



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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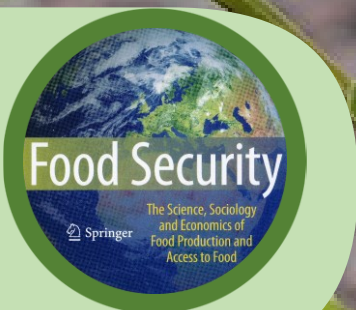
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INTERNATIONAL SOCIETY FOR PLANT PATHOLOGY (ISPP)

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FOURTEENTH UPDATE ON ISPP RESILIENCE BURSARY FOR PLANT PATHOLOGISTS

ZOIA PUSTOVA, MAŁGORZATA JĘDRYCZKA, MAŁGORZATA MAŃKA AND GREG JOHNSON

In June this year, the Royal Netherlands Society of Plant Pathology (KNVP) will celebrate the centenary of the first [International Conference on Phytopathology and Economic Entomology](#) which was held at the University of Wageningen on 24-30 June 1923. So, we start this Update by congratulating our colleagues in the Netherlands Society on this significant anniversary and look forward to celebrating it with them in Lyon in August.

The 1923 conference was attended by just 65 delegates from other countries and about 30 from the Netherlands, representing 25 nationalities and some 30 'dominions and protectorates'.



On the left, delegates of the First International Conference on Phytopathology 1923 at the entrance of Wageningen Town Hall with the same building from a 2016 picture (Greg Johnson) on the right.

The inspiration and arguments for the Conference were of course the same as the rationale for meetings today – furtherance of science, strengthening of collaborations and knowledge and inspiration for those attending and reading the conference report. There is a quality of fellowship that arises from such events that is also imbued in the creation and implementation of the ISPP Resilience Bursary for Plant Pathologists – to strengthen science and collaboration -while giving real support to plant pathologists in need.

This month we would also like to thank those individual donors to the Resilience Bursary which is now receiving donations to support scientists from Ukraine, Türkiye and Syria and also thank the Korean Society for Plant Pathology and the Polish Phytopathological Society for their direct contributions to the fund. They have joined eight other Societies and groups contributing so far – the Australasian Plant Pathology Society, the Canadian Phytopathological Society, members of the Chinese Society for Plant Pathology, the Royal Netherlands Society for Plant Pathology, the Italian Association for Plant Protection, the Italian Phytopathological Society, the Mediterranean Phytopathological Society and the ISPP. If you would like to donate, please use the link [here](#) or for Societies wishing to contribute email ISPP at resilience@isppweb.org.

While options for support to colleagues from Turkey and Syria are still being explored, this month we bring an update from Dr. Zoia Pustova of the Department of Ecology and General Biological Disciplines, Faculty of Agrotechnology and Nature Management of Podillia State University, Kamianets-Podilskyi, Ukraine.

ZOIA PUSTOVA

The ongoing war in Ukraine has brought changes in the lives of many people. But there are many good people in the world who come to help Ukrainians, provide both moral and material support. Ukrainians are very grateful to everyone who helps us! After all, the good that you give to someone will return to you in an increased size.



Dr. Zoia Pustova (left) and her supervisor Assoc. Prof. Lidia Blaszczyk (right) at the conference on the occasion of the 10th anniversary of the Polish Mycological Society, Poznań, Poland.

I am Zoia Pustova from Ukraine. I live in the ancient city of Kamianets-Podilskyi. I work as Associate Professor (PhD) in the Department of Ecology and General Biological Disciplines at the State University of Podillia. I spend most of my time teaching. I pass on to my students not only knowledge in the field of biological sciences, but I also try to instill in them an interest in scientific research. I want to show students how society develops thanks to the activities of scientists.



Class on plant pathology and mycology led by Zoia for students in Ukraine.

For more than twenty years, I have been conducting various scientific studies related to plants and microorganisms. Microorganisms that help counteract phytopathogenic microorganisms without the use of chemical preparations are of interest. To do this, I study both phytopathogens and their competitors.

The war in Ukraine stopped all research activities. I found the strength and courage to write to Prof. Lidia Błaszczuk, Head the Department of Plant Microbiomics at the Institute of Plant Genetics of the Polish Academy of Sciences. In this way, my dream of cooperation not only with scientists from Ukraine, but also from other countries began to come true.

In order for this cooperation to flourish and result in good research, and thus publications, I received extraordinary financial support from the International Society for Plant Pathology (ISPP). I am very grateful to the members of this Society for the help shown to me and other Ukrainian phytopathologists! I am also grateful for the scientific advice received from Prof. Małgorzata Jędrzycka, corresponding member of the Polish Academy of Sciences, Head of the Department of the Pathogen Genetics and Plant Resistance at the Institute of Plant Genetics of the Polish Academy of Sciences.

Despite the difficult situation in my homeland, thanks to the financial support I received, I can continue my scientific work and improve my skills in the field of molecular identification of phytopathogens inhabiting the soil. During my stay at IPG PAS, I will isolate phytopathogens from agricultural soil samples collected from various locations in Ukraine. The obtained homogeneous cultures will be used for morphological/microscopic and molecular identification based on the analysis of the nucleotide sequence of selected phylogenetic markers. I will familiarize myself with the Sanger sequencing technique and bioinformatics programs for the processing and analysis of nucleotide sequences. Finally, the species composition of soil samples will be determined, biodiversity between them will be assessed, with particular emphasis on differences in the content of phytopathogens in soils from different locations, as well as from the same region, but with different cultivation systems. We will mainly look at the impact of the use of biofungicides on the occurrence of pathogenic microorganisms and thus assess the effectiveness of biological protection.

ADDRESS THE GROWING URGENCY OF FUNGAL DISEASE IN CROPS

A comment by Eva Stukenbrock and Sarah Gurr titled “Address the growing urgency of fungal disease in crops” was published on 2 May 2023 by *Nature* (vol. 617, pp 31-34). An expert follows:-

In October 2022, the World Health Organization (WHO) published its first list of [fungal pathogens that infect humans](#), and warned that certain increasingly abundant disease-causing fungal strains have acquired resistance to known antifungals. Even though more than 1.5 million people die each year from fungal diseases, the WHO’s list is the first global effort to systematically prioritize surveillance, research and development, and public-health interventions for fungal pathogens.

Yet fungi pose another major threat to human health — one that has received even less attention than infections in people.

Hundreds of fungal diseases affect the 168 crops [listed as important in human nutrition by the Food and Agricultural Organization](#) (FAO) of the United Nations. Despite widespread spraying of fungicides and the planting of cultivars bred to be more disease resilient, growers worldwide lose between [10% and 23% of their crops to fungal disease every year, and another 10–20% post-harvest](#). In fact, the five most important calorie crops — rice, wheat, maize (corn), soya beans and potatoes — can be affected by rice blast fungus, wheat stem rust, corn smut, soybean rust and potato late blight disease (caused by a water mould oomycete), respectively. And losses from these fungi equate to enough food to provide some [600 million to 4,000 million people with 2,000 calories every day for one year](#). Such [losses are likely to increase in a warming world](#).

Much more awareness of the plight of the world’s crops as a result of fungal disease is needed, as is more government and private- sector investment in crop fungal research.

Read [article](#).

NOTICE TO ISPP COUNCILLORS – CHANGES TO THE ISPP STATUTES AND RULES OF PROCEDURE AGREED

GREG JOHNSON, ISPP PAST PRESIDENT

Thanks to the many [ISPP Councillors](#) representing Associated Societies who voted in the ballot to amend some of the [ISPP Statutes and Rules of Procedure](#). The on-line version of the Statutes and Rules will be updated during June. One agreed change was modification of Rule 5 to (a) increase the number of Councillors representing Societies whose membership numbers range from 100 to 500, to encourage better engagement with under-represented groups. This means that ISPP Associated Societies that are now entitled to additional representation on Council have the opportunity to consult with their Society as appropriate to appoint an additional councillor (or more). Members who may or are representing their Society as a Councillor should consider the points below:

ISPP Councillors play an important role in the ISPP: they are the representatives of ISPP Associated Societies, national plant pathology nominating bodies (in countries where a Plant Pathology or Plant Protection Association does not exist) or the ISPP, who represent those bodies on the ISPP Council. ISPP Councillors are expected to understand and be able to fulfill the following important roles:

- To represent their Society on ISPP Council, attend the ISPP Council meeting at the International Congress of Plant Pathology, and participate actively in Council ballots and deliberations.
- To familiarize themselves with the ISPP Statutes and Rules and the functions and activities of the ISPP, so as to be able to serve on the ISPP Council and advise on ISPP matters for the Society they represent. http://www.isppweb.org/about_objectives_statutes.asp
- To understand and support the financial requirements of membership of their society in ISPP based on member number, development status and agreement with ISPP.
- To vote on the following ballots: (i) Election of the ISPP Executive which is reappointed every four or five years; (ii) selection of the host society and the venue of the International Congress of Plant Pathology (ICPP) (held every four or five years); (iii) Motions to change or amend the ISPP Statutes and Rules; (iv) Motions made at ISPP Council Meetings.
- To champion and publicize the ISPP and ICPP activities to the members of their Society and Sibling societies, to help raise awareness of their Society with ISPP, and to encourage their Society to be involved in ISPP Subject Matter Committees and to nominate members for representation on the ISPP Executive.

More details on the role of ISPP Councillors are available [here](#). If you are an ISPP Councillor representing a Society, or a member of a Society Management Committee that is choosing your Society's Councillor and have any questions, please contact ISPP Immediate Past President, Greg Johnson (gregh4d@gmail.com).

THIRD REMINDER - PLEASE COMPLETE OUR SURVEY ON PLANT PATHOLOGY IN THE SOCIAL MEDIA AGE

GREG JOHNSON AND ANDREA MASINO

With ICPP2023 fast approaching, we expect to undertake an initial analysis of survey data in early July for our Congress presentation. However, we will keep the survey open until after the Congress so we might obtain responses from some of the 2000 + Congress delegates! So far we have received 500 + responses. This isn't Eurovision and there are no prizes, but if you haven't done so yet, help us by completing it now and please add your views in the comments section!

At ICPP2023 and in our reports via the ISPP newsletter, survey findings will be summarised under

- topics most important to social media readership
- platforms respondents use to access plant pathology related topics and inspiration
- scientific societies and other sources of plant pathology information and
- the demographic profiles of users and non-users.

The Green Button below has the link to the survey.

CLICK HERE TO PARTICIPATE IN THE SURVEY!

In our "Who is the most responsive Country or Region Stakes", Germany is ahead this month! 🤗 (Table 1. Total: 515).

Table 1: Responses by Country or Region
(As at 25 May 2023)

🤗 Germany	58
France	38
Italy	33
South Africa	32
Japan	31
USA	30
Poland	28
Australia	28
India	23
Serbia	20
Pakistan	20
New Zealand	19
Vietnam	18
Thailand	16
Spain	15
Portugal	14
United Kingdom	13
Uruguay	10
South Korea	10
Ukraine	9
Netherlands	6
Austria	3
Two respondents from: Singapore, Peru, Lebanon, Kenya, Israel, Indonesia, Colombia, Bosnia and Herzegovina, Bangladesh and Argentina	20
One respondent from: Tunisia, Tanzania, Taiwan ROC, Switzerland, Senegal, Nepal, Mexico, Luxembourg, Kyrgyzstan, Jordan, Guyana, Guatemala, Grenada, Greece, Fiji, Eswatini (fmr. "Swaziland"), Egypt, Croatia, Canada, Brazil and Belgium	21

Here’s a sneak preview of some findings so far (from 515 responses). Graph 1 shows the percentage of respondents favouring particular topics when using social media in relation to plant pathology.

Graph 1 The number of respondents choosing each topic as one of their five favourites when using social media in relation to plant pathology.



ICPP2023 JOINT SATELLITE EVENT: OOMYCETE MOLECULAR GENETICS NETWORK (OMGN) & 7TH INTERNATIONAL OOMYCETES WORKSHOP (IOW) (19-20 AUGUST 2023 – LYON FRANCE)

GLORIA ABAD, CHAIR OF THE ISPP SMC OOMYCETES

The Subject Matter Committee (SMC) of the Oomycetes of the International Society of Plant Pathology (ISPP) is very pleased to announce the presentation of the Joint Satellite Event “Oomycete Molecular Genetics Network (OMGN) & 7th International Oomycetes Workshop (IOW)” that will be held during 19-20 August, 2023 at the Convention Center in Lyon France. This important event will be offered in association with the 12th International Congress of Plant Pathology (ICPP) 2023 “ONE HEALTH for all plants, crops and trees” to be presented in Lyon France during 20-25 August. The main event is organised by the International Society of Plant Pathology (ISPP) and hosted by the French Phytopathological Society (SFP).

The Joint Oomycetes Satellite Event is organised by **Laurent Camborde**, **Bernard Dumas** and **Elodie Gaulin** at Toulouse University, UT3, France - Oomycete Molecular Genetics Network and **Gloria Abad**, at the USDA-APHIS-PPQ-S&T Plant Pathogen Confirmatory Laboratory, USA representing the ISPP Subject Matter Committee (SMC) of the Oomycetes. The SMC of the Oomycetes of the ISPP ([link](#)) was established in December 2016 and has 36 members from 15 countries including: Argentina, Australia, Canada, Czech Republic, Germany, India, Italy, Japan, Mexico, Philippines, South Africa, Spain, Taiwan, United Kingdom and United States. The Chair of the ISPP SMC: Oomycetes is Gloria Abad, and Co-chairs are **Marco Thines** at Goethe University Frankfurt, Germany, **David Cooke** at The James Hutton Institute, UK and **Treana Burgess** at the Phytophthora Science and Management, Harry Butler Institute, Murdoch university, Australia. **One of the missions of the SMCs of the ISPP is to organise International Workshops.**

The Joint Satellite Event will include sessions devoted to: Cell Biology, Signaling and Metabolism; Evolution, Diversity and Population Genomics; Molecular Mechanisms of Pathogenicity; Host Resistance Mechanisms; Emerging Pathogens in the era of Globalization; Innovations in Management and Control; Taxonomy, Nomenclature, New Taxa; and Identification and Diagnostics: From the traditional tools to HTS.

Oomycetes are a group of filamentous eukaryotic microorganisms widely present in natural environments, some of them including the main pathogenic species for plants, algae and animals. This international Joint Satellite Event will be dedicated to the presentation of the most recent research on these organisms, aiming in particular at developing new control methods to limit their impact on agriculture and natural environments. For registrations (early until April 28, late from April 29/onsite) visit ICPP Program ([link](#)).

2th INTERNATIONAL CONGRESS OF PLANT PATHOLOGY

The International Society for Plant Pathology & the French Phytopathological Society

20-25 August, France



JOINT SATELLITE EVENT - ICPP 2023

ICPP 2023

**OOMYCETE MOLECULAR GENETICS NETWORK (OMGN)
7TH INTERNATIONAL OOMYCETES WORKSHOP (IOW)**

SCIENTIFIC SESSIONS :
CELL BIOLOGY, SIGNALING AND METABOLISM
EVOLUTION, DIVERSITY AND POPULATION GENOMICS
MOLECULAR MECHANISMS OF PATHOGENICITY
HOST RESISTANCE MECHANISMS
EMERGING PATHOGENS IN THE ERA OF GLOBALIZATION
INNOVATIONS IN MANAGEMENT AND CONTROL
TAXONOMY, NOMENCLATURE, NEW TAXA
IDENTIFICATION AND DIAGNOSTICS

19-20 AUGUST 2023
CONVENTION CENTER,
LYON FRANCE



ORGANIZERS:
LAURENT CAMBORDE
BERNARD DUMAS
ELODIE GAULIN
GLORIA ABAD

ON BEHALF OF ISPP
OOMYCETES SUBJECT
MATTER COMMITTEE &
OOMYCETE MOLECULAR
GENETICS NETWORK

INFORMATION :
WWW.ICPP2023.ORG/PROGRAMME/SATELLITE-EVENTS

JOINT SATELLITE EVENT - ICPP 2023

ICPP 2023

**OOMYCETE MOLECULAR GENETICS NETWORK (OMGN)
7TH INTERNATIONAL OOMYCETES WORKSHOP (IOW)**

PROGRAM AT A GLANCE

SATURDAY, 19 AUGUST (9AM-5PM)

MORNING
CELL BIOLOGY, SIGNALING AND METABOLISM
EVOLUTION, DIVERSITY AND POPULATION GENOMICS

AFTERNOON
MOLECULAR MECHANISMS OF PATHOGENICITY
HOST RESISTANCE MECHANISMS

SUNDAY, 20 AUGUST (9AM-5PM)

MORNING
EMERGING PATHOGENS IN THE ERA OF GLOBALIZATION
INNOVATIONS IN MANAGEMENT AND CONTROL

AFTERNOON
TAXONOMY, NOMENCLATURE, NEW TAXA
IDENTIFICATION AND DIAGNOSTICS

6PM ICPP WELCOMING RECEPTION

INFORMATION :
WWW.ICPP2023.ORG/PROGRAMME/SATELLITE-EVENTS

SCIENTIST KELEMU FETED WITH FRENCH AWARD

ICIPE NEWS, 12 MAY 2023

International Centre of Insect Physiology and Ecology (ICIPE) Director General, Dr Segenet Kelemu, has been decorated with the second highest award of France; the title of Officier de L'Ordre national du Mérite (Officer in the National Order of Merit). The honour is awarded by the President of France, to French citizens as well as foreign nationals in recognition of distinguished services or acts of devotion, bravery, generosity and commitment to the service of others, in the military or in the public and private sectors. Dr Kelemu was rewarded for her efforts in building cooperation between ICIPE and French scientists. She becomes the first Ethiopian, and one of a handful of Africans that have received this honour.

His Excellency Mr Arnaud Suquet, the Ambassador of France to Kenya and to Somalia noted: “Under Dr Kelemu’s leadership, impactful results have been achieved by ICIPE in cooperation with researchers from around the world. They include French researchers from the Agricultural Research Centre for International Development (CIRAD), and the National Research Institute for Sustainable Development (IRD).”

Dr Kelemu said “I am most honoured to receive this recognition. I accept it with great humility fully aware that it is not a personal achievement, but a true endorsement of one of the ideologies that I have held dearly throughout my career – the power of partnerships in science. My journey to becoming a scientist started in rural Ethiopia, where I was inspired by the possibility of changing the lives of communities through science and agriculture. I know that my vision has succeeded because of the immense network of people that I have encountered; the synergy of resources and expertise, dreams and aspirations, to create sustainable solutions.”

Having assumed leadership of ICIPE in November 2013, Dr Kelemu is the first woman and the second African to head the institution – Africa’s only research institution dedicated to research on insects and other arthropods. She took the Centre’s helm after a highly prolific scientific career (1992–2007) at the International Center for Tropical Agriculture (CIAT) in Cali, Colombia; as the Director of the Biosciences eastern and central Africa Hub at the International Livestock Research Institute (BecA-ILRI Hub), from 2017 to 2012; and as Vice-President of Programmes at the Alliance for a Green Revolution in Africa (2012 – 2013).

At ICIPE, Dr Kelemu has advanced the Centre’s global status as a model of excellence. ICIPE uniquely combines the generation of world-class knowledge, and its translation into nature-based, One Health, inclusive innovations that improve food, nutritional security and health, environment and livelihoods. The Centre also manages BioInnovate Africa Programme, one of the largest regional bioscience research and innovation-driven initiatives; and the Regional Scholarship and Innovation Fund (RSIF), the flagship programme of the Partnership for Skills in Applied Sciences, Engineering and Technology (PASET), an initiative established in 2013 by African governments and partners.



His Excellency, Mr Arnaud Suquet (right), the Ambassador of France to Kenya and to Somalia, presents a certificate to Dr Segenet Kelemu, after the pinning of the medal of the Officier de L'Ordre national du Mérite (Photo credit: ICIPE).

COLLABORATION BETWEEN ICIPE AND FRENCH INSTITUTIONS

Dr Kelemu has enhanced the longstanding partnership between ICIPE and French institutions, primarily IRD (since 2001) and CIRAD (from 2012). Through the cooperation, scientists from these two organisations are either hosted by ICIPE, or spend significant amounts of time each year working at the Centre. Over the past 10 years, this relationship has been broadened to intensify skills synergies and linkages with ICIPE programmes, and to integrate scientists from the two organisations into the Centre more effectively.

ICIPE collaboration with IRD has built on the extensive research on the diversity of stemborers, important pests of maize, and their interactions with their natural enemies. The researchers explored the ecological and evolutionary processes between grasses, the pests and their natural enemies, as well as the risks resulting from man-made activities on natural environments. Current studies are focusing on the invasive fall armyworm, aiming to understand how the pest unbalances or modifies the interactions between stemborers and their natural enemies. Using dynamic models, the studies have predicted the coexistence of the fall armyworm with stemborer species, and the dominance of the invasive species, alongside the exotic stemborer, *Chilo partellus*. The scientists are also working on the biological control of the Mediterranean corn borer, to generate knowledge for the commercial use of a wasp (*Cotesia* species) that can naturally control the pest.

Collaborative projects between CIRAD and ICIPE include two recently concluded research thrusts: the exploration of semiochemical compounds for pest control and development of eco-friendly nets to protect horticultural crops from pests. Ongoing projects include:

- HonOgiek, a project funded by the French Development Agency and coordinated by CIRAD, which aims to develop a Geographical Indication (GI) of the traditional honey from Mau Forest, in Kenya's Rift Valley, which is the largest indigenous montane forest in East Africa. A GI is important as it identifies and protects products that possess the unique qualities, characteristics or reputation associated with a product and a particular geographic region. In regard to HonOgiek, the GI certification will document the traditional process of its production and uniqueness, and clearly stipulate what can be referred to as "Ogiek honey". These qualities will be protected by the community and any other organisation supporting the GI. The certification will also contribute to biodiversity protection, as the honey is associated with specific indigenous trees in the region.
- COntrolling and progressively Minimising the Burden of Animal Trypanosomosis (COMBAT, funded by EU Horizon 2020 research and innovation programme): the initiative will strengthen control and prevention of animal trypanosomosis (known commonly as nagana); the most devastating disease of livestock, which causes direct and indirect losses of approximately USD 4.75 billion per year in Africa. The researchers will improve basic knowledge of the disease, develop innovative control strategies, build capacity and raise awareness on the disease. Significantly, the team will create strategies to timely detect, monitor and predict tsetse flies, the insects that transmit the parasites that cause nagana. An important output will be a tsetse atlas that will guide the design and deployment of cost-effective, large-scale tsetse control tools.
- Development of Smart Innovations through Research in Agriculture (DeSIRA) project titled: Transforming robusta coffee agroforestry to improve the resilience of smallholders to adapt and mitigate climate change (funded by the European Union).
- Plant Health Theme: to support basic and applied research on native and invasive, below- and aboveground, pre- and postharvest pests, under changing climate and habitats multidisciplinary research using a One Health concept.

NEW ARTIFICIAL INTELLIGENCE ALGORITHM FOR MORE ACCURATE PLANT DISEASE DETECTION

NANJING AGRICULTURAL UNIVERSITY, 12 MAY 2023

Every year, plant diseases caused by bacteria, viruses, and fungi contribute to major economic losses. The prompt detection of these diseases is necessary to curb their spread and mitigate agricultural damage, but represents a major challenge, especially in areas of high-scale production. Smart agriculture systems use camera surveillance equipped with artificial intelligence (AI) models to detect features of plant diseases, which often manifest as changes in leaf morphology and appearance.

However, conventional methods of image classification and pattern recognition extract features indicative of diseased plants from a training set. As a result, they have low interpretability, which means it is challenging to describe what features were learned.

Further, obtaining large datasets for model training is tedious. Handcrafted features, which are selected based on expert-designed feature detectors, descriptors, and vocabulary, offer a feasible solution to this problem. However, these often result in the adoption of irrelevant features, which reduce algorithm performance.

Fortunately, a solution is now on the horizon. A team of data scientists and plant phenomics experts from China and Singapore have developed a swarm intelligence algorithm for feature selection (SSAFS) that allows efficient image-based plant disease detection. They reported the development and validation of this algorithm in their recent study published in *Plant Phenomics*.

Explaining the benefits of introducing SSAFS, the corresponding author of this study, Prof. Zhiwei Ji, comments, “SSAFS not only significantly reduces the count of features, but also significantly improves the classification accuracy.”

The study used a combination of two principles: high-throughput phenomics, through which plant traits like disease severity can be analysed on a large scale, and computer vision, in which image features representative of a specific condition are extracted. Using SSAFS and a set of plant images, the researchers identified an "optimal feature subset" of plant diseases.

This subset encompassed a list of only the high-priority features that could successfully classify a plant as diseased or healthy, and further estimate the severity of disease. The effectiveness of SSAFS was tested in four UCI datasets and six plant phenomics datasets. These datasets were also used to compare the performance of SSAFS to that of five other similar swarm intelligence algorithms.

The findings demonstrate that SSAFS performs well in both plant disease detection and severity estimation. Indeed, it outperformed the existing state-of-the-art algorithms in identifying the most valuable handcrafted image features. Interestingly, the majority of these disease-related features were local—i.e., they involved distinct patterns or structures, such as points, edges, and patches, which are often observed in diseased plants.

Overall, this algorithm is a valuable tool for obtaining an optimal combination of handcrafted image features indicative of plant diseases. Its adoption could significantly improve plant disease recognition accuracy and reduce the required processing duration.

When asked about the future implications of their study, Prof. Ji comments, “One of the crucial contributions of this work to plant phenomics is the definition of handcrafted features and the precision screen of relevant features through a novel computational approach. We propose to combine comprehensive handcrafted and non-handcrafted features of plant images for accurate and efficient detection in the field of phenomics.”

ADVANCES IN UNDERSTANDING INSECT PESTS AFFECTING WHEAT AND OTHER CEREALS – NEW BOOK

Sanford D. Eigenbrode and Arash Rashed, Editors (2023). *Advances in understanding insect pests affecting wheat and other cereals*, Burleigh Dodds Science Publishing, UK. 478pp.

With growing concerns surrounding the impact of climate change on both native and invasive pest invasions, coupled with the rising threat of global food insecurity, more research is required to understand the major insect pests of cereals, including how best to control and monitor them.

Advances in understanding insect pests affecting wheat and other cereals provides a comprehensive review of the wealth of research that addresses this challenge. This collection discusses the most recent developments in fundamental and applied research on major pests and shows how better understanding of these pests can be used to improve integrated pest management strategies.

For more information and to view the full table of contents, visit the Burleigh Dodds Science Publishing [website](#).

Exclusive Discount for ISPP Members

Receive 20% off your order of the book using code PESTS20 via the [BDS Website](#). Please note that this discount code expires 30th June 2023.



INCREDIBLE BACTERIUM CAN TRANSFER ITS GENES INTO PLANTS AND GIVE THEM SUPERPOWERS

UNIVERSITY OF COPENHAGEN, 4 MAY 2023

Humans have bred for desirable plant and animal traits for millennia by selecting and crossing their offspring. Now, researchers at the University of Copenhagen are taking a natural shortcut to promote beneficial changes using a special bacterium that can transfer its genes into plants.

Millions of years ago, a unique bacterium found its way to the surface of a root vegetable – perhaps somewhere in Central or South America. It catalysed a kind of outgrowth of long roots. One day, one of the roots sprouted and developed into a new plant with new characteristics.

This is the abbreviated story of how one of our most ancient crops came to be. A plant whose tubers we now know as sweet potatoes. Tea and numerous other plants have undergone similar transformations. What they have in common is that they received new genes and traits from *Rhizobium rhizogenes*, a bacterium with the special ability to transfer its genes into host plants, and by doing so, transforming them.

“This incredible bacterium can insert some of its genes into plants in a process called transformation. This can offer a range of new advantages – and at times, some disadvantages. As researchers, we can recreate and accelerate this process and select the best results to produce improved flowering plants, crops, foods and much more in a very natural way, just as nature did millions of years ago,” explains Henrik Lütken of the University of Copenhagen’s Department of Plant and Environmental Sciences.

Lütken likes to refer to *Rhizobium rhizogenes* as his “favorite bacterium”, and working with his bacterial bestie has borne fruit for him in the form of tangible results and even greater possibilities for the future. Among other things, his research team has used the bacterium to breed potted kalanchoe plants which are more compact – a trait desired by the horticultural sector.

“Conventionally, chemical growth inhibitors have been used to achieve the same results, but with the help of this bacterium and its genes, we have developed plants in which these traits are inherent. Indeed, they are now ready to come to market,” says Henrik Lütken.



Henrik Lütken and his research team have given plants new genes and benefits with the help of a bacterium (Photo credit: University of Copenhagen).

DROUGHT RESISTANCE CAN HELP EU CROPS

While working with the potted plants, [Lütken and his research team noticed](#) that the transformed plants also had significantly more and longer roots, which sparked a hypothesis: maybe the bacterial genes could help make plants more drought resistant. “We are now in the process of proving this in a [“Villum experiment” project](#), by testing both wild and naturally altered plants in a drought experiment,” explains Lütken.

The results could prove important. Climate change has already put a wide variety of crops under pressure in southern Europe and the EU remains closed to genetically modified crops.

If European anti-GMO policies are maintained, *Rhizobium rhizogenes* could help accelerate a more natural development of drought-resistant crops, as the method does not alter the bacterium's natural genetics. Hence, it does not fall under GMO definitions.

“So far, we’ve achieved positive results in transformations of oilseed rape, where despite slightly lower yields, we believe that better oils and strengthened root systems will make the plant more drought resistant. Oilseed rape is an extensively grown and important crop in Denmark. However there are Southern Europe crops that could be interesting to work with as well,” says Henrik Lütken.

One of these is rocket salad, an important winter crop in Italy and other drought prone European countries. In recent years, the plant has come under climatic pressure as a result of decreased precipitation. According to Lütken, as rocket salad is related to rapeseed, there may be good opportunities to develop drought-resistant versions of the peppery plant using his favorite bacterium.

SHAKES UP THE UNDERSTANDING OF GMOs

Humans have been modifying plant traits for thousands of years. Consider the vast array of delicious apples available to us, whose origin was a small sour fruit that no one really enjoyed taking a bite of tens of thousands of years ago. By growing and crossing the largest, nicest and tastiest specimens, humans gradually changed apple trees to accommodate their needs and tastes. In recent times, GMOs have become a faster, and – some would say – more radical approach.

“Transformations with the *Rhizobium rhizogenes* bacterium may fall somewhere in between. The bacterium’s genes speed up the changes we are able to make, so it's basically an accelerated natural process. Although here, the process is wild - and, one in which both good and bad traits emerge. The good specimens can then be cultivated and crossed with each other to eventually be left with plants characterized predominantly by their advantageous traits,” says Lütken.

We already consume foods whose genes have been evolutionarily influenced by *Rhizobium rhizogenes* and the method has already made its mark on foodstuffs. Nevertheless, Henrik Lütken stresses that moving from potted plants to foodstuffs is a big step that needs to be managed properly.

“This method shakes up how we designate something as GMO or not. It pushes boundaries and makes the whole issue less black and white. In the slightly longer term, there are clearly perspectives for food crops, but as we move from ornamental plants to plants for food, it is crucial that we communicate well with both the public authorities and other interested parties. It is important that everything is checked across the board,” he says.



GM CAVENDISH OFFERS SAFETY NET TO WORLD BANANA INDUSTRY

QUEENSLAND UNIVERSITY OF TECHNOLOGY NEWS, 12 MAY 2023

A Queensland University of Technology (QUT) developed genetically modified (GM) variety of Cavendish banana designed to help save the world's Cavendish banana production has been submitted for regulatory approval to the Australian Government.

The QCAV-4 banana is the first Australian GM fruit to be submitted for assessment. If approved, it would offer a potential safety net against the devastating Panama Disease tropical race 4 (TR4) which threatens the world's US\$20 billion banana industry.

QCAV-4 bananas, developed in partnership with government and industry, have been grown in field trials in the Northern Territory for over six years and have proven to be highly resistant to Panama Disease TR4.

Panama Disease TR4 has already crippled Cavendish banana production in Asia, has started to take a foothold in South America and occurs in Australia in the Northern Territory and North Queensland.

QCAV-4 is a Cavendish Grand Nain banana that has been bioengineered with a single gene, RGA2, from the wild, south-east Asian banana, *Musa acuminata* ssp *malaccensis*. Cavendish bananas already contain the RGA2 gene, but it is dormant.

QCAV-4 is currently being assessed by the Australian Government regulatory authorities, the Office of the Gene Technology Regulator (OGTR) and Food Standards Australia New Zealand (FSANZ).

QUT Distinguished Professor James Dale and his team have been working on developing and growing genetically modified Cavendish bananas for more than 20 years.

“The devastating Panama Disease TR4 is caused by a soil-borne fungus that stays in the ground for more than 50 years, wiping out banana crops and destroying farms for generations,” Professor Dale said.

“It is a huge problem. It has devastated Cavendish plantations in many parts of the world and could cripple the Cavendish banana export industry worldwide.”



QUT Distinguished Professor James Dale and his team, are trialling the QCAV-4 banana, at the QUT field trial site in the Northern Territory. From left to right: Dr Jean-Yves Paul, Ms Maiko Kato, Professor Dale and farm manager Mark Smith (Photo credit: Queensland University of Technology).

Australia's world-class biosecurity rules have so far limited the impact of Panama Disease TR4 on the majority of the Australian industry, however it has been found in parts of North Queensland and has decimated the Northern Territory commercial banana industry.

“About 95 per cent of Australia's bananas are grown in Queensland, and Cavendish banana accounts for 97 per cent of production,” Professor Dale said.

“Apart from providing a genuine protection against Panama Disease TR4 for the world's export industry, QCAV-4 is a safety net for Australia's \$1.3 billion industry, which includes protected employment for 18,000 Queenslanders involved in banana production.”

While regulatory approval by OGTR and FSANZ would support the environmental and food safety of QCAV-4, there are no plans to grow or sell QCAV-4 bananas to consumers in Australia at this time.



OBITUARY OF PROFESSOR ZOLTAN KIRALY, 1925-2021

TAMAS KOMIVES (2021) [ECOCYCLES, VOL. 7, NO. 1, PP. 47-51](#)

An obituary for Professor Dr. Zoltan Kiraly, was published in the journal *Ecocycles* in 2021. He was a plant pathologist, one of the founders of the scientific field of plant pathophysiology, a talented and internationally recognised scientist and educator admired by many, a distinguished professor of several universities, member of the Hungarian Academy of Sciences (HAS), and director of the Plant Protection Institute of HAS, who lived for ninety-six years. He had a great impact on the international advancement of plant pathophysiology, on Hungarian scientific life, on the spirit of his Institute, and on his contemporaries and university students both within and outside the country.



[Read obituary.](#)

CURRENT VACANCIES

Assistant Professor of Plant Pathology (Potato Pathology) - Washington State University, Position # 128780

The Department of Plant Pathology at Washington State University (WSU) is recruiting a full-time (12 months), tenure-track position in plant pathology at the rank of Assistant Professor. The successful candidate will: 1) develop a nationally and internationally recognized research program leading to enhanced management of diseases of potatoes grown in Washington State and the Pacific Northwest; 2) develop an extension program relevant to Washington potato production; 3) contribute to the teaching mission of the department and the College of Agricultural, Human, and Natural Resource Sciences (CAHNRS); 4) provide service contributions to the department, college, and university; and 5) contribute to WSU's commitment to diversity, equity, and inclusive excellence. More info about the position and further instructions in the [PDF](#).

Submit the application online (<https://hrs.wsu.edu/jobs/>).

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COMING EVENTS

13th International Congress on Plant Biotechnology and Agriculture

12 June - 16 June, 2023
Cayo Guillermo, Cuba
Website: bioveg.bioplantas.cu

International Fusarium Laboratory Workshop

18 June - 23 June, 2023
Bari, Italy
Website: fusarium2023.ispacnr.it/

Plant Health 2023 – APS Annual Meeting

12 August - 16 August, 2023
Denver, Colorado, USA
Website:
www.apsnet.org/meetings/annual/Pages/default.aspx

12th International Congress of Plant Pathology (ICPP2023)

20 August - 25 August, 2023
Lyon, France
Website: www.icpp2023.org

Plant Pathology 2023

5 September - 8 September, 2023
Birmingham, UK
Website: www.bspp.org.uk/conferences/plant-pathology-2023/

X International Conference “Bioresources and Viruses”

11 September - 13 September, 2023
Kyiv, Ukraine
Website: icbv.knu.ua

24th Australasian Plant Pathology Society Conference

20 November - 24 November, 2023
Adelaide, South Australia
Website: eventstudio.eventsair.com/apps2023/

XX International Plant Protection Congress

1 July - 5 July, 2024
Athens, Greece
Website: www.ippcathens2024.gr

9th ISHS International Postharvest Symposium

11 November – 15 November, 2024
Rotorua, New Zealand
Website: scienceevents.co.nz/postharvest2024





ICPP 2023

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www.icpp2023.org



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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.

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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.

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