

## INTERNATIONAL NEWSLETTER ON PLANT PATHOLOGY

ISPP Newsletter 46 (5) May 2016

News and announcements from all on any aspect of Plant Pathology are invited for the Newsletter. Contributions from the ISPP Executive, Council and Subject Matter Committees, Associated Societies and Supporting Organisations are requested.

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### Royal Netherlands Plant Pathology Society celebrates 125 years

On 11 April 2016, 300 members and guests of the Royal Netherlands Plant Pathology Society (KNPV) joined together in an afternoon program and dinner at the Reehorst Conference Centre in Ede, the Netherlands, to celebrate the 125th Anniversary of the establishment of the Society. The KNPV is the oldest Plant Pathology Society in the world.



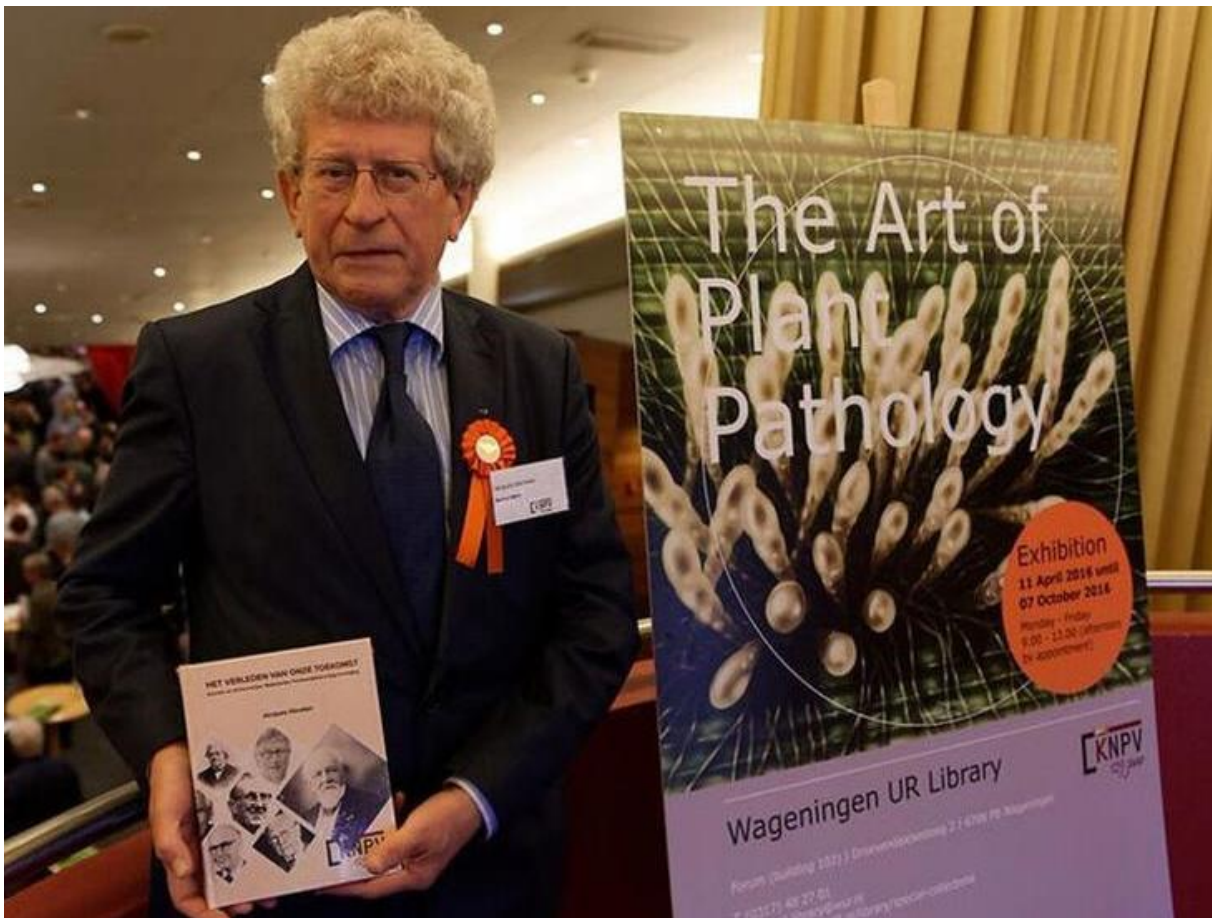
The formal program consisted of five talks -

- Professor Louise Fresco, Chair of the Executive Board of Wageningen University, spoke on the scientific challenges and the roles of plants in sustainably increasing world food production in the coming decades;
- Emeritus Professor Jan Carel Zadoks gave an historical overview of the impact of plant diseases on food security and social developments during the past centuries;
- ISPP President, Dr Greg Johnson spoke on reaping what we sow - plant pathology assures earth's wealth. Dr Johnson also conveyed the congratulations and best wishes of the ISPP to the KNPV members;
- Trend-watcher extraordinaire, Adjiedj Bakas, gave an out-of-the-box vision of the trends and potential of food production in the future and control of plant diseases; and
- President of the Royal Netherlands Plant Pathology Society, Dr Piet Boonekamp, presented a brief overview of 125 years for KNPV and looked ahead to the future challenges of the role that the KNPV wants to continue to play in crop protection in the Netherlands and abroad.

In addition to the talk series, Professor Fresco launched the book on the History of the Royal Netherlands Plant Pathology Society (*Het verleden van onze toekomst; the past of our future*) by Jacques Horsten and the Society presented an award to Professor Zadoks; he was appointed Honorary Member of the KNPV.



Board of KNPV, from left: André van der Wurff, Kees Westerdijk, Jan-Kees Goud, Jacques Horsten, Piet Boonekamp, Corné Kempenaar, Annemarie Breukers, Freek Stelder, Bart Thomma, and Noline Roozen.



Dr. Jacques Horsten, Secretary of KNPV, holding the book on the History of the KNPV and a billboard advertising an exhibition "The Art of Plant Pathology" showing at the Wageningen UR Library from 11 April to 7 October 2016.



KNPV Chair, Dr Piet Boonekamp, presents an Honorary Member of the KNPV award to Emeritus Professor J.C. Zadoks.

(Greg Johnson and Jacques Horsten)

### **Myrtle rust - a threat to the Australian landscape and plant industries**

In Australia, plants that feature commonly in the landscape from the Myrtaceae family - such as eucalypts, tea tree and paperbark - are under threat from a devastating disease called myrtle rust (*Puccinia psidii*). Industries that rely on these plants for their production value, such as lemon myrtle and forestry plantations, are also feeling the impacts of the disease.

Through a [Plant Biosecurity Cooperative Research Centre \(PBCRC\) research project](#) scientists are investigating how to manage the impact of myrtle rust. This disease has the potential to cause widespread change in native plant species and the ecological communities they support. Myrtle rust has spread rapidly and is now considered established and widespread along the entire east coast of Australia.

[Read this month's feature story](#) in PBCRC news about the impacts of myrtle rust on the environment, communities and industry and how PBCRC research is helping build knowledge for management of this devastating disease.

(PBCRC, The Leaflet, 26 April 2016)

### **A proposal to rationalise within-species plant virus nomenclature**

A paper by R.A.C. Jones and M.A. Kehoe titled "A proposal to rationalize within-species plant virus nomenclature: benefits and implications of inaction" was published online in April 2016 by Archives of Virology

(early view). The summary is as follows:-

Current approaches used to name within-species, plant virus phylogenetic groups are often misleading and illogical. They involve names based on biological properties, sequence differences and geographical, country or place-association designations, or any combination of these. This type of nomenclature is becoming increasingly unsustainable as numbers of sequences of the same virus from new host species and different parts of the world increase. Moreover, this increase is accelerating as world trade and agriculture expand, and climate change progresses. Serious consequences for virus research and disease management might arise from incorrect assumptions made when current within-species phylogenetic group names incorrectly identify properties of group members. This could result in development of molecular tools that incorrectly target dangerous virus strains, potentially leading to unjustified impediments to international trade or failure to prevent such strains being introduced to countries, regions or continents formerly free of them. Dangerous strains might be missed or misdiagnosed by diagnostic laboratories and monitoring programs, and new cultivars with incorrect strain-specific resistances released. Incorrect deductions are possible during phylogenetic analysis of plant virus sequences and errors from strain misidentification during molecular and biological virus research activities. A nomenclature system for within-species plant virus phylogenetic group names is needed which avoids such problems. We suggest replacing all other naming approaches with Latinized numerals, restricting biologically based names only to biological strains and removing geographically based names altogether. Our recommendations have implications for biosecurity authorities, diagnostic laboratories, disease management programs, plant breeders and researchers.

[Read paper.](#)

### **Fungal parasites that increase the palatability of lichens to snails**

A paper by J. Asplund et al. titled "The role of fungal parasites in tri-trophic interactions involving lichens and lichen-feeding snails" was published online in April 2016 by New Phytologist (early view). The summary is as follows:-

- Lichens are hosts for a variety of lichenicolous fungi. By investigating two lichens with specialized parasites, we will test the hypothesis that these parasites reduce lichen fitness by increasing the palatability of their respective hosts.
- The palatability of *Lobarina scrobiculata* and *Lobaria pulmonaria* with or without galls of the lichenicolous fungi, *Plectocarpon scrobiculatae* and *P. lichenum*, respectively, were quantified in a feeding-preference experiment with grazing snails (*Cepaea hortensis*). We repeated the experiment for pairs with or without gall in which the carbon-based secondary compounds (CBSCs) had been reduced nondestructively by acetone rinsing.
- Lichens with galls had lower concentration of CBSCs than those without, but this contrast disappeared after acetone rinsing. In the lichen high in nitrogen (N) (the cyanolichen *L. scrobiculata*), the grazing was low, and the snails did not discriminate between specimens with and without *Plectocarpon*-galls. In *L. pulmonaria* low in N (green algae as main photobiont), the parasite reduced the lichen C:N ratio and the snails strongly preferred specimens with *Plectocarpon*-galls, regardless of whether CBSC concentration had been reduced or not.
- In conclusion, some lichen parasites can indirectly reduce lichen fitness by increasing its palatability and thus the grazing pressure from snails, whereas other parasites do not affect grazing preferences.

[Read paper.](#)

### **Wheat-blast appears in Asia for first time**

On 26 April, a team led by microbial population geneticist Daniel Croll, who is at the Swiss Federal Institute of Technology in Zurich, reported on [github.com](#) that the Bangladeshi wheat-blast strain is closely related to those collected in Brazilian wheat fields and on nearby weeds. His team's analysis, which uses the data on the website [Open Wheat Blast](#), reveals that the sample is not closely related to known rice-blast-causing strains of *M. oryzae*. Croll's team concludes that wheat blast was probably introduced to Bangladesh from Brazil, and warns that other Asian countries that import Brazilian wheat, including Thailand, the Philippines and Vietnam, should be on the lookout for the disease.

Read entire [article](#) in Nature.

(Ewen Callaway, Nature 532,421-422, 28 April 2016)

### **Smartphones will provide farmers automatic disease diagnosis in future**

David Hughes and his colleagues, Sharada Mohanty and Marcel Salathé at the Swiss Federal Institute of Technology in Lausanne, fed a computer with images of 54,000 leaves, and allowed it to learn the features that signify disease. It churned out an algorithm that could diagnose 26 different diseases in the foliage of 14 crops with 99.4% accuracy. Admittedly, this was all done using photos taken under clear lighting and standardised backgrounds. Under realistic conditions, the algorithm is not anywhere near as good. But the team thinks that

is just a matter of giving it a broad enough set of images to learn from.

Running the neural network takes a huge amount of computing power, but once the program is built, it can run on a smartphone. And since a growing proportion of the world's population has mobile broadband access - 69% at the end of last year, and climbing - the team is hopeful that an app could prove valuable to farmers in the developing world, who need it most. Other diagnostic apps have been developed, but they either offer an encyclopaedia of images, or put you in touch with an expert. None are automatic.

The team have made their [image library](#) free to access, and they hope that computer scientists will help to devise better algorithms. They also want more images - more crops plagued by many strains of various diseases, at different points of the infection cycle, under a range of lighting conditions, and backgrounds.

"I see great potential for use of this automatic disease diagnosis by farmers worldwide," says Saskia Hogenhout from the John Innes Centre. "Moreover, I am sure people will volunteer to contribute images of diseases and pests to the public database making it useful for plant-health agencies to control disease and pest invasions globally."

Read entire [article](#).

(Ed Young, The Atlantic, 26 April 2016)

### **50th Anniversary Congress of the South African Society for Plant Pathology**

The first announcement for the 50th Anniversary Congress of the South African Society for Plant Pathology to be held during 17-19 January 2017 at the Champagne Sports Conference Resort, Drakensberg Mountains, near Winterton in South Africa is now available on the [SASPP website](#).

### **9th Australasian Soilborne Diseases Symposium - Registration open**

Registration is open for the 9th ASDS, to be held in Hanmer Springs, New Zealand from 14-18 November, 2016. Full details of the Symposium, including Offered Paper formats, abstract submission guidelines and access to registration protocols, are available on the [website](#).

(Richard Falloon)

### **The oldest-known fossil of a land-dwelling organism is a fungus**

The beautifully preserved filaments from a fungus that lived 440 million years ago are the oldest-known fossils of a land-dwelling organism yet found, according to a new study. The early pioneer, known as Tortotubus, helped lay the foundation for more complex organisms to take root and thrive on land, said palaeontologist Dr Martin Smith of Durham University in the United Kingdom. It is likely that other organisms appeared on land earlier, but fossil evidence is hard to find. Dr Smith published his [findings](#) in the Botanical Journal of the Linnean Society recently.

Read entire [article](#).

(Genelle Weule, ABC Science, 3 March 2016)

### **The Global Mycotoxin Threat 2016**

The prevalence of mycotoxins, toxic fungal metabolites found in almost all types of agricultural feedstuffs and grains, is a major concern with regards to feed contamination and presents a genuine risk to livestock animal production. The BIOMIN Mycotoxin Survey constitutes the longest running and most comprehensive survey of its kind, using state-of-the-art analytic tools. The [2015 edition](#) covers more than eight thousand samples taken from 75 countries worldwide.

### **New with Springer - Journal of Plant Diseases and Protection**

The Journal of Plant Diseases and Protection (JPDP) is an international scientific journal that publishes original research articles, reviews, short communications, position and opinion papers dealing with applied scientific aspects of plant pathology, plant health, plant protection and findings on newly occurring diseases and pests.

The journal:

- Covers the entire range of scientific interest of the worldwide plant protection community with relevance for European plant health and protection.
- Bridges the gap between research in the lab and in the field, and the legislative framework

- Is the scientific journal of the Deutsche Phytomedizinische Gesellschaft (DPG) - the German Society of Plant Protection and Plant Health

Discover more about the [journal](#).

### **Coconut lethal yellowing disease in Côte d'Ivoire: state of emergency**

Coconut lethal yellowing disease has already killed millions of coconut palms in Ghana and Tanzania and is now expanding into Côte d'Ivoire. It already destroyed hundreds of hectares of coconut plantations, threatening the livelihoods of farmers and causing social troubles. The coconut palm is one of the most important crops along the coastal belt of West Africa. It represents the main source of income for people living in the coastal region. Many farmers' children cannot go to school due to lack of money.

<https://youtu.be/-rqb1-OITXI>

(Roland Bourdeix, CIRAD and COGENT, the international coconut network)

### **UN agency boosts efforts to detect and prevent spread of damaging wheat rusts**

The United Nations Food and Agriculture Organisation (FAO) is expanding a partnership to inhibit the ongoing spread of wheat rusts, a group of fungal plant diseases that block the production of the staple grain and other crops, which is raising concern in Central Asia and the Middle East. As part of its efforts, the UN agency is developing its collaboration with the International Centre for Agricultural Research in the Dry Areas and the University of Aarhus' Global Rust Reference Centre in Denmark to provide training on surveillance, resistance and management. Country surveys and sample analysis are also planned to better understand and manage the spread of the disease - which, in addition to Central Asia and the Middle East is posing a threat in the world's major wheat-producing areas. Read [full article](#).

(UN News Centre, 15 April 2016)

### **Insight into cacao-killing fungal disease**

A fungal disease that poses a serious threat to cacao plants reproduces clonally, Purdue University researchers find. Many researchers and cacao breeders believed the fungus reproduced sexually. The fungus, *Moniliophthora roreri*, causes frosty pod rot, a disease that has decimated cacao plantations through much of the Americas.

Purdue mycologists, Catherine Aime and Jorge Diaz-Valderrama, show that *M. roreri* generates billions of cocoa pod-destroying spores by cloning, even though it has two mating types and seemingly functional mating genes. The findings could help improve cacao breeding programs and shed light on the fungal mechanisms that produce mushrooms. The study was published in [Heredity](#).

Read entire [article](#).

(Agri News, 27 March 2016)

### **Varied diet repels poisoned fungus**

Food contamination with fungal toxins is best prevented by improving post-harvest processing and diversifying crops, according to a World Health Organization agency report.

Aflatoxins, produced by *Aspergillus* fungi that grow on grains, cause deadly liver cancer and stunting in children. They have been known since the 1960s, but still regularly contaminate food in Africa, Asia and Latin America, says the [report](#), launched by the International Agency for Research on Cancer in February 2016.

The report recommends various methods to reduce the threat of aflatoxins, including better ways of storing and processing grains. Research reviewed in the report has studied toxin levels in the urine and blood of people in affected areas, rather than just monitoring the toxin's presence in contaminated food. Using available evidence, the authors determine that four out of 15 interventions to prevent the toxins' health effects are ripe for implementation in low-income countries.

Read entire [article](#).

(Tania Rabesandratana, SciDev.Net, Agriculture News, 28 March 2016)

### **Acknowledgements**

Thanks to Richard Falloon, Jacques Horsten, Grahame Jackson, Greg Johnson, and Peter Williamson for contributions.