ISPP family. Wishing you a prosperous and fulfilling 2025!

With warmest regards,

Yong-Hwan

2024 UPDATE ON THE ISPP RESILIENCE BURSARY EXPENDITURES AND ACTIVITIES BY UKRAINIAN SCIENTISTS IN POLAND

MAŁGORZATA JĘDRYCZKA AND MAŁGORZATA MAŃKA

In March 2022, the International Society for Plant Pathology (ISPP) in cooperation with the Polish Phytopathological Society (PPS) and support from other plant pathology societies initiated short-term scientific scholarships (1-3 months) for cooperation between a plant pathologist from Ukraine and a research team in Poland, working in a Polish laboratory under the supervision of a plant pathologist from Poland. The scholarships were also provided to plant pathologists who were interested in an internship in a laboratory dealing with related sciences, in order to expand their skills. By "phytopathology" we meant broadly understood scientific works and activities related to plant diseases, pathogens, plant protection, having a direct but also indirect relationship with phytopathology.

All scholarship recipients that were officially employed in Ukraine, primarily those who left Ukraine after 24 February 2022 as a result of Russia's aggression, could apply for a scholarship. The procedure of application was available on the PPS website, it was also widely distributed by Facebook and other information channels in Poland and Ukraine. The final acceptance of applicants depended on a secret ballot of the Polish Phytopathological Society Board. All submitted proposals were accepted.

From April 2022 until February 2024 twelve scientists obtained scholarships and they were the official trainees of the research and academic institutions in Poland. The scholarships were $ 1,000 net per month and they were tax free. On top of it, the health insurance and other administrative costs were covered by the ISPP Resilience Bursary fund. The official documentation has been archived.

In total, the scholars worked for varying periods over 25 months in several Polish laboratories – both at universities and in research institutes. Their short biograms and scientific interests were presented in the ISPP Newsletters published in 2022-2024. Some of the trainees as well as the other plant pathologists from Ukraine were invited as guest speakers at the International Congress of Plant Pathology Congress in Lyon, France in August 2023 (ICPP2023) in the session C1.7 on “Impact of war and conflicts on plant pathology research and food safety of countries”. Similarly, the Polish Phytopathological Society exempted from the conference fee and offered free accommodation to all ISPP trainees who wanted to participate the Conference of the PPS in Warsaw on 24-26 September 2024 and offered oral talks or posters (alone or in cooperation with the other researchers). Great fee reductions and cheaper accommodation was also offered to the researchers from Ukraine, not being ISPP scholars.

One significant outcome from the support was that one of the ISPP bursary recipients succeeded in winning a major project within the framework of the Long-term program to support Ukrainian research teams at the Polish Academy of Sciences. This program is carried out in collaboration with the U.S. National Academy of Sciences with the support of external partners. A part of the project was presented at the opening session of the PPS 2024 Conference in Warsaw, titled “Liposomal bionanocomposites (BNC) as potential agents for the regulation of virus-plant relationships” (A. Kyrychenko, O. Kovalenko, H. Snihur, T. Shevchenko, T. Nyzhnyk). The success of this project funding was particularly noteworthy, as only 18 teams were awarded grants out of more than 300 applications submitted to the competition.

The project support was the latest initiative by the Polish Academy of Sciences aimed at supporting Ukrainian refugee scientists in Poland. The competition offered exceptionally generous grants, each worth up to 2,000,000 PLN for 2 or 3 years (approximately 500,000 USD). It was open exclusively to Ukrainian research teams led by a principal investigator who was a refugee scientist based in Poland, working in collaboration with Polish colleagues.

If the circumstances were happier, it would be just a sheer pleasure and a good scientific experience to cooperate with colleague phytopathologists from Ukraine. We wish them strength, peace, freedom and good support of their scientific plans, successful achievements in science and happy personal life in a peaceful world.

Thanks are also due to our colleague at the Taras Shevchenko National University of Kyiv for advice and translations into Ukrainian and to Dr Greg Johnson and Professor Mathews Paret of the ISPP Executive (2018-2023) for ongoing advice and ISPP financial arrangements.

Małgorzata Jędryczka and Małgorzata Mańka

SNIFFER DOG DETECTS TREE DISEASE TO HELP PROTECT UK'S WOODLANDS

FOREST RESEARCH NEWS, 2 DECEMBER 2024

In collaboration with Forest Research, Canine Assisted Pest Eradication successfully trained Ivor, a cocker spaniel x labrador, aged six, to identify the highly destructive pathogen. This destructive organism can cause extensive damage and even death to more than 150 plant species including significant mortality on larch, which are important timber trees.

Ivor was trained using a variety of detection training techniques including initial scent recognition. The first round saw Ivor successfully identify *Phytophthora ramorum* in soil, plant material and sterile distilled water. Further training phases saw Ivor faced with a number of scenarios which helped reinforce his detection abilities by introducing new working environments. Ivor was then able to build up to distinguishing *P. ramorum* from the scent of other *Phytophthora* species often found in the same environments to ensure effectiveness in real-world scenarios.

"The results from the trials have been incredibly encouraging, with a first-time 89 per cent detection rate highlighting the huge potential of dogs in our fight against pests and diseases," said Forest Research Pathologist, Dr Heather Dun.

"Biosecurity is incredibly important and detection dogs like Ivor are an exciting new method for helping to protect our trees."

(Photo: Heather Dun)

The Defra funded project is a collaboration between Forest Research and Canine Assisted Pest Eradication.

"We believe that innovation drives progress," said Luke Jones, director of Canine Assisted Pest Eradication. "We're passionate about discovering the potential of detection dogs who are one of nature's 'super-computers'."

Forest Research and Canine Assisted Pest Eradication have previously worked together on insect proof of concept projects, testing dogs' ability to detect Great spruce bark beetle (*Dendroctonus micans*) and, more recently, Emerald Ash Borer beetle.

Detection dogs have previously been used to tackle the outbreak of the Asian longhorn beetle pest in Paddock Wood, Kent, in 2012, where a team of dogs from the Austrian Plant Health Inspectorate successfully helped to detect the beetle.

Following the success of the initial trials, Forest Research is now exploring the use of detection dogs to help combat other pests and diseases such as Ips typographus, also known as the eight-toothed spruce bark beetle.

Read the full report.

WHAT A CENTURY-OLD GRAPEVINE REVEALS ABOUT A DISEASE THAT PLAGUES WINE COUNTRY

KARA MANKE, UC BERKELEY NEWS , 16 DECEMBER 2024

UC Berkeley postdoctoral scholar Alexandra Kahn (left) and graduate student Monica Donegan with historic grapevine specimens from the University and Jepsen Herbaria (Photo: Mathew Burciaga, UC Berkeley).

A century-old grapevine cutting is providing new clues into the history of a deadly plant pathogen that is decimating crops across the globe. First reported in Anaheim, California in the 1880s, Pierce's disease of the grapevine has since been found in much of California, as well as in other parts of the U.S. and, more recently, Europe. Triggered by the bacterium *Xylella fastidiosa*, the disease clogs the tiny tubes called xylem that transport water and nutrients throughout the plant. Starved of nourishment, the vine's grapes shrivel, its leaves turn brown and drop, and eventually the plant dies. A recent study estimates that the disease costs California growers and taxpayers more than $100 million a year in lost revenue and prevention efforts.

In a new study, researchers at the University of California, Berkeley, and the French agricultural research organisation CIRAD identified a 120-year old grapevine cutting in the UC Davis Center for Plant Diversity that still contained traces of *X. fastidiosa* DNA from the early 1900s.

By comparing the genome of this century-old *X. fastidiosa* strain with the genomes of more than 330 contemporary strains, the team was able to reconstruct the history of how the pathogen first arrived in California and later spread throughout the state. "Having a better estimate of what happened historically is vital for understanding the very complex, pathogen-riddled world around

us right now," said study co-first author Alexandra Kahn, a postdoctoral scholar at UC Berkeley. The study was published online in the journal *Current Biology*.

Scientists had long assumed that *X. fastidiosa* was first introduced to California in the 1880s or slightly before, when many species of grapes were brought to the state from the east to establish vineyards. At the time, local newspapers such as the Pacific Rural Press started reporting a mysterious new disease that was affecting "a large number of vineyards" in Anaheim and the Santa Ana Valley.

However, the genomic data suggests that the pathogen actually arrived in the U.S. nearly 150 years earlier, around the year 1740, and came from Central America. The data further suggests that the disease in California arose from not one but at least three separate introductions of the pathogen. "Even though this occurred over 250 years ago, it's still relevant to understanding the global spread of plant pathogens today," said Monica Donegan, a graduate student at UC Berkeley and co-first author of the study. "We found that the simplest assumptions about the routes and timing of pathogen introduction may be deceiving, which can impact things like international trade policies and quarantines for plant pathogens."

The fact that there were likely three separate introductions of *X. fastidiosa* also suggests that multiple, genetically distinct pathogen populations of the pathogen may exist in California. Like different variants of SARS-CoV-2, these populations may all cause similar symptoms, but respond differently to stressors like climate change. "These biological differences, even if they're small, can be meaningful when it comes to disease management," said study senior author Rodrigo Almeida, the Professor and Hildebrand-Laumeister Chair in Plant Pathology at UC Berkeley.

The grapevine cutting was collected by an individual named Alfred Tournier on Aug. 2, 1906, in Modesto, California. The cuttings are bereft of leaves, but still cling to a few barren or "matchstick" petioles, the scientific term used for the stalks that connect leaves to the stem of a plant. Tournier's cuttings were labeled Anaheim disease, the original name given to Pierce's disease. They are now among approximately 1100 historic grapevine specimens in the UC Davis herbarium's collection. Working with herbarium curator Alison Colwell, the researchers tested 10 sickly-looking grapevine specimens from the collection, but only found one that was positive for *X. fastidiosa* bacteria. They also tested grapevine specimens from the University and Jepson Herbaria, but did not find any that tested positive.

"A grapevine with a lot of *X. fastidiosa* is not necessarily a prime candidate for an herbarium collection, so we were very lucky to find even one infected sample," said Donegan.

Study co-authors Nathalie Becker and Adrien Rieux led the painstaking work of isolating the old and degraded *X. fastidiosa* DNA from the specimen. With the genome sequence in hand, the researchers then used bioinformatics software to compare the genes from the century-old *X. fastidiosa* to contemporary strains. This analysis provided an estimate of how quickly the pathogen's DNA mutates over time, which, in turn, allowed them to estimate the timing of key moments in the bacteria's evolutionary tree.

"The sample allowed us to calibrate the mutation rate of the pathogen as it evolved in California over the last hundred years," Kahn said. "Once we had established this relationship between evolutionary time and absolute time, we could reconstruct the chronological history of the disease outbreak."

In recent decades, *X. fastidiosa* has spread from the U.S. and Latin America to other countries, including Portugal, Spain, Italy, Israel and Taiwan. Knowing the evolutionary rate of the pathogen can also help researchers estimate the timing of these introductions and prevent further spread.

"It was only recently that people realized they could use these historic herbarium specimens to study plant pathogens," Almeida said. "I think this highlights the value of herbarium collections for research. There's a lot of pressure on these collections because we can't support them adequately, but they provide a huge value, and you never know how we may benefit from them in the future."

HARNESSING NATURE'S ARSENAL: PHOSPHOLIPIDS IN PLANT DEFENSE MECHANISMS

CHINESE ACADEMY OF SCIENCES, NEWS WISE, 29 NOVEMBER 2024

Powdery mildew and other crop diseases pose persistent threats to global food security and agricultural productivity. Overuse of pesticides has not only damaged ecosystems and raised health concerns but also led to resistant pathogen strains, reducing their effectiveness. Plant defense inducers (PDIs), natural molecules designed to mimic pathogen attacks and activate plant immune responses, offer a promising alternative. However, the interplay between PDIs and plant genotypes remains largely uncharted territory. To address these challenges, understanding the molecular mechanisms of genotype-specific immunity is vital.

Published on 12 July 2024 in *Horticulture Research*, a team from the Benaki Phytopathological Institute explored the power of *Reynoutria sachalinensis* extract in enhancing plant defenses. Using zucchini plants as a model, the study reveals how phospholipid signaling—an essential communication system within cells—plays a key role in countering powdery mildew. Advanced transcriptomic and metabolomic analyses shed light on how genetic differences dictate the effectiveness of this natural defense inducer, offering a scalable solution for sustainable agriculture.

The researchers compared two zucchini genotypes: one susceptible to powdery mildew and one with intermediate resistance. In the susceptible genotype, the plant defense inducer activated phospholipid production and related signaling pathways, bolstering the plant's resistance. Key molecules like lysophosphatidic acid were found to increase, aligning with significant changes in genes involved in lipid biosynthesis. In contrast, the resistant genotype showed strong baseline immune activity, with little additional response to treatment. The team linked this difference to the epigenetic regulation of a specific gene involved in lipid metabolism, demonstrating how genetic background can shape plant defense mechanisms. These findings highlight the pivotal role of phospholipid signaling in natural immunity, opening new avenues for targeted crop protection.

"Our research highlights the critical role of genetic diversity in shaping plant immune responses," said Dr. Theoni Margaritopoulou, the lead author of the study. "By understanding how defense inducers interact with different genotypes, we can create more effective, sustainable solutions for crop protection. This work marks an important step toward reducing pesticide reliance and mitigating the impact of crop diseases."

The implications of this research are profound. By combining plant defense inducers with genotype-specific breeding strategies, agriculture can move toward more resilient and sustainable practices. The discovery of lipid signaling's role in plant immunity provides a roadmap for developing targeted, environmentally friendly pest control solutions. While this study focused on courgettes, its principles could be extended to other crops, offering a transformative approach to safeguarding global food supplies.

NASA HELPS SPOT WINE GRAPE DISEASE FROM SKIES ABOVE CALIFORNIA

SALLY YOUNGER, JET PROPULSION LABORATORY NEWS, 4 AUGUST 2023

Withering molds, root-rotting bacteria, viruses, and other plant pathogens destroy an estimated 15 to 30% of global harvests every year. Early detection can make the difference between a failed crop and a treatable one. Using an airborne science instrument developed at NASA's Jet Propulsion Laboratory in Southern California, U.S., researchers have found that they can accurately spot the stealthy signs of a grape disease that inflicts billions of dollars in annual crop damage. The remote sensing technique could aid ground-based monitoring for this and other crops.

In a pair of new studies, researchers from JPL and Cornell University focused on a viral disease called GLRaV-3 (short for grapevine leafroll-associated virus complex 3). Primarily spread by insects, GLRaV-3 reduces yields and sours developing fruit, costing the U.S. wine and grape industry some $3 billion in damage and losses annually. It typically is detected by labor-intensive vine-by-vine scouting and expensive molecular testing.

The research team wanted to see if they could help growers identify GLRaV-3 infections early and from the air by using machine learning and NASA's next-generation Airborne Visible/InfraRed Imaging Spectrometer (AVIRIS-NG). The instrument's optical sensor, which records the interaction of sunlight with chemical bonds, has been used to measure and monitor hazards such as wildfires, oil spills, greenhouse gases, and air pollution associated with volcanic eruptions.

It was during a 2020 campaign to map methane leaks in California that plant pathologist Dr. Katie Gold and her team seized the opportunity to pose a different question: Could AVIRIS-NG uncover undercover crop infection in one of the state's most important grape-producing regions?

"Like humans, sick plants may not exhibit outward symptoms right away, making early detection the greatest challenge facing growers," said Gold, an assistant professor at Cornell University and senior author of the new studies. In the case of grapevine leafroll virus, it can take up to a year before a vine betrays the telltale signs of infection, such as discolored foliage and stunted fruit. However, on the cellular level, stress is well underway before then, changing how sunlight interacts with plant tissue.

AERIAL ADVANTAGE

Mounted in the belly of a research plane, AVIRIS-NG observed roughly 11,000 acres of vineyards in Lodi, California. The region – located in the heart of California's Central Valley – is a major producer of the state's premium wine grapes.

The team fed the observations into computer models they developed and trained to distinguish infection. To help check the results, industry collaborators scouted more than 300 acres of the vineyards from the ground for visible viral symptoms while collecting vine samples for molecular testing.

Gold noted it was a labor-intensive process, undertaken during a California heat wave. "Without the hard work of the growers, industry collaborators, and the scouting teams, none of what we accomplished would have been possible," she said. Similar efforts will continue under the NASA Acres Consortium, of which Gold is a lead scientist.

The researchers found that they were able to differentiate non-infected and infected vines both before and after they became symptomatic, with the best-performing models achieving 87% accuracy. Successful early detection of GLRaV-3 could help provide grape growers up to a year's warning to intervene.

In a complementary paper, the researchers said their case study shows how emerging capabilities in air and space can support ground-based pathogen surveillance efforts. These capabilities include forthcoming missions like NASA's Surface Biology and Geology (SBG) – part of the fleet of missions that will compose the agency's Earth System Observatory. They said that SBG will provide data that could be used in combination with machine learning for agricultural decision-making at the global scale.

Fernando Romero Galvan, a doctoral candidate and lead author of both studies, noted that sustainable farming practices are more important than ever in the face of climate change. "I think these are exciting times for remote sensing and plant disease detection," he said. "Scalable solutions can help growers make data-driven, sustainable crop management decisions."

"What we did with this study targets one area of California for one disease," said co-author Ryan Pavlick, a research technologist at JPL. "The ultimate vision that we have is being able to do this across the planet for many crop diseases and for growers all over the world."

Plant pathologist Katie Gold, an assistant professor at Cornell University, inspects diseased grapes in a field. Gold's team used a JPL-developed instrument to detect infected crops from the air in one of California's most important wine grape producing regions (Photo: Allison Usavage).

Advancements in plant gene editing technology: From construct design to enhanced transformation efficiency

A review by Pu Yuan *et al.* titled "Advancements in plant gene editing technology: from construct design to enhanced transformation efficiency" was published on 18 December 2024 by *Biotechnology Journal* (vol. 19, Issue 12, e202400457). The abstract is as follows:-

Plant gene editing technology has significantly advanced in recent years, thereby transforming both biotechnological research and agricultural practices. This review provides a comprehensive summary of recent advancements in this rapidly evolving field, showcasing significant discoveries from improved transformation efficiency to advanced construct design. The primary focus is on the maturation of the Clustered regularly interspaced short palindromic repeats/CRISPR-associated protein (CRISPR/Cas)9 system, which has emerged as a powerful tool for precise gene editing in plants. Through a detailed exploration, we elucidate the intricacies of integrating genetic modifications into plant genomes, shedding light on transport mechanisms, transformation techniques, and optimization strategies specific to CRISPR constructs. Furthermore, we explore the initiatives aimed at extending the frontiers of gene editing to nonmodel plant species, showcasing the growing scope of this technology. Overall, this comprehensive review highlights the significant impact of recent advancements in plant gene editing, illuminating its transformative potential in driving agricultural innovation and biotechnological progress.

Read paper.

Bacterial diseases: An emerging threat for central European forest and urban trees?

A review by Francesca Dennert *et al.* titled "Bacterial Diseases: An Emerging Threat for Central European Forest and Urban Trees?" was published on 3 December 2024 by *Forest Pathology* (vol. 54, Issue 6, e70002). The abstract is as follows:-

Bacterial tree diseases have been mainly studied in agriculture and horticulture. For forest trees, damage due to bacterial diseases is understudied. Moreover, bacterial tree diseases often appear in the context of so-called complex diseases, which are dependent on other factors, such as multiple microorganisms, insects or abiotic factors which weaken the host. In recent years, outbreaks of bacterial tree diseases, such as *Xylella fastidiosa* in the Mediterranean region or acute oak decline (AOD) in the United Kingdom, raised the awareness of bacterial diseases on forest trees. In this review, we aim to summarise the current issues and available knowledge about bacterial diseases of forest trees in Central Europe. Furthermore, we identify potential bacterial pathogens that could gain importance in the future for central European forests. The methods used were a systematic literature search and the analysis of the data collected over the last 10 years on bacterial diseases by the Swiss forest protection service. We conclude that, on one side, complex bacterial diseases could increase in importance, especially considering ongoing climate change. Therefore, the bacterial community of diseased trees (the pathobiome) needs to be studied more in depth to understand the emergence of complex bacterial diseases. On the other side, host ranges of highly pathogenic invasive genera and species, such as *Xylella*, need to be investigated experimentally for common central European tree species and varieties, to implement proactive risk management strategies against bacterial diseases in forest trees. Finally, urban trees and green spaces should be monitored more closely, as they could serve as starting points for bacterial disease outbreaks in forests, similarly to other emerging diseases and pathogens.

Read paper.

UNITY AGAINST UNCERTAINTY: EXPERTS COME TOGETHER TO COMBAT RICE FALSE SMUT

INTERNATIONAL RICE RESEARCH INSTITUTE (IRRI) NEWS, 4 DECEMBER 2024

Plant pathology experts from Asia, Africa, Europe, and America convened at the International Rice Research Institute (IRRI) headquarters in Los Banos, Philippines, during 14-17 October 2024 to address the threat of Rice False Smut (RFS) disease. Participants from 30 international organizations expressed their commitment to this cause by joining the newly formed International Rice False Smut Consortium (IRFSC).

The event, supported by the John Templeton Foundation, included presentations, workshops, meetings, and field visits. It responds to the increasing threat of false smut disease caused by the fungal pathogen *Ustilaginoidea virens*. This disease is exacerbated by changing climate patterns and increased seed movement, posing a significant risk to high-yield rice varieties. The molecular and genetic characteristics of the pathogen, along with its epidemiology and host resistance, remain poorly understood, highlighting an urgent need for agricultural research in this area. The workshop also served as the launch platform for the IRFSC, which aims to create a dynamic knowledge exchange platform for sharing cutting-edge research, insights, and experiences related to false smut disease and its management. The consortium will establish an international working group of multidisciplinary experts to collaboratively explore solutions, share resources, and drive collective research efforts.

Additionally, it will formulate a comprehensive research roadmap to guide future investigations into the biology, molecular, genetic, and ecological aspects of false smut disease. During the four-day workshop, onsite and online participants participated in sessions focused on developing actionable strategies with three to ten years of milestones. The first three years will emphasise establishing foundational tools and frameworks, including developing and

validating RFS resistance screening protocols, identifying elite RFS resistance donors, initiating QTL mapping, and piloting a disease forecasting model. As the consortium progresses toward year five, it will aim to enhance collaborative research and implement tangible solutions. This will involve validating candidate QTLs/genes across various locations, developing new resistant rice varieties, expanding pathogen population studies, and publishing comprehensive insights into pathogen biology and resistance mechanisms.

Through the consortium, the members plan to deploy RFS management packages and incorporate forecasting into advisory systems during this timeframe. By the tenth year, the consortium aims to establish sustainable global solutions. A steering committee was elected to ensure the consortium's sustainability and effectiveness. This committee will guide strategic direction, decision-making, monitoring and oversight, and stakeholder engagement. Dr. Van Schepler-Luu, Lead of the Plant Pathology and Host Plant Resistance Group at IRRI, and Dr. Nollie Vera Cruz, an IRRI alumnus, will represent the institute on this committee alongside colleagues from AfricaRice, CNRRI, Bayer, Corteva, Alliance Bioversity and CIAT, USDA, JIRCAS, and TSL, among others.

Participants expressed their enthusiasm for being part of the consortium. Adam Sparks from Curtin University in Australia remarked, "Consortia bring people together. It's easy to keep doing your work in isolation, but the details are important. You may not have all the information, but a consortium can integrate a wide range of expertise that strengthens your research."

Camila Nicolli from the University of Arkansas emphasised the importance of partnerships: "The diseases we face here in Asia are different from those in other parts of the world. In the U.S., our experiences are not the same. As a new systems professor, I recognise that to help others, we need to learn from outside our perspective."

The workshop's outcomes and the consortium's long-term objectives have the potential to shape the research agenda, policy decisions, and practical approaches to rice cultivation worldwide.

NEW FAO ANALYSIS MAPS NATIONALLY DETERMINED CONTRIBUTIONS, IDENTIFIES OPPORTUNITIES, GAPS AND RISKS RELATED TO AGRIFOOD CLIMATE SOLUTIONS

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO) NEWS, 18 NOVEMBER 2024

A new analysis from the Food and Agriculture Organization of the United Nations (FAO) finds that almost all countries identify agrifood systems as a priority for climate change adaptation (94 percent) and mitigation (91 percent) in their Nationally Determined Contributions (NDCs). This highlights the tremendous potential of agrifood systems as climate solutions, especially as countries prepare to submit their third round of NDCs in 2025.

NDCs are national climate action plans and the primary tool for achieving the Paris Agreement's goals. The FAO Agrifood Systems in Nationally Determined Contributions: Global Analysis sends an urgent message for policymakers: if we are to address the climate crisis and deliver on the Paris Agreement, agrifood solutions must be at the fore.

In this regard, the Global Analysis provides valuable data to help countries enhance these plans, particularly by addressing gaps in mitigation, adaptation, and climate finance within agrifood systems. It offers an overview of the major climate-related risks and greenhouse gas hotspots in this sector and synthesises key adaptation and mitigation strategies.

KEY FINDINGS AND GAPS

The study reveals that food insecurity and biodiversity loss are the most frequently reported climate-related risks, featuring in 88% of NDCs. These risks that threaten to undermine hard-earned sustainable development gains are particularly severe in sub-Saharan Africa, where climate change is increasing hunger and poverty.

Around two-thirds of all countries report climate-related impacts and risks for crop-based systems in their NDCs, while around one-half do for livestock, forest, and ocean and coastal-based fisheries and aquaculture systems. Least Developed Countries (LDCs) and low-income countries (LICs) report climate-related risks at a higher rate than the global average, especially risks to agrifood systems and food security; livelihoods, poverty and inequality.

The analysis also shows that inequalities within agrifood systems remain a significant barrier in NDCs. Addressing poverty and inequality is increasingly recognized as essential for adaptation and fair transitions, but only a fraction of NDCs target the specific vulnerabilities, risks and capacities of different segments of the agrifood population. Without greater attention to these socioeconomic gaps, agrifood systems risk leaving the most marginalised groups even more exposed to the impacts of climate change.

Similarly, mitigation gaps in agrifood systems are significant. While agriculture and food systems are a major source of greenhouse gas emissions, current NDCs address only around 40% of these emissions. This leaves the potential for doubling ambition in future NDCs and action. Livestock emissions are particularly neglected, with 66% unaddressed, and pre- and postproduction emissions fare even worse, with an 82% gap. Without closing these gaps, achieving global temperature targets will be nearly impossible. Even if fossil fuel emissions were eliminated,

unaddressed agrifood emissions would make it almost impossible to limit warming to 1.5°C, with even 2°C a daunting challenge.

Adaptation planning efforts also fall short. While agrifood adaptation measures in NDCs are relatively comprehensive, their effectiveness is uncertain due to lack of clarity regarding feasibility, and robustness. Without more coordinated and effective planning and investment, adaptation efforts will struggle to keep pace with escalating climate risks.

COSTS OF CLIMATE CHANGE IN AGRIFOOD SYSTEMS AND CLIMATE FINANCING NEEDS

The study shows that there is also an immense financial cost associated with decades of relative climate inaction in agrifood systems. Agriculture bears the brunt of climate-related disasters, suffering hundreds of billions of dollars in losses annually – equivalent to 5% of global agricultural GDP over the past 30 years. Between 2007 and 2022, agriculture accounted for 23% of total disaster-related losses, with droughts responsible for over 65%.

The scale of the climate finance gap further highlights the challenges ahead. Transforming agrifood systems to withstand climate pressures will require USD 1.15 trillion annually until 2030, but current funding averages only USD 28.5 billion annually. To bridge this gap would require a massive 40-fold increase in agrifood system investments per year until 2030, according to a study cited by the Global Analysis.

While countries recognize the need to scale up funding for agrifood systems, current estimates in NDCs still cover only one-sixth of the required finance, meaning a critical opportunity to mobilize resources for developing countries and implement actionable investment plans could be missed. The good news is that with a deadline of early 2025 to submit updated NDCs, countries still have a small window to increase their ambitions in this regard.

AGRIFOOD OPPORTUNITIES – THE WAY FORWARD

The recent Global Stocktake made it clear that despite current NDC pledges, the world is far from achieving the Paris's agreement's climate goals. Agrifood systems are vital for food security, livelihoods, and economies, but remain uniquely vulnerable to climate change.

Despite the challenges, agrifood systems offer tremendous potential. This is reflected in the current NDCs of nearly every country, as the study shows.

When thoughtfully crafted, agrifood climate actions ripple outward, delivering co-benefits across the Sustainable Development Goals—lifting people from poverty (SDG 1), ending hunger (SDG 2), and safeguarding biodiversity (SDG 15). A third of NDCs already explicitly connect agrifood solutions to broader development goals – by aligning agrifood priorities in NDCs with other climate and biodiversity plans, multilateral environmental agreements, food systems transformation pathways, and other similar development pathways, there are unique opportunities for transformational change.

Bold, data-driven plans and adequate funding are essential to unlock the potential of agrifood systems. As outlined in the study, countries must bridge the gaps—in emissions, equity, and finance—not only to protect these systems but also to realise their potential as a cornerstone of climate resilience, mitigation and sustainable development.

CURRENT VACANCIES

University of Manitoba Research Chair in Potato Sustainability

The University of Manitoba invites applications for a Research Chair in Potato Sustainability, a tenure-track position at the rank of Assistant or Associate or Professor. The Chair's program will be funded with an investment by a consortium of potato industry stakeholders including growers, processors, potato marketers, sector suppliers, and service providers. The Chair position will be conferred for a five-year term. The Chair's distribution of work duties will be research (55%), extension and sector engagement (25%), and teaching (20%). The tenure-track position will continue after the term without it being designated as a Chair. The position is expected to commence May 1, 2025 or as soon as possible thereafter. The Chair will be a faculty member in the Department of Plant Science, Faculty of Agricultural and Food Sciences (FAFS). FAFS is investing heavily to grow and modernize its horticulture and agronomic research and training capacity. Crop and soil research teams have been renewed by the addition of eleven new tenure-track faculty positions over three years (2020-23) as well as new infrastructure. The potato sector is an important part of Canadian agriculture, representing the fifth largest primary agriculture crop in Canada. Potatoes are Manitoba's fourth most valuable crop. Most potatoes produced in Manitoba are for processing, though fresh and seed potatoes are also grown. Research and innovation are key to enabling this sector to thrive and remain sustainable. In the 2022 Manitoba Potato Science and Technology Strategy, potato sector stakeholders presented a bold vision statement: "Make Manitoba Canada's leader in potato research and innovation". Following extensive consultation, the key priority areas identified in the Manitoba Strategy were soil productivity, fertility, and health; irrigation and water management; disease and pest management; variety evaluation and management; and storage. One of the primary recommendations in the strategy was to enhance the research and training capacity in potatoes at the University of Manitoba in areas including agronomy, soils, potato quality, and sustainability.

The Manitoba Research Chair in Potato Sustainability will ensure the University remains a recognized leader in agronomic sciences and crop production systems, supporting each of the four pillars identified in the Faculty's 2022-2027 Strategic Research Plan (https://umanitoba.ca/agricultural-food-sciences/sites/agricultural-food-sciences/files/2023-04/FAFS-Strategic-Research-Plan-2022-2027.pdf): promoting sustainable, resilient, fair, diverse & healthy, and technologically advanced agri-food systems. FAFS is actively working with Manitoba Agriculture to highlight research efforts by dedicating significant resources to foster knowledge translation and mobilization activities. It is expected that the Chair will play a significant role in knowledge exchange and extension as it applies to sustainable potato production.

Application Deadline: 6 December 2024. Applications should be sent to Dr. Nazim Cicek, Search Committee Chair, University of Manitoba, agresearch@umanitoba.ca. Applications should include:

- cover letter outlining the candidate's qualifications and how they fulfill the above-listed qualifications
- curriculum vitae (may include examples of significant research or extension contributions)
- maximum two-page statement outlining the innovative research, extension, and stakeholder engagement activities envisioned for the programage
- maximum one-page teaching statement

- a maximum one-page statement on the candidate's strengths and experiences in fostering Equity, Diversity and Inclusion
- names and contact information of three referees (will only be contacted with permission of candidate)

More information on job including responsibilities and qualifications.

Assistant Professors: Horticulture and Plant Pathology, Clemson University

The Department of Plant and Environmental Sciences in the College of Agriculture, Forestry and Life Sciences at Clemson University is seeking to fill two 9-month, tenuretrack positions at the Assistant Professor level (75% research and 25% Extension) to work on small fruit crops. The positions are located on the main campus in Clemson, South Carolina. Clemson University is an R1 Land Grant University located on the shores of Lake Hartwell within view of the Blue Ridge Mountains in the upper Piedmont region of South Carolina, USA. The 1,400-acre campus is part of the 18,000 acres of University Farms and Forests devoted to teaching and research.

The successful candidates are each expected to develop a vigorous, innovative, and extramurally supported research program. The first successful candidate should have a strong background in horticulture and focus on the cultivation of economically important small fruit crops in South Carolina and the southeastern United States. The second successful candidate should have a strong background in Plant Pathology and focus on the management of fungal diseases in small fruit crops. The research must be responsive to grower and stakeholder needs. Successful candidates are expected to collaborate with other faculty members in the department and college and interact with stakeholders and commodity groups in the region and around the country. There is an expectation of excellence in grantsmanship, timely communication of research findings through publication of peer-reviewed journal articles, and active participation in the training and mentoring of graduate students and postdocs. In addition to the above responsibilities, the successful candidate will be expected to communicate findings effectively with stakeholders and to assist in teaching activities.

Deadline: For full consideration, please apply by 15 November, 2024. Applications will be reviewed as they are received. The position will remain posted until it is filled.

More information on job and submit application.

Professor and Department Head (Academic Administrator), Pennsylvania State University

The Department of Plant Pathology and Environmental Microbiology at The Pennsylvania State University is seeking an outstanding individual to provide leadership and vision as Department Head. The Department thrives on understanding the nature of how diverse factors impact food safety, crop quality/productivity, and agricultural and ecosystem health with the goal to develop effective strategies for sustainable food and feed production. Specifically, the Department supports integrated extension programs in field crops, fruits, mushrooms, and vegetables. The faculty lead basic and applied research programs on biological control, fungal biology, microbial ecology, genomics and evolution, and plant/microbe/environment interactions. The Department fosters a highly ranked graduate program in Plant Pathology and actively participates in undergraduate and inter-college graduate programs to provide an intellectually stimulating, diverse, and inclusive environment for education and professional development.

Responsibilities:

The Head serves as the Departmental program leader and administrative officer and reports directly to the Dean of the College of Agricultural Sciences. The Head works with faculty to develop and meet strategic goals and to engage with diverse internal and external stakeholders.

Duties include:

Academic program leadership in research, graduate and undergraduate instruction and extension. Administrative responsibility for academic affairs, departmental personnel, financial matters, and physical facilities. Leadership and coordination of Departmental relations with other Penn State units and programs, agricultural producers, agricultural industries, government agencies, and citizens of the Commonwealth of Pennsylvania. Creating an environment that supports and cultivates diversity, equity, inclusion and belonging.

More information on job and submit application.

ACKNOWLEDGEMENTS

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COMING EVENTS

Plant & Animal Genome 32 Conference (PAG 32)
10 January – 15 January, 2025
San Diego, USA
Website: www.intlpag.org/PAG32/

11th Symposium on Plant Protection and Plant Health International (PPPHI)
18 February – 19 February, 2025
Braunschweig, Germany
Website: ppphi.plant-protection.net

International Organization of Citrus Virologists (IOCV) XXIII Conference
16 March – 20 March, 2025
Mildura, Victoria, Australia
Website: www.iocvaustralia2025.org.au

Joint meeting of the 70th Conference on Soilborne Plant Pathogens and the APS Pacific Division
25 March – 27 March, 2025
University of California, Davis, USA
Website: soilfungus.wsu.edu

International Symposium on Plant Pathogenic Sclerotiniaceae - BotryScleroMoni 2025. Joint meetings of XIX International *Botrytis* Symposium, XVII International *Sclerotinia* Workshop, and II International *Monilinia* Workshop
25 May – 30 May, 2025
Thessaloniki, Greece
Website: botryscleromoni.com

Australasian Plant Pathology Society Conference
26 May – 28 May, 2025
International Convention Centre at Darling Harbour, Sydney, Australia
Website: www.apps2025.org

14th Conference of the European Foundation for Plant Pathology (EFPP)
2 June – 5 June, 2025
Uppsala, Sweden
Website: www.efpp2025.com

XVII Working Group "Biological and integrated control of plant pathogens." From single microbes to microbiome targeting One Health.
11 June – 14 June, 2025
University of Torino, Torino, Italy
Contacts: Davide Spadaro and Monica Mezzalama
Email: iobc2025@symposium.it
Website: www.iobctorino2025.org

17th Congress of the Mediterranean Phytopathological Union - New phytopathology frontiers of research and education for plant health and food safety
7 July – 10 July, 2025
Ciheam-Bari, Italy
Contact and Email: Anna Maria D'Onghia
mpu2025@iamb.it
Website: www.mpunion.org

13th International Workshop on Grapevine Trunk Diseases
21 July – 25 July, 2025
Ensenada, Baja California, México
Contact and Email: Rufina Hernández
13iwgtd@cicese.mx
Website: 13iwgtd.cicese.mx

Plant Health 2025
2 August – 5 August, 2025
Honolulu, Hawaii
Website:
www.apsnet.org/meetings/annual/PH2025/Pages/default.aspx

Conference of the IOBC/WPRS Working Group "Integrated Protection in Viticulture"
13 October – 15 October, 2025
Mikulov, Czech Republic
Website: event.fourwaves.com/ipvc/pages

14th Arab Congress of Plant Protection Sciences
3 November – 7 November, 2025
Algeria city, Algeria
Contact and Email: info@acpp-aspp.com
Website: acpp-aspp.com

8th International Bacterial Wilt Symposium (IBWS)
22 March – 26 March, 2026
Wageningen, the Netherlands
Website: event.wur.nl/ibws2026

13th International Congress of Plant Pathology 2028
19 August – 25 August, 2028
Gold Coast, Queensland, Australia
Website: www.icpp2028.org

INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY (ISPP)

WWW.ISPPWEB.ORG

The ISPP List is an e-mail list server which broadcasts messages and announcements to its subscribers. Its goal is to facilitate communication among members of the International Society for Plant Pathology and its Associated Societies. Advertised vacancies in plant pathology and ISPP Newsletter alerts are also sent to members of the ISPP List.

In accordance with the guidelines and recommendations established by the new EU General Data Protection Regulation 679/2016 (GDPR), the International Society for Plant Pathology has created a Privacy Information Notice containing all the information you need to know about how we collect, use and protect your personal data.

This policy explains when and why we collect personal information about our users, how we use it, the conditions under which we may disclose it to third parties, how we keep it safe and secure and your rights and choices in relation to your personal information.

Should you need further information please contact business.manager@issppweb.org

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