ISPP INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY

PROMOTING WORLD-WIDE PLANT HEALTH AND FOOD SECURITY

INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY

ISPP NEWSLETTER

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CALL FOR BIDS TO HOST THE 14TH INTERNATIONAL CONGRESS OF PLANT PATHOLOGY, ICPP2032

ANDREA MASINO AND TERESA COUTINHO, 1 MARCH 2026

Associated Societies of ISPP are invited to present bids to host the 14th International Congress of Plant Pathology in 2032 (ICPP2032). Traditionally the ICPP is held in August. ISPP councillors are urged to consider and discuss this opportunity with their Society.

In calling for bids to host ICPP2032 the Executive recommends that bidding should be restricted to Societies that have been financial members of ISPP for at least three years. ISPP should also give consideration to giving priority in 2032 to a Society that has not previously hosted ICPP.

Attention to options for virtual attendance should also continue, both to broaden participation opportunities and strengthen the financial viability of Congresses and strengthen engagement with ISPP between Congresses.

The deadline for receipt of bids is 31 August, 2026. They should be sent to the Business Manager of ISPP, with c.c. to the Secretary ISPP, as e-mail attachments and/or Web addresses.

If a Society is considering a bid for the 14th International Congress of Plant Pathology, 2032, please read the bid and congress guidelines and requirements carefully. They can be accessed here.

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WOMEN IN PLANT PATHOLOGY: PROTECTING CROPS AND SUPPORTING FARMERS

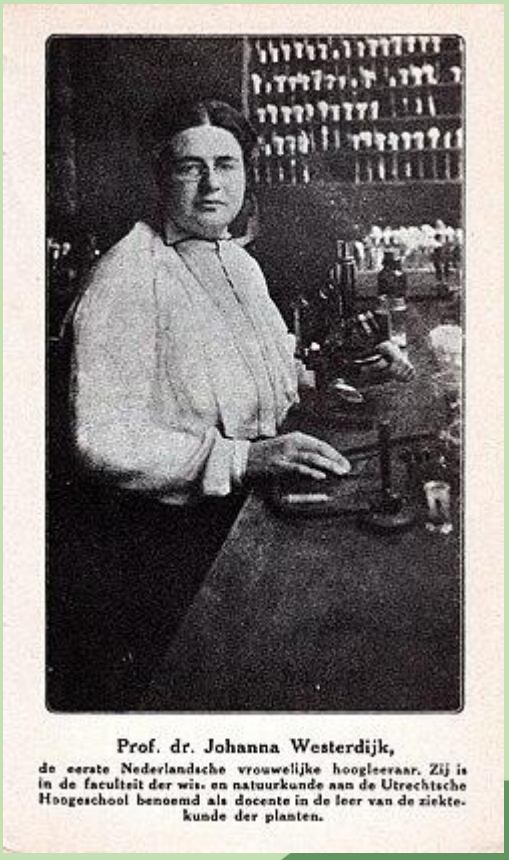
DANIEL HÜBERLI, 26 JANUARY 2026

Each year International Women's Day (8 March) celebrates the achievements of women and highlights the importance of gender equity across all sectors, including science and agriculture. In 2026, this celebration aligns with the International Year of the Woman Farmer 2026, a global initiative recognising the vital contributions women make to agricultural production and food systems worldwide.

Plant pathology plays a critical role in safeguarding crops from diseases that threaten food production, farmer livelihoods and ecosystem health. Women scientists have contributed to this mission for more than a century, advancing both fundamental knowledge and practical solutions for managing plant diseases.

One landmark figure was Johanna Westerdijk, who became the first female professor in the Netherlands in 1917. As director of the Westerdijk Fungal Biodiversity Institute, she trained generations of plant pathologists and helped advance understanding of devastating tree diseases such as Dutch elm disease. Her leadership helped shape plant pathology as a modern scientific discipline.

Women also played important roles in the early development of plant virology. British scientist Anne Elizabeth McLaren Smith was among the pioneers studying plant viruses and their spread in crops. Her work on virus diseases of potato helped improve understanding of virus transmission and management, contributing to the development of healthier planting material and improved crop production.



Prof. dr. Johanna Westerdijk,
de eerste Nederlandsche vrouwelijke hoogleeraar. Zij is in de faculteit der wis- en natuurkunde aan de Utrechtsche Hoogeschool benoemd als docente in de leer van de ziekte-kunde der planten.

Today, women play an increasingly prominent role in plant pathology across universities, research institutes, industry and government organisations worldwide. Their work spans pathogen biology, epidemiology, diagnostics and integrated disease management.

These scientific advances directly support farmers, including the many women who play central roles in agriculture globally. Research in plant pathology contributes by improving disease diagnostics, developing resistant crop varieties and strengthening integrated disease management strategies.

On International Women's Day, the global plant pathology community celebrates the women whose research, leadership and mentorship continue to protect crops and strengthen resilient food systems for the future. Many national and regional plant pathology societies mark the day with events and discussions, and readers are encouraged to support and participate in these activities.

CALL FOR SUBMISSIONS TO FOOD SECURITY: GENETIC TRANSFORMATION OF CROP PLANTS FOR DISEASE MANAGEMENT AND FOOD SECURITY

SERGE SAVARY, FOOD SECURITY EDITOR-IN-CHIEF, 16 FEBRUARY 2026

One of the important advances in plant pathology during the 20th century has been the genetic engineering of plants to confer host plant resistance to plant pathogens. This has led to considerable success, but also considerable debate in societies worldwide. Conventional genetic engineering has been followed (although through different approaches) by gene editing, with great promises.

Strangely, genetic modification for tolerance to abiotic stresses has led to wide adoption and lesser debates, as for instance in the case of the submergence tolerance in rice conferred by the Sub-1 gene: today, submergence-tolerant rice varieties, especially Swarna Sub-1, derived from the much-liked Swarna variety, is cultivated in vast swaths – million hectares of rice – in several states of the eastern States of India and in Bangladesh. Such an advance enables combating the impacts of climate-change driven floods, and it benefits farmers and consumers: it is recognised as a major success to ensure sustainable food security in South Asia.

Over the years, *Food Security* has had to decline Opinion submissions on genetic engineering and on genetic editing in relation with plant pathology because, being prepared by non-specialists, the material offered to review was inaccurate scientifically and incomplete. This is not a field that plant pathologist should abandon. Good Opinions, published in a wide-audience science journal such as *Food Security* and written by plant pathologists, would contribute generating clarified views from accurate explanations.

Food Security would welcome submissions on this topic. A good submission would first document in a couple of short paragraphs (possibly along with a Figure) what the technology in question is. It would then explain, from a scientific standpoint, what could be hoped for from such technology: in terms of food security, environmental resilience, and benefits to society. Controversy (if existing) should also be addressed, although in carefully crafted words.

Food Security therefore calls for submissions in the form of Opinion manuscripts. Writing an Opinion article for *Food Security* is equivalent to a conventional Letter to the Editor in other scientific journals. On such a topic, it is advisable, but not compulsory, that the submission be multi-authored (not more than 5-8, however). There is no deadline for this call, but submissions within 2026 would be appreciated. If sufficiently numerous and offering contrasting and complementary views, these could be assembled in a Special Section of *Food Security*.

Opinions in *Food Security* are formal, peer-reviewed articles. They are short pieces, with Abstract (a few lines), 2-3 printed pages, 1-2 Table or Figure, References (not more than 10 – the reference list is accounted into acceptable manuscript length), short bios of Author(s), and their photo(s) (Author(s) may opt out).

Main guidelines to Authors include: 1. To concern food (in)security; 2. To be science-based; 3. To be backed by select references on key points; 4. To follow a logical path, understandable for the non-specialist (here, the non-pathologist); 5. Be new, in not repeating someone else's opinion. An Opinion however may (i) provide additional ground to an already expressed Opinion, or (ii) repeat an Opinion expressed long ago, which (iii) is deemed to be scientifically correct, and (iv) has not sufficiently been taken into account; 6. Be short. An Opinion is not a Review; 7. While a response to an Opinion (rebuttal) is acceptable, Food Security will not publish a response to a response to an Opinion; 8. To provide the reader with a sufficient background so that the Opinion is not parochial.

More guidelines can be found on the website of *Food Security*: link.springer.com/journal/12571

Q&A: How can microbiome science solve problems in agriculture?

KATIE BOHN, PENN STATE NEWS, 25 FEBRUARY 2026

Decades of research has shown promise for using microbiome science to solve several problems facing agriculture, but these findings have not yet been translated to practical recommendations for growers, according to a team of scientists in Penn State's College of Agricultural Sciences.

The researchers authored a paper in the journal *Applied and Environmental Microbiology* on how scientists and growers could translate microbiome research from theory to practical applications in crop production.

In the Q&A below, a few of the authors — Carolee Bull, professor of bacterial systematics and plant pathology; Alex Vompe, postdoctoral scholar; Mozhde Hamidizade, postdoctoral scholar; and Kevin Hockett, associate professor of microbial ecology — spoke about where science stands with microbiome research in agriculture and how it could be used to benefit crop production.

Q: What is a microbiome and why do they matter in agriculture?

Bull: A microbiome is the community of microorganisms — including bacteria, archaea, viruses and microeukaryotes, including fungi — that inhabit a specific habitat, which may be a specific organism. When we're talking about plants, we also refer to the phytobiome, which is a system that includes the interactions between the plant, the diversity of microbes that inhabit the plant and soil around the plant.

Previous research has shown promise for microbiome science to help find solutions for multiple problems facing agriculture. For example, studies have demonstrated that plant growth-promoting microorganisms can mitigate the effects of environmental stresses and plant disease on crop performance.

Food safety is also an important challenge in agricultural systems, and the use of microbes to mitigate the risk of foodborne illness shows great potential. Additionally, microbiomes could be used to reduce chemical pesticide use, which would lower the exposure of farm workers and others to chemical pesticides, minimising potential impacts to their health. Microbial pesticides also could be employed to manage pest populations that are resistant to chemical pesticides.

Still, while microbiome manipulations and microbial inoculants present promising solutions, their practical application has so far proven challenging.

Q: How can microbiome science solve these problems?

Vompe: There are several strategies that can use microbiomes to improve agricultural outcomes. The first is adding microbial communities or substrate that promotes a beneficial microbial community to plant systems with the goal of promoting improved plant health and crop productivity, such as prebiotics and probiotics.

One example of successful probiotic use in agriculture includes applying certain bacteria to seeds to give the plants resistance against a different, pathogenic bacteria. Another is applying specific bacteria to soybeans to either partially or completely replace nitrogen fertilizers, which are linked to environmental and health issues.

In addition to providing benefits, microbiomes also may help plants by inhibiting detrimental microbes. For example, bacteriophages are important predators in agricultural systems and could be used to effectively reduce target bacterial populations.

Hockett: Microbiomes also can be shaped through selective pressure over time, in a process called "passaging." This refers to repeatedly subjecting a microbial community to the same environment and its associated pressures, typically with the goal of enhancing a trait, such as increasing plant salt tolerance or disease suppression.

Hamidizade: Finally, seed microbiomes can act as microbial reservoirs that can impact plants for generations. They can improve germination rates, seedling health and influence important plant functional traits. They also may enhance nutrient availability and uptake while increasing tolerance to biotic and abiotic stress.

Q: WHAT ARE SOME OF THE CHALLENGES PUTTING THESE SOLUTIONS INTO PRACTICE?

Hamidizade: Supplementing hosts or environments with functional microbial communities presents several challenges.

First, the host or environment may have to be re-supplemented with microbes multiple times. This is because the persistence of these microbe strains can be unpredictable in complex, real-world ecosystem. Second, existing microbiome probiotics are usually limited to bacteria, which ignores the potential benefits of organisms such as archaea, micro-eukaryotes and viruses.

Third, these introduced communities potentially can harbor genes for antibiotic resistance and other undesirable traits. Finally, standards for evaluating probiotic effectiveness, consistency and safety across conditions remain limited and need further development and validation.

Q: HOW DO WE PUT THESE SOLUTIONS INTO PRACTICE, AND WHAT'S NEXT FOR MICROBIOME SCIENCE IN AGRICULTURE?

Vompe: Some of these solution approaches are more mature and broadly used, while others are more novel and face challenges to translation due to biological complexity and novelty. We believe there are a series of core objectives that must be met to most effectively apply microbiomes translationally.

First, precision agriculture should be a priority. For microbiome-informed treatments to be successful, we will need to be able to provide personalized treatments for crops, treating individual fields, parts of fields and, potentially, individual plants.

Second, microbiome products for growers must be regulated and commercialised. This process will set standards for product safety, effectiveness and reproducibility. Additionally, we must develop relationships and trust with stakeholders. Grower acceptance is a major hurdle, and extension research remains a major bridge toward grower acceptance. Participatory research, in which growers are co-designers of research, is a successful approach leading to acceptance and adoption.

Finally, the best tools at scientists' disposal to address the above objectives are carefully designed, long-term experiments in locations with a variety of soil and climate conditions to represent the diversity of agricultural systems. By providing both time and diversity of conditions, scientists will be able to better understand the influence of microbiome interventions on crop health.

HOW DOES A PARASITIC NEMATODE INFECT A WIDE VARIETY OF PLANTS?

KATHY KEATLEY GARVEY, UC DAVIS PRESS RELEASE, 19 NOVEMBER 2025

Nematologists at the University of California, Davis, including Valerie Williamson, professor emerita in the Department of Plant Pathology and associate professor Shahid Siddique, Department of Entomology and Nematology, have long wondered how the the Northern root-knot nematode (Meloidogyne hapla) is able to infect such a wide range of plants, from carrots to trees.

Now a 15-member research team of international nematologists and biotechnologists has gained insight into how the DNA of this nematode species facilitates its success. The work was supported in part by grants from the U.S. National Science Foundation and Dutch Research Council.

"Plant parasitic nematodes cause billions of dollars of damage annually to plant crops globally," said Williamson, a Fellow of the Society of Nematologists. "Root knot nematodes are the most damaging species group in large part because they are able to infect diverse crops including both monocots and dicots, annual crops and woody plants."

The Northern root-knot nematode causes significant economic damage to many crops by causing root galls, stunting, reduced yield, and disfigurement, which makes infected produce like carrots unmarketable. The damage affects a wide range of plants, including vegetables, fruit trees, and wine grapes in certain regions. Infections are most severe in young plants, which can lead to complete crop destruction, while established plants may sustain significant yield reduction.

The discovery, hailed by the team as groundbreaking, "is the most complete and contiguous genome assembly for a plant-parasitic nematode to date," said Williamson and Siddique, co-authors of a paper published in the open-access medical journal, *PLOS Pathogens*.

"Interestingly, we discovered that Meloidogyne hapla uses an unusual DNA repeat at the ends of its chromosomes instead of typical telomeres, suggesting it may have an alternative way to protect its chromosomes ends," Siddique said.

"Overall, our study integrates high-resolution structural genomics, genetic mapping, and functional inference to uncover links between genome architecture, recombination landscapes, and host–parasite interactions," said first-author Pallavi Shakya, a doctoral candidate in the Siddique lab who received her master's degree in plant biotechnology from Wageningen University, The Netherlands.

GENOME FLEXIBILITY REVEALED

Other co-authors include UC Davis doctoral candidate Alison Blundell and UC Davis postdoctoral researcher Dadong Dai, both of the Siddique lab, and scientists from The Netherlands, France, Indonesia, Australia and Croatia.

"Over twenty years ago, my group and others decided to focus on a single species as a model to serve as a resource," Williamson said. "We chose the species Meloidogyne hapla due to its relatively simple DNA genome, its genetic tractability, and the observation that isolates of the nematode differed in plants that they could infect. While considerable progress was made in analyzing the DNA, attempts to completely understand the genome structure were hindered by the tiny size of the organism and limitations in technology."

However, in recent years, dramatic improvements in biotechnology and bioinformatics developed. "Our international team of nematologists and biotechnologists worked together to produce a complete assembly of the genome that represents the DNA sequence of full-length chromosomes," Williamson said. "As far as we are aware, this is the most complete genome for a plant-parasitic nematode."

The genome structure has several novel features, Williamson said. The chromosome ends do not resemble those of most other animals or plants, and the chromosome structure differs between isolates with breaks, rejoining and recombination between chromosomes of different isolates.

"This genome flexibility may provide a clue as to how root-knot nematodes are able to change the spectrum of hosts that they can infect. It will also provide a resource for studying the genome of other important root knot nematode species and allow identification of nematode genes that contribute to successful parasitism. This information should inform best strategies for control as well as development of plants with increased resistance."

ENGINEERED ENDOPHYTIC MICROBIOMES BOOST CROP HEALTH AND SUPPRESS SOILBORNE DISEASES

ZHANG NANNAN, CHINESE ACADEMY OF SCIENCES, 4 NOVEMBER 2025

In a new study published in *Horticulture Research*, a team of researchers from the Institute of Subtropical Agriculture of the Chinese Academy of Sciences has demonstrated that designed synthetic microbial communities (SynComs) can significantly boost crop growth and curb soil-borne diseases, revealing a promising biocontrol strategy. Plant endophytes, which live symbiotically within plant tissues, play a critical role in host health, nutrient uptake, and disease resistance. Using these microbes offers a sustainable alternative to chemical pesticides. However, selecting effective strains from complex natural microbiomes and assembling them into stable, functional SynComs remains a major challenge.

By integrating field sampling, microbiome sequencing, and functional assays, the researchers analyzed the endophytic microbiota of edible lilies under long-term monoculture. They found that continuous cropping enriched both the soil-borne pathogen Fusarium oxysporum and beneficial bacteria such as *Pseudomonas* and *Bacillus*, forming a network in an "antagonistic equilibrium." *Burkholderiaceae* and *Pseudomonas* were identified as key taxa maintaining this microbial balance.

Interestingly, about 50% of the endophytic bacteria originated from the soil, whereas less than 10% of fungi did, reflecting strong host selection on fungal members. The researchers isolated core antagonistic strains from lily bulbs, including Rhizobium, Methylobacterium, and the fungus Talaromyces, and constructed several SynComs. In tests, multi-strain consortia outperformed single isolates in both promoting plant growth and suppressing pathogens. Importantly, SynComs containing fungi were more effective than those composed solely of bacteria.

"Our work reveals how monoculture influences the plant microbiome and presents a novel strategy for constructing targeted SynComs to combat Fusarium wilt." said Prof. ZHU Baoli, corresponding author of the study.

Rationally designed microbial communities not only suppress pathogens but also promote plant growth, offering a sustainable solutions to replanting challenges and reducing pesticide overuse. These findings bridge microbial ecology and agricultural practice, with broad implications for green agriculture and soil health management.

THE FIVE SENSES: HOW DO PLANT PATHOGENS KNOW THEY FOUND THEIR HOST?

A paper by Danyan Qiu *et al.* titled "The five senses: How do plant pathogens know they found their host?" was published on 27 November 2025 by *Nature Communications* (Vol. 39, No. 1). The abstract is as follows:-

All pathogens must sense that they have arrived at their host. This is a necessary part of infection in order to effect the changes in pathogen biology required to progress through their life cycle. How the information that they have arrived is transmitted, and what molecules/media convey the information, is poorly understood. Here, we review recent literature and provide speculation as to how this might happen, by analogy to the five human senses. Our criteria center on natural selection: we consider host-derived signals—in the broadest sense—to be those that carry some information and that can be detected by the pathogen, in principle. For each, we identify supporting literature and speculate on areas of possible expansion. We conclude, on the one hand, that there is a diversity of understudied but compelling signals, but, on the other hand, that not all signals are equal. The magnitude of the response is likely a function of the fidelity of the signal/detection. Although knowledge is currently incomplete, the prospect of understanding perception of arrival at the host may allow us to perturb pathogen perception of the host and thereby thwart this early and fundamental step in pathogen development.

Read paper.

DEEP LEARNING EMPOWERS GENOMIC SELECTION OF PEST-RESISTANT GRAPEVINE

A paper by Yu Gan *et al.* titled "Deep learning empowers genomic selection of pest-resistant grapevine" was published on 8 August 2025 by *Horticulture Research* (Vol. 12, Issue 8, Paper uhaf128). The abstract is as follows:-

Crop pests significantly reduce crop yield and threaten global food security. Conventional pest control relies heavily on insecticides, leading to pesticide resistance and ecological concerns. However, crops and their wild relatives exhibit varied levels of pest resistance, suggesting the potential for breeding pest-resistant varieties. This study integrates deep learning (DL)/machine learning (ML) algorithms, plant phenomics, quantitative genetics, and transcriptomics to conduct genomic selection (GS) of pest resistance in grapevine. Building deep convolutional neural networks (DCNNs), we accurately assess pest damage on grape leaves, achieving 95.3% classification accuracy (VGG16) and a 0.94 correlation in regression analysis (DCNN-PDS). The pest damage was phenotyped as binary and continuous traits, and genome resequencing data from 231 grapevine accessions were combined in a Genome-Wide Association Studies, which maps 69 quantitative trait locus (QTLs) and 139 candidate genes involved in pest resistance pathways, including jasmonic acid, salicylic acid, and ethylene. Combining this with transcriptome data, we pinpoint specific pest-resistant genes such as ACA12 and CRK3, which are crucial in herbivore responses. ML-based GS demonstrates a high accuracy (95.7%) and a strong correlation (0.90) in predicting pest resistance as binary and continuous traits in grapevine, respectively. In general, our study highlights the power of DL/ML in plant phenomics and GS, facilitating genomic breeding of pest-resistant grapevine.

Read paper.

MOVING BIOPESTICIDES THROUGH PLANTS OPENS NEW OPPORTUNITIES

UNIVERSITY OF QUEENSLAND NEWS, 18 FEBRUARY 2026

University of Queensland research has revealed that double-stranded RNA-based biopesticides (dsRNA) sprayed on plant leaves can travel right down into root systems. Led by Dr Chris Brosnan at UQ's Queensland Alliance for Agriculture and Food Science, the work also disproves a long-standing misconception that dsRNA directly enters plant cells.

"Instead, we have shown in multiple species that when it's sprayed on a plant's leaf, the dsRNA is mobile, travelling between cells and throughout the plant, including to the roots," Dr Brosnan said.

"If we are trying to target a pathogen, then this spray technology has a real chance of being effective, because the dsRNA can move systemically, encountering pathogens to kill."

Dr Chris Brosnan and Dr Donald Gardiner looking at samples in the laboratory at UQ St Lucia (Photo credit: University of Queensland).

dsRNA is a molecule that can regulate genes or trigger RNA interference (RNAi) in target pest and pathogen species, including viruses, bacteria and fungi. RNAi-based biopesticides are an emerging technology representing a sustainable alternative to synthetic chemical-based crop protection strategies.

When pests or pathogens eat or absorb the dsRNA, essential genes are shut down killing the pest while not causing harm to the plant or any other beneficial or non-target organism.

QAAFI's Dr Donald Gardiner said the findings were significant. "This work changes the dogma around the stability, uptake and movement of dsRNA which is vital as we develop the technology," Dr Gardiner said.

"Currently, there are no effective sprayable products to target pests and pathogens below the ground. "It's a challenge to get anything protective into plant roots, so if we can spray RNA on a leaf and get it to move through the plant's tissues as an intact molecule to its roots, that's a significant opportunity to target hard-to-reach pests and pathogens."

Dr Brosnan said the team's next target was to identify root-based organisms highly susceptible to dsRNA. "One of the challenges in developing effective RNA-based technologies is the instability of RNA in the soil environment," he said. "Our finding could mitigate this problem, but we need to know how this translocated RNA is then transferred to susceptible organisms. "One target could be nematodes, which are a major pest in agriculture, affecting grains, cotton and many important horticultural species."

The research was published in Nucleic Acids Research.

SCIENTISTS DISCOVER NEW SPECIES OF FUNGUS IN 407-MILLION-YEAR-OLD PLANT FOSSIL FROM SCOTLAND

UNIVERSITY OF CAMBRIDGE NEWS, 12 NOVEMBER 2025

An ancient plant-fungus partnership has been revealed using advanced microscopy imaging, providing evidence of the mutually beneficial relationship that enabled plants to adapt to life on land.

Researchers from the University of Cambridge and the Natural History Museum, London have identified a new species of ancient symbiotic fungus preserved within a 407-million-year-old plant fossil from Scotland. The discovery provides unprecedented three-dimensional insight into one of the earliest known plant–fungus partnerships, known as mycorrhiza.

Gardeners and farmers know mycorrhizae are vital for plant health - with these fungi living symbiotically inside plant roots, extending their reach to absorb water and nutrients like phosphorus. This mutually beneficial partnership underpins the majority of plant life today and is one of nature's most successful relationships.

Studying this partnership, which dates back to when plants first colonised land, is allowing scientists to discover new information about how plant-fungi partnerships shaped ecosystems for hundreds of millions of years.

The advanced microscopy techniques used to distinguish the fungus from the surrounding plant cells open a powerful new way to identify fossilised life forms. By analysing the fossils' unique light signatures - a kind of natural fingerprint preserved through time - scientists can detect traces of organisms long after their DNA has vanished.

Published in the journal *New Phytologist*, the paper describes a new species of arbuscular mycorrhizal fungus, *Rugososporomyces lavoisierae*, forming a symbiotic relationship with the early land plant, *Aglaophyton majus* - the second fungal species known to have been hosted by this plant.

The fossil from the Windyfield Chert, Scotland, provides the most detailed evidence to date that early land plants engaged in complex symbiotic relationships with multiple fungal species over 400 million years ago.

The implications of this discovery extend far beyond the immediate findings.

"This is just the start. By applying these methods to the fossilised remains of different organisms, we now have a powerful new tool to tell apart structures that may look similar but differ in their fine ultrastructure, for example ancient arthropods, plants and fungi," said Professor Sebastian Schornack, Group Leader at the Sainsbury Laboratory Cambridge University, who co-led the study.

He added: "This technique adds a new dimension to how we identify, describe and discriminate fossilised ancient life, using the unique light signals these materials emit as a kind of fingerprint. Although the original biological material is fossilised and no DNA remains, these optical signatures preserve vital clues to their identity."

Using these techniques with other fossils from the Windfield and nearby Rhynie cherts, researchers aim to understand how early symbioses evolved and how plants and fungi first learned to coexist.

The fossil analysis brought together specialists from the Natural History Museum - who found the new fungus and conducted brightfield microscopy and confocal microscopy with the Muséum national d'Histoire naturelle in Paris; the Sainsbury Laboratory Microscopy Core Facility - who conducted confocal, fluorescence lifetime imaging microscopy (FLIM) and Raman imaging; and the Cambridge Graphene Centre, responsible for Raman spectroscopy.

The combined use of advanced imaging and spectroscopy applied for the first time to a fossil plant enabled the team to distinguish fossilised fungal and plant tissues based on their unique light signatures, marking a breakthrough that could transform how scientists' study ancient life in the future.

"By combining confocal fluorescence lifetime imaging with Raman spectroscopy, we can chemically identify ancient microscopic life forms with remarkable precision. Our new technique is opening an exciting new window on life's earliest chapters," said Dr Raymond Wightman, Manager of the Sainsbury Laboratory Microscopy Core Facility who led the FLIM imaging work.

The fossil, held at the National Museum of Scotland, Edinburgh, was prepared and studied by the Natural History Museum's scientific associate Dr Christine Strullu-Derrien, who co-led the study.

"Mycorrhizas are very rare in the fossil record and have never been found in the Windyfield Chert before. The presence of the arbuscule shows that the fungus wasn't parasitising on the plant or feeding on it after death – instead, there was a symbiotic association. The fungus would have provided minerals like phosphorus in return for sugars from the plant in a way that benefits them both," said Dr Christine Strullu-Derrien.

This fossilised relationship was found to closely resemble modern arbuscular mycorrhizal associations that continue to play a vital role in plant nutrition and soil health today..

CURRENT VACANCIES

There are no current vacancies.

ACKNOWLEDGEMENTS

Thanks to Grahame Jackson, Greg Johnson, and Serge Savary for contributions.

COMING EVENTS

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

71st Annual Conference on Soilborne Plant Pathogens and the 56th California Nematology Workshop
24 March – 26 March, 2026
Kearney Agriculture Research and Extension Center in Parlier, CA, USA
Website: soilborneplantpathogens.org

21st Reinhardsbrunn Symposium 2026 – Modern Fungicides and Antifungal Compounds
19 April – 23 April, 2026
Friedrichroda, Germany
Website: https://reinhardsbrunn-symposium.de/de/

VIII International Symposium on Postharvest Pathology
18 May – 22 May, 2026
Ullensvang, Norway
Website:
https://nibio.pameldingssystem.no/isphpp2026#/contact-2228

36th Symposium of the European Society of Nematologists
1 June – 5 June, 2026
Egmond aan Zee, The Netherlands
Website: www.esn2026.nl/home

25th Annual Fusarium Laboratory Workshop
21 June – 26 June, 2026
Manhattan, Kansas, USA
Contact: John Leslie jfl@ksu.edu

Plant Health 2026
1 August – 4 August, 2026
Providence, Rhode Island, USA
Website:
www.apsnet.org/meetings/annual/PH2026/Pages/default.aspx

Plant Pathology 2026
8 September – 10 September, 2026
John Innes Centre Conference Centre, Norwich, UK
Website: Not yet available

13th Australasian Soilborne Diseases Symposium
14 September – 18 September, 2026
Melbourne, Australia
Website: www.asds-apps.com

20th IOBC – WPRS Working Group meeting on: "Integrated Control in Oilseed Crops"
29 September – 1 October, 2026
Swedish University of Agricultural Sciences (SLU), Campus Alnarp, Lomma, Sweden
Website: www.slu.se/ICOC20

7th International Symposium on Fusarium Head Blight
5 October – 8 October, 2026
Department of Agricultural, Food and Environmental Sciences, University of Perugia
Perugia, Italy
Website: www.7isfhb.org

International Phytobiomes Conference 2026
3 November – 5 November, 2026
Niagara-on-the-Lake, Ontario, Canada
Website: https://phytobiomesconference.org/

International Plant Protection Congress
Dates not announced yet, 2027
Christchurch, New Zealand
Website: www.plantprotection.org

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

ICPP2028
13th International Congress of Plant Pathology
19-25 August, Gold Coast Convention & Exhibition Centre, Queensland, Australia

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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