PROMOTING WORLD-WIDE PLANT HEALTH AND FOOD SECURITY

INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY

ISPP NEWSLETTER

ISSUE 54 (2) FEBRUARY 2024

Editor: Daniel Hüberli (**email**)

Join the ISPP **mail list**

IN THIS ISSUE:

SCIENTISTS ENGINEER PLANT MICROBIOME FOR THE FIRST TIME TO PROTECT CROPS AGAINST DISEASE

UNIVERSITY OF SOUTHAMPTON NEWS, 4 JANUARY 2024

Scientists have engineered the microbiome of plants for the first time, boosting the prevalence of 'good' bacteria that protect the plant from disease. The findings published in *Nature Communications* by researchers from the University of Southampton, China and Austria, could substantially reduce the need for environmentally destructive pesticides.

Plants host a huge variety of bacteria, fungi, viruses, and other microorganisms that live in their roots, stems, and leaves. For the past decade, scientists have been intensively researching plant microbiomes to understand how they affect a plant's health and its vulnerability to disease.

"For the first time, we've been able to change the makeup of a plant's microbiome in a targeted way, boosting the numbers of beneficial bacteria that can protect the plant from other, harmful bacteria," says Dr Tomislav Cernava, co-author of the paper and Associate Professor in Plant-Microbe Interactions at the University of Southampton.

"This breakthrough could reduce reliance on pesticides, which are harmful to the environment. We've achieved this in rice crops, but the framework we've created could be applied to other plants and unlock other opportunities to improve their microbiome. For example, microbes that increase nutrient provision to crops could reduce the need for synthetic fertilisers."

The international research team discovered that one specific gene found in the lignin biosynthesis cluster of the rice plant is involved in shaping its microbiome. Lignin is a complex polymer found in the cell walls of plants – the biomass of some plant species consists of more than 30 per cent lignin.

First, the researchers observed that when this gene was deactivated, there was a decrease in the population of certain beneficial bacteria, confirming its importance in the makeup of the microbiome community.

The researchers then did the opposite, over-expressing the gene so it produced more of one specific type of metabolite – a small molecule produced by the host plant during its metabolic processes. This increased the proportion of beneficial bacteria in the plant microbiome.

When these engineered plants were exposed to *Xanthomonas oryzae* – a pathogen that causes bacterial blight in rice crops, they were substantially more resistant to it than wild-type rice.

Bacterial blight is common in Asia and can lead to substantial loss of rice yields. It's usually controlled by deploying polluting pesticides, so producing a crop with a protective microbiome could help bolster food security and help the environment.

The research team are now exploring how they can influence the presence of other beneficial microbes to unlock various plant health benefits.

MANNON GALLEGLY, WEST VIRGINIA UNIVERSITY PROFESSOR EMERITUS UNVEILS FINAL TOMATO VARIETY

WVU TODAY, 24 JANUARY 2024

A West Virginia University (WVU) plant pathology professor emeritus who has spent more than 70 years developing hearty tomato varieties for home gardeners has created his fourth and final tomato — the West Virginia '23, dubbed "Mannon's Majesty."

Mannon Gallegly, WVU plant pathology professor emeritus, has spent more than 70 years researching tomato varieties. He's created four varieties of his own including his newest, and last, the West Virginia '23, also known as "Mannon's Majesty" (Photo credit: WVU).

"With so many tomato growers in this state, I wanted to help them continue to grow their food," Mannon Gallegly said. "I am, after all, an employee of the people of West Virginia. That's why I developed it — for the people of West Virginia."

Gallegly, now 101 and 30 years into retirement, began his tomato creating journey in 1950. His research at WVU on vegetable diseases and tomato blight led him on a 13-year quest to develop the West Virginia '63, known as the "people's tomato." The variety was first released in 1963 and rereleased in 2013 to commemorate West Virginia's 100th and 150th birthdays. In 2017, he created two more new varieties — the West Virginia '17A and the West Virginia '17B — in honor of the 150th birthday of the WVU Davis College of Agriculture, Natural Resources and Design, the University's founding academic unit.

The West Virginia '23 is resistant to *Septoria lycopersici* or Septoria leaf spot, one of the major diseases that home gardeners deal with, Gallegly explained. It's also resistant to fusarium wilt, verticillium wilt and late blight.

Septoria leaf spot affects the foliage of the tomato plant, removing the leaves and exposing the fruit to direct sunlight, which can lead to sunscald. This can either kill the plant or negatively affect the taste. Fusarium wilt is a fungal disease that can cause significant yield losses. Verticillium wilt is also a fungal disease that causes gradual deterioration, and late blight infects the entire plant, spreads quickly and can cause total crop failure.

Gallegly inoculated his research plants with these diseases before putting them in a moisture chamber for three days. The survivors are those that are resistant. From those, he picked out tomatoes based on preferable size, color, shape and taste. He bred them in the field to eventually have a tomato that is delicious, resistant to disease and with a good size, shape and color.

As he did with his previous varieties, Gallegly sent the new seeds to the World Vegetable Center, an international, nonprofit institute for vegetable research and development that focuses on climate change.

Unlike his previous varieties, Gallegly asked Davis College Dean Darrell Donahue, also the director of the West Virginia Agriculture and Forestry Experiment Station, to name the West Virginia '23. "Mannon gave me the honor of naming this new variety, which I did not take lightly," Donahue said. "He named his previous tomatoes in honor of West Virginia, so it's only right that we, and the state, honor him for all that he's given us. Mannon shies away from the spotlight, but I thought it was best to name the West Virginia '23 after him — 'Mannon's Majesty.'"

OBITUARY OF JAMES LORBEER, 1931-2023

KRISY GASHLER, CORNELL CHRONICLE, 25 JANUARY 2024

James W. Lorbeer, whose research on diseases of onion and other vegetables grown in organic soils aided growers in New York state and around the world, died 5 October 2023, in Ithaca, USA. A professor emeritus of plant pathology, Lorbeer was 91.

Lorbeer was born and raised on his family's citrus farm in Ventura County, California, and his upbringing affected his research direction, said Gary Bergstrom, professor emeritus of plant pathology and a colleague of Lorbeer.

"Agriculture was in Jim's blood, and this influenced his career choice, and especially his motivation to develop useful solutions for farmers," Bergstrom said. "His scientific travels took him to every continent except Antarctica. At the same time, until his death, he oversaw management of orange groves in California."

Lorbeer's research focused on the causes and management of vegetable crop diseases, especially for crops grown in organic soils. Lorbeer was internationally recognised for his groundbreaking research and publications on diseases of onion, Bergstrom said, especially fungal and bacterial infections that cause crop-devastating diseases like purple blotch disease, neck rot, bulb rot, and leaf blight. He collaborated with farmers, researchers, and public and private agencies to develop disease-resistant onion varieties, disease prediction systems, effective fungal control strategies and modified cropping practices to reduce disease impacts.

Lorbeer was born 30 October 1931. He received his bachelor's degree from Pomona College, his master's degree from the University of Washington, Seattle, and his Ph.D. in plant pathology from the University of California, Berkeley. He joined the Cornell faculty as an assistant professor in 1960 and retired in 2010.

Lorbeer received the American Phytopathological Society Northeastern Division Award for Applied Research in 1991 and the Orange County (New York) Vegetable Improvement Cooperative Association Award in 1993. He published more than 300 articles in scientific and trade journals as well as numerous book chapters. His research was supported by grants from the U.S. Department of Agriculture, the New York State Department of Agriculture and Markets and private agricultural companies.

Lorbeer was also an effective and caring teacher and adviser, said George Abawi, M.S. '65, Ph.D. '71, professor emeritus of plant pathology and plant-microbe biology. Lorbeer taught courses in plant pathology and mycology and served as director of graduate studies in plant pathology. Abawi was advised by Lorbeer during his graduate studies before becoming his colleague.

"Jim was an excellent teacher and adviser throughout his career," Abawi said. "He cared about all of his students, he introduced them to all the scientists he knew at meetings, and he always made sure they got their shares of whatever resources were available to them in the department and the graduate school. He was truly engaging, respectful and most helpful to all."

Lorbeer's research and outreach work benefited onion growers, consumers, fellow scientists and the environment, Abawi said. "His research always addressed practical and ongoing production problems, thus growers were the primary beneficiaries of his research results," he said. "However, the integrated pest management approaches Jim advocated also benefited the environment and reduced production costs, which benefited consumers."

Lorbeer is survived by his wife of 59 years, Susanne T. Perrault Lorbeer.

OBITUARY OF EMERITUS PROF. ALLEN KERR, 1926-2023

KATHY OPHEL-KELLER, GRANT SMITH AND JACQUI MCRAE

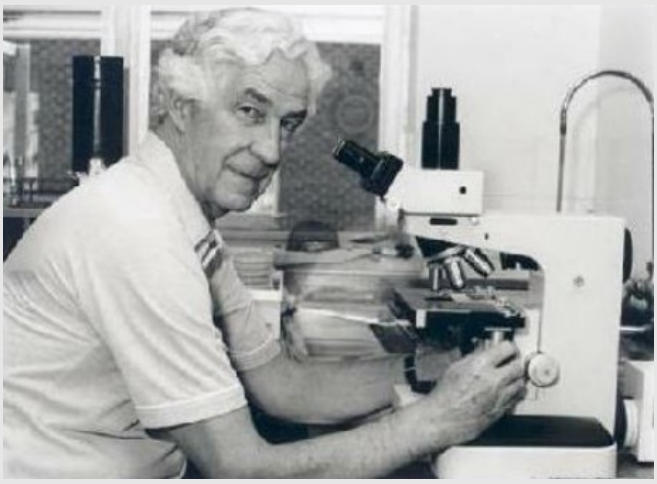
It's with great sadness that we announce the passing of Emeritus Prof Allen Kerr on 14 December 2023.

Many younger plant pathologists will know of Allen Kerr as an Australasian Plant Pathology Society (APPS) Fellow and via the Allen Kerr prize, which is awarded each year by APPS for the most outstanding PhD research in plant pathology.

Allen Kerr's own research career had many significant highlights, including fundamental observations which led to the discovery of the tumour-inducing plasmids (Ti plasmids) in *Agrobacterium*, paving the way for plant genetic engineering, and the discovery and understanding of the most successful example of biological control in plant pathology, the use of strain K84 for control of crown gall disease of stonefruit.

Allen was born in Edinburgh in 1926. His career began in Edinburgh University where he enrolled in Science, with an interest in bacteriology. His interest in botany and an inspiring mycologist as a teacher led Allen to discover the joy of plant pathology, and his career as a plant pathologist began. In 1950, he was offered a job at the Waite Agricultural Research Institute. He enrolled in a PhD on *Rhizoctonia solani*, then (as now) an important pathogen of cereals in southern Australia. A sabbatical with Dr SD Garrett at Cambridge in 1959 stimulated a lifelong interest in biological control.

After a period in Ceylon in the 1960's studying blister blight of tea (*Exobasidium vexans*), Allen returned to Adelaide at a time when crown gall disease was causing very significant economic losses in the South Australian stonefruit industry. At this time, it was known that, after infection, crown gall tumours could grow without the causal bacterium, and a hypothetical "tumour- inducing principle" had been proposed by Braun, but the discovery of the Ti plasmid was still a decade away.



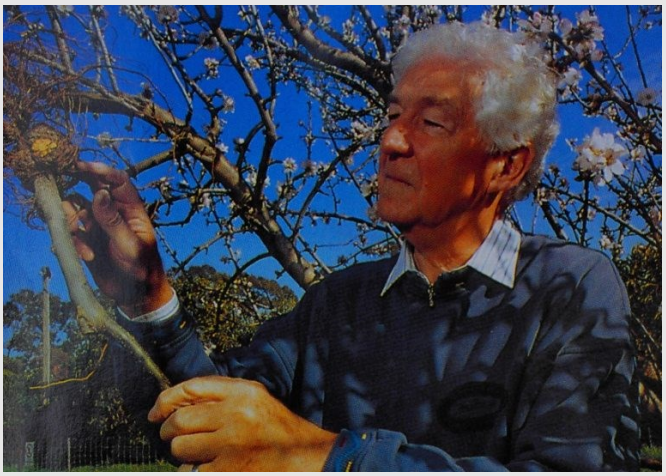
Allen's research at the Waite focused on the ecology of *Agrobacterium*, and through his use of different selective media, realised that pathogenicity was being transferred from pathogens to nonpathogens. He soon understood that this must be the result of plasmid transfer between strains. The demonstration of pathogenicity transfer led to an international race to locate the "tumour-inducing principle" and in 1975 Eugene Nestor's lab in Seattle published evidence for the Ti plasmid. This created the basis of the revolution in plant genetic engineering.

Allen Kerr's own research re-focused on the biology of *Agrobacterium* studies on non-pathogenic and pathogenic strains led to the important observation that a non-pathogenic strain of *Agrobacterium* completely inhibited crown gall formation when mixed with a pathogen. Work in the lab then demonstrated that control was dependent on the production of an antibiotic, agrocin 84 by the non-pathogen, strain K84.

As with many effective controls, the seriousness of crown gall disease to stonefruit production is now largely forgotten. Stonefruit growers were supplied with strain K84 on agar slopes from a small incubator in Allen Kerr's lab for many years.

A report from Greece that pathogens could arise which produced agrocin 84 led to a detailed genetic study of the agrocin 84 plasmid. Using transposon mutants supplied by Stephen Farrand (University of Illinois), the genes controlling agrocin synthesis and plasmid transfer were mapped. Dr. David Jones, working with Allen Kerr, constructed a deletion mutant of K84, which was unable to transfer the plasmid.

The deletion mutant, K1026, was shown to be as effective as K84 at controlling crown gall disease and approval was gained to use this genetically modified strain as a commercial control. It was the first genetically engineered organism in the world to be released for commercial use.



Emeritus Professor Allen Kerr inspecting gall on peach tree (Photo credit: Waite Adelaide).

The highlights of Allen's research were undoubtedly the discovery of pathogenicity transfer, the successful biological control of crown gall and the commercial use of the genetically engineered biological control agent. However, Allen and his collaborators also made a wide range of contributions to plant bacteriology with significant impact on the control of crown gall disease of grapevines, on the understanding of conjugation in *Agrobacterium*, and on the role of bacteria and bacteriophage in Annual Ryegrass Toxicity (ARGT).

Allen Kerr served on the ISPP Executive during 1978-1983 as ISPP Vice President responsible for ICPP1983 and subsequently as Congress President for ICPP1983 held from 17-24 August in Melbourne, Victoria, Australia.

Allen Kerr's career and achievements were recognised by the award of the inaugural Australia Prize (1990), election as a Fellow of the Australian Academy of Science, Fellow of the Royal Society, Foreign Associate of the National Academy of Sciences, US and Fellow of the American Academy of Microbiology, not to forget the APPS Allen Kerr Prize.

Information from:

https://www.appsnet.org/Awards/Kerr.pdf

OBITUARY OF DEBORAH GOLINO, 1953-2023

EMILY C. DOOLEY, UC DAVIS NEWS, 10 JANUARY 2024

Deborah Golino, renowned plant pathologist, avid gardener and retired director of Foundation Plant Services, or FPS, at University of California, Davis, died 23 Dececember 2023. She was 70 and will be dearly missed.

Golino was a powerhouse, a kind friend and mentor who had a knack for seeing the big picture and making her vision happen. She was approachable yet formidable, known for her epic parties and willingness to help others.

"She was not only a colleague, she was a good friend and a supporter," said Maher Al Rwahnih, the current FPS director who worked closely with her for nearly 20 years. "I learned from her how to focus more on the big picture."

Golino earned her degrees at University of California, Riverside, graduating with a Ph.D. in plant pathology in 1987. While earning her doctorate she studied insect-transmitted citrus diseases for the U.S. Department of Agriculture's Agricultural Research Service, or USDA-ARS.

Golino moved to Davis in 1987 working for the Crops Pathology and Genetics Research Unit for the USDA-ARS, which was co-located on campus.

She became a Cooperative Extension specialist in the UC Davis Department of Plant Pathology and director of Foundation Plant Services in 1994. During her tenure, she expanded the unit from a small staff of less than 10 focusing mostly on grapevines and grapes into a nationally and internationally known source of virus tested, healthy roses, grapevines, strawberries, sweet potatoes and fruit and nut trees.

"She really took [Foundation Plant Services] to a world class level," said Dave Rizzo, chair of the Department of Plant Pathology. "It's very respected around the world for what they do and a lot of that was because of Deborah."

Helene Dillard, dean of the College of Agricultural and Environmental Sciences, said Golino was an outstanding plant pathologist. "She is highly regarded throughout the world for her work on plant pathogens and for her exceptional leadership of Foundation Plant Services at UC Davis," Dillard said

At the time of Golino's retirement in 2021, the unit had 45 employees who oversaw 100 acres of crops, which were screened and determined free of diseases for sale to nurseries, growers and other industry players.

Golino was a popular teacher and leader who never lost sight of the importance of crops and the needs of industry. "We know if you don't have clean plants, you will have economic impacts from pathogens," Al Rwahnih said.

She played a key role in the formation of the National Clean Plant Network and sat on the board of the National Grape Research Alliance, serving as an initial member of its Science Advisory Council.

Golino retired from UC Davis in 2021 during the COVID-19 pandemic and wasn't able to have a retirement party. Last November, Rizzo held a small dinner party for department retirees, and she was there, laughing and sharing memories.

"We had a lot of fun and laughed," Rizzo said. "It was a wonderful last memory to have with her."

Positive and negative aspects of bacteriophages and their immense role in the food chain

A paper by Jacquelinne Soniya Ashok Ranveer *et al.* titled "Positive and negative aspects of bacteriophages and their immense role in the food chain" was published on 3 January 2024 by *npj Science of Food* (vol. 8 (1)). The abstract is as follows:-

Bacteriophages infect and replicate inside a bacterial host as well as serve as natural bio-control agents. Phages were once viewed as nuisances that caused fermentation failures with cheese-making and other industrial processes, which lead to economic losses, but phages are now increasingly being observed as being promising antimicrobials that can fight against spoilage and pathogenic bacteria. Pathogen-free meals that fulfil industry requirements without synthetic additives are always in demand in the food sector. This study introduces the readers to the history, sources, and biology of bacteriophages, which include their host ranges, absorption mechanisms, lytic profiles, lysogenic profiles, and the influence of external factors on the growth of phages. Phages and their derivatives have emerged as antimicrobial agents, biodetectors, and biofilm controllers, which have been comprehensively discussed in addition to their potential applications in the food and gastrointestinal tract, and they are a feasible and safe option for preventing, treating, and/or eradicating contaminants in various foods and food processing environments. Furthermore, phages and phage-derived lytic proteins can be considered potential antimicrobials in the traditional farm-to-fork context, which include phage-based mixtures and commercially available phage products. This paper concludes with some potential safety concerns that need to be addressed to enable bacteriophage use efficiently.

Read paper.

Diversity and pathogenic characteristics of the Fusarium species isolated from minor legumes in Korea

A paper by Min Sun Ha *et al.* titled "Diversity and pathogenic characteristics of the *Fusarium* species isolated from minor legumes in Korea" was published on 18 December 2023 by *Scientific Reports* (vol. 13, article number: 22516). The abstract is as follows:-

Legumes are primarily grown agriculturally for human consumption, livestock forage, silage, and as green manure. However, production has declined primarily due to fungal pathogens. Among them, this study focused on *Fusarium* spp. that cause Fusarium wilt in minor legumes in Korea. Diseased legume plants were collected from 2020 to 2021, and diverse fungal genera were isolated from the internal tissues of the plant roots and stems. *Fusarium* spp. were the most dominant, accounting for 71% of the isolates. They were identified via morphological characteristics and molecular identification. In the pathogenicity test, *Fusarium oxysporum* and *Fusarium fujikuroi* generally exhibited high virulence. The host range investigation revealed that the NC20-738, NC20-739, and NC21-950 isolates infected all nine crops, demonstrating the widest host range. In previous studies, the focus was solely on Fusarium wilt disease in soybeans. Therefore, in this study, we aimed to investigate Fusarium wilt occurred in minor legumes, which are consumed as extensively as soybeans, due to the scarcity of data on the diversity and characteristics of *Fusarium* spp. existing in Korea. The diverse information obtained in this study will serve as a foundation for implementing effective management strategies against *Fusarium*-induced plant diseases.

Read paper.

DISEASE PREDICTION BASED ON TRANSFER LEARNING USING CONVNETS

A paper by Anita S. Kini *et al.* titled "Early stage black pepper leaf disease prediction based on transfer learning using ConvNets" was published on 16 January 2024 by Scientific Reports (vol. 14, article number: 1404). The abstract is as follows:-

Plants get exposed to diseases, insects and fungus. This causes heavy damages to crop resulting in various leaves diseases. Leaf diseases can be diagnosed at an early stage with the aid of a smart computer vision system and timely disease prevention can be targeted. Black pepper is a medicinal plant that is extensively used in Ayurvedic medicine because of its therapeutic properties. The proposed work represents an intelligent transfer learning technique through state-of-the-art deep learning implementation using convolutional neural network to predict the presence of prominent diseases in black pepper leaves. The ImageNet dataset available online is used for training deep neural network. Later, this trained network is utilized for the prediction of the newly developed black pepper leaf image dataset. The developed data set consist of real time leaf images, which are candidly taken from the fields and annotated under supervision of an expert. The leaf diseases considered are anthracnose, slow wilt, early stage phytophthora, phytophthora and yellowing. The hyperparameters chosen for tuning in to deep learning models are initial learning rates, optimization algorithm, image batches, epochs, validation and training data, etc. The accuracy obtained with 0.001 learning rate ranges from 99.1 to 99.7% for the Inception V3, GoogleNet, SqueezeNet and Resnet18 models. Proposed Resnet18 model outperforms all model with 99.67% accuracy. The resulting validation accuracy obtained using these models is high and the validation loss is low. This work represents improvement in agriculture and a cutting edge deep neural network method for early stage leaf disease identification and prediction. This is an approach using a deep learning network to predict early stage black pepper leaf diseases.

Read paper.

USDA ANNOUNCES THE NATIONAL CLIMATE CHANGE ROADMAP

A new resource, National Climate Change Roadmap - A Research Framework for Agriculture, Forestry and Working Lands, funded by USDA's National Institute of Food and Agriculture (NIFA) and led by researchers from Colorado State University and Meridian Institute, was released recently.

Addressing the impact of climate change on agriculture and natural resources requires the translation of science to solutions and policies that support more sustainable forms of land use, efficient agricultural production, and community-engaged research globally. The National Climate Roadmap is a science agenda holistically designed to serve researchers, policymakers, farmers and practitioners.

DOMESTICATING PLANTS IMPACTS THEIR MICROBIOME

UNIVERSITY OF OXFORD NEWS, 16 JANUARY 2024

New research led by the University of Oxford indicates that human domestication of crops can alter the communities of microorganisms that are associated with plants. Intriguingly, independent domestication events were found to have similar impacts on the plant microbiome. The results have been published in *Current Biology*.

Lead researcher Dr Riccardo Soldan (Department of Biology, University of Oxford) said: "Our study provides evidence that regardless of where and how domestication took place, domesticated plants have microbial communities that distinguish them from their wild counterparts. This knowledge is important because if we know that a certain domesticated crop species consistently associates with specific microbes, one day we might be able to engineer these communities to deliver positive effects to the host plant."

As microorganisms can have numerous beneficial effects on host plants such as enhancing growth, stress tolerance, and drought or disease resistance, these findings could ultimately help inform microbe-based approaches to improve crop yields and food security. For instance, previous work by the research team suggests that domestication may have reduced the ability of crop plants to recruit microorganisms that enhance disease resistance.

In the new study, the researchers analysed the microbial communities associated with two crop species that are known to have been domesticated independently multiple times in Mesoamerica and South America: *Phaseolus vulgaris* (common bean) and *Phaseolus lunatus* (lima bean). This meant they had a series of replicates for an event that lasted thousands of years.

As the researchers wanted to understand whether any changes in the microbiome were linked to plant traits that were subject to selection by humans during domestication, they focused on microbes associated with seeds. In seed crops, such as beans, seeds have undergone significant changes during domestication. For example, domesticated bean seeds are significantly larger compared with their wild relatives and have different mineral contents (linked to improved seed quality and cooking properties).

Using statistical and machine learning approaches, the researchers found significant differences in the composition of the microbial communities associated with beans from the wild and domesticated plants.

Furthermore, these changes in microbiome abundance and composition correlated with changes in seed mineral content across multiple domestication events. In particular, reduced calcium concentrations in domesticated *P. vulgaris* seeds, which may have been selected for as a consequence of selection for improved cooking properties, showed a notable correlation with changes in microbiome composition.

The principal investigator, Professor Gail Preston (Department of Biology, University of Oxford) said "Our results provide evidence that the similarities in the microbial communities of independently domesticated plants can be partially explained by the fact that domesticated plants have closely matched plant traits. In this case, independent domestication processes selecting for bigger and better seeds in two different regions of the Americas shaped the seed microbiome in similar ways. Understanding the factors that shape microbial communities in wild and domesticated plants could open up exciting opportunities to modify the composition of domesticated crop microbiomes to increase resilience and improve productivity."

In future work, the research team intend to investigate the effect of domestication on other plant traits and for a wider range of crop species. A key question is whether there are beneficial traits present in wild species which act to recruit a diverse and health-promoting microbiome that could be reintroduced into domesticated crops.

THE SOIL-PLANT CONNECTION: A COMPREHENSIVE GUIDE TO SOIL HEALTH AND PLANT VITALITY

POTATO NEWS TODAY, 26 DECEMBER 2023

In an insightful video presentation by Joel Williams, an independent plant and soil health educator and consultant in the UK, the intricate relationship between soil health and plant nutrition was explored in detail. The video, titled "Soils and Nutrition with Joel Williams," hosted by AHDB, delved into the complexities of soil microbiome, soil health measurements, and strategies for improving soil health.

Williams emphasised the critical role of soil in supporting healthy plants and animals. He highlighted the alarming statistics about soil degradation worldwide, pointing out that one-third of the world's soils are degraded. The causes of this degradation, such as water and wind erosion, salinity, loss of organic matter, and extremes of pH, were discussed, underscoring the urgent need for effective soil management strategies.

The presentation shifted focus to the concept of soil health, breaking it down into its chemical, physical, and biological components. Williams argued that all three aspects are equally important and interdependent, likening them to a three-legged stool. He stressed that neglecting any one aspect could destabilize the entire system.

A significant portion of the talk was dedicated to the role of plants in soil health. Williams explained how plants, through photosynthesis, are crucial in bringing carbon into the soil ecosystem. This process not only supports the soil microbiology but also enhances the soil's chemical and physical properties. He highlighted the importance of root exudates, liquid carbon released by roots, in feeding soil organisms and improving soil structure.

The discussion then moved to practical strategies for improving soil health. Williams advocated for integrated nutrient management, combining organic and inorganic sources to optimize plant growth. He also emphasized the importance of plant species diversity, explaining how different plants contribute uniquely to soil health through varied root systems and interactions with soil microbes.

Williams concluded by reinforcing the inseparable link between soil health and plant health. He urged for a holistic approach to soil management, incorporating principles of conservation agriculture and emphasizing the role of plants in the soil health framework. The key takeaway was the critical importance of maintaining a healthy, diverse soil ecosystem as the foundation for sustainable agriculture.

This insightful presentation by Joel Williams offers a comprehensive understanding of the dynamic relationship between soil health and plant nutrition, providing valuable guidance for farmers, agronomists, and environmentalists alike in their quest for sustainable agricultural practices.

Watch the full video on AHDB's YouTube channel here.

CURRENT VACANCIES

Full Professor of Plant Diseases and Crop Protection – University of Göttingen, Germany

The Faculty of Agricultural Sciences, Department of Crop Sciences, is seeking to fill a permanent professorship with civil servant status at the earliest possible date. The post-holder will be expected to address issues pertaining to the emergence, spread, and integrated control of plant diseases in crops in both research and teaching, encompassing a wide scope. Research should be clearly related to agronomic issues and have an international focus. The inclusion of crops and production systems under field conditions, and the consideration of biotic and abiotic factors in agricultural ecosystems is preferred. The professorship will contribute to teaching in the Faculty´s Bachelor and Master programs. More info about the position and further instructions in the PDF.

Have we awakened your interest? Here you can find the complete job advertisement: https://uni-goettingen.de/en/682774.html. Candidates are invited to send their applications no later than 25 February 2024 to the Dean of the Faculty of Agricultural Sciences via the online application portal: https://lotus2.gwdg.de/uni/uafb/w3_PlantDiseases_2023.nsf/bewerbung

Info about the position and further instructions in the PDF.

Assistant Professor of Virus Ecology – The Pennsylvania State University, USA

The Department of Plant Pathology and Environmental Microbiology in the College of Agricultural Sciences and the Huck Institutes of the Life Sciences of The Pennsylvania State University are seeking an Assistant Professor of Virus Ecology. This position has 75% research and 25% teaching responsibility on a tenure-track 36-week appointment. The successful applicant is expected to develop an externally funded, high impact research program exploring virus ecology and evolution. We anticipate applicants that seek to understand and harness viruses (including viromes) for increased sustainability and resilience of agricultural and natural systems.

Ph.D. in Plant Pathology, Ecology, Biology, Microbiology, or a related field is required.

Applications will be reviewed starting March 15th with the position to remain open until filled.

To learn more or apply visit: https://apptrkr.com/4953663

Assistant Professor of Plant Pathology - Dalhousie University, Canada

The Department of Plant, Food, and Environmental Sciences (PFES) in the Dalhousie University Faculty of Agriculture invites applications from qualified candidates for a full- time, tenure stream faculty position in Plant Pathology at the Assistant Professor rank. The successful candidate will commence 1 July 2024 (or negotiable) and contribute to Teaching (40%), Research (40%) and Service (20%) responsibilities.

See full job description and to apply go to Dalhousie's online portal via this posting (https://dal.peopleadmin.ca/postings/15185). If you require more information please contact the Chair of the selection committee, Dr. Andrew Hammermeister, Department of Plant, Food, and Environmental Sciences, Faculty of Agriculture: andrew.hammermeister@dal.ca.

Info about the position and further instructions in the PDF.

Assistant Professor of Plant Pathology - University of Florida, USA

We at the University of Florida are excited to share the attached faculty position opening at the Everglades Research and Education Center (EREC). We are currently accepting applications for an Assistant Professor of Plant Pathology to primarily focus within the sugarcane, sod, and rice cropping systems. We are looking for excellent candidates ready to develop a world-class Extension and Research program that will address the unique plant disease challenges of agriculture in beautiful South Florida. Our ideal candidate will be eager to seize the opportunity to join an academically-diverse faculty at the EREC while also becoming an active member of a top Plant Pathology Department worldwide. Please consider sharing this announcement with your best and brightest finishing Ph.D. students, post-docs, and junior faculty. Questions about the application process, the position duties, as well as nominations of deserving candidates for recruitment efforts may be directed to Dr. Phil Harmon, Chair of the Search and Screen Committee at pfharmon@ufl.edu. To apply, please see the official UF job description at: https://explore.jobs.ufl.edu/en-us/job/523459/assistant-professor-of-plant-pathology. More info about the position and further instructions in the PDF.

For full consideration, candidates should apply and submit additional materials by 1 November 2023. The position will remain open until a viable applicant pool is determined.

ACKNOWLEDGEMENTS

Thanks to Grahame Jackson, Greg Johnson and Jan Leach for contributions.

COMING EVENTS

7th International Research Conference on Huanglongbing (IRC-HLB)
26 March – 29 March, 2024
Riverside, California, United States
Website: web.cvent.com/event/7c12d9c3-01db-4e6e-b781-aafeb0f7109a/summary

10th International conference on *Pseudomonas syringae*
4 June – 7 June, 2024
Porto, Portugal
Website: psyringae2024.com

International Plant Molecular Biology (IPMB) Congress
24 June – 28 June, 2024
Cairns, Queensland, Australia
Website: www.ipmb2024.org/

XX International Plant Protection Congress
1 July – 5 July, 2024
Athens, Greece
Website: www.ippcathens2024.gr

International Conference on Plant Pathogenic Bacteria & Biocontrol 2024
7 July – 12 July, 2024
Virginia Tech, Blacksburg, Virginia, United States
Website: icppbbiocontrol2024.org

Triennial Conference of the European Association for Potato Research (EAPR)
7 July – 12 July, 2024
Oslo, Norway
Website: nibio.pameldingssystem.no/eapr2024

Plant Health 2024
27 July – 31 July, 2024
Memphis, Tennessee, USA
Website:
www.apsnet.org/meetings/annual/Pages/default.aspx

Asian Conference on Plant Pathology 2024
3 August – 7 August, 2024
Changchun, Jilin, China
Website: tba

Australasian Soilborne Disease Symposium 2024
26 August – 29 August, 2024
Kingscliffe, New South Wales, Australia
Website: www.asds-apps.com/

Australasian plant virology workshop (APVW 2024)
29 October – 31 October, 2024
Gold Coast, Australia
Contact and Email: Fiona.Filardo@daf.qld.gov.au
Website: apvw-2024-.w.kamevents.currinda.com

11th IUFRO Phytophthora in Forests and Natural Ecosystems working party
8 September – 13 September, 2024
Bay of Islands (Paihia), New Zealand
Website: www.scienceevents.co.nz/iufro2024

9th ISHS International Postharvest Symposium
11 November – 15 November, 2024
Rotorua, New Zealand
Website: scienceevents.co.nz/postharvest2024

14th Arab Congress of Plant Protection Sciences
3 November – 7 November, 2025
Algeria
Contact and Email: hou.boureghda@gmail.com
Website will be developed soon.

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

SUBSCRIBE OUR NEWSLETTER