



President: Prof. Mike Gooding, PhD

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Images courtesy of Malida Peranidze (Borjomi, Georgia)

Our Mission

"to further the application of biology to the production of food, materials, and energy, and for the maintenance and improvement of the earth's environment"

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AAB Early Career Professional members (AAB ECP) eligible for FREE Online registration to ANY AAB-organised hybrid event, AAB ECP non-members pay a nominal fee (£5) for access and also gain free membership!







Upcoming Events in 2024



Crop Production in Northern Britain 2024 Feb 27-28 2024

Registration open as in-person delegate

Visit Event Website

Horticultural Science: From Discovery to Application March 26-27 2024

Abstract submission is OPEN

Visit Event Website

ACRYRED ILSI aab Hosted in Brussels

Acrylamide and process formed contaminants: A supply chain approach

> September 4-5 2024 PLEASE SAVE THE DATE

Upcoming Events in 2024





Hosted online and at University of Birmingham, UK

Cereal Quality for Sustainable Production and Human Health September 17-18 2024 PLEASE SAVE THE DATE

https://cvent.me/WPvk5G



Hosted online and at University of Aberystwyth, UK

Biomass and Energy Crops VI October 1-3 2024 PLEASE SAVE THE DATE https://cvent.me/yKgGXw

International Advances in Pesticide Application 2024

Meeting report from Graham Matthews

The Association of Applied Biologists latest meeting on advances in application technology, held in Brighton from 23-25 January 2024, was attended by about 80 delegates representing many different countries, with another 30 registered on-line.

Mireia Torres Maczassek from Familia Torres vineyards in Spain gave the opening presentation, in which she referred to changing climate and various innovations, regenerative agriculture, adapting vineyards, and, improving the management and purification of water.

Session One: Unmanned aerial spray systems

Jane Bonds referred to the use of drones to control mosquitoes transmitting malaria. Initially the aim has been to control larvae, but as many people are shopping or meeting friends when it is cooler after sunset, outdoor biting has increased, indicating that use of drones should be considered for adulticiding also. This requires use of smaller droplets in a 'space spray' applying only 0.7 I/ha so a rotary atomiser was



chosen, due to its better control of droplet sizes, and this achieved good results.

Ken Giles then reviewed studies in California to apply agrochemicals on field and orchard crops. Field experiments included using Chlorantraniliprole to assess control of naval orange worm, a key pest of almond trees successfully applying 47 and 94 litres per hectare in contrast to 935 litres per hectare with a ground-based air blast sprayer i.e. reductions in spray volume of 95% and 90% respectively

Steve Li presented an overview of spray drone efficacy and operation from the United States perspective. In the USA, drones have been particularly used in large row- crops, including corn and soybean, but also cotton and peanuts, especially to apply fungicides. In forestry, herbicide applications a year after planting were to release pine seed seedlings from the competition of weeds with more acres treated per day.

In Brazil, Ulisses Antuniassi was concerned with calibration accuracy of drones and reported an analysis from a series of spray trials to determine the accuracy of spray volume applied. Errors were highly variable, from 1.7 to 9.5%, likely due to the pump/ drone flow control algorithm.

David Nuyttens then reported the evaluation of a drone in Belgium, with the drone fitted with different TeeJet nozzle types, spraying at 108l/hectare. In field experiments this was compared with a conventional spray boom applying 240l/ha on potatoes. Differences were mostly deeper in the canopy on the ground and on the underside of leaves due to differences in volume applied and droplet sizes. Andreas Herbst gave a presentation about electronic controls and spray assistance settings which are challenges for inspections in use with reference to the ISO Standards.

Session Two: Variable Rate Application

Javier Compos from Ohio State University, US reported about Pulse width modulation (OWM) solenoid valves that are commonly used for achieving variable-rate applications of pesticides. Two



Steve Li from the University of Auburn Extension Service joined IAPA24 online to discuss drones

types of valve, the conventional electric PWM valve and Air-pinch PWM valve, were examined and both gave comparable flow rate modulations, but further research is needed to test the longevity and durability of the Air-pinch valve under real farm conditions. This was followed by a separate presentation to assess functional ranges of PWM solenoid valves to control hollow cone nozzles. to determine if these valves could improve the accuracy of variable-rate spray systems.

Marco Grella was concerned about excessive spray volumes being applied, resultingin an over-sprayed target, and reported development and validation of tools for smart spraying for Italian vineyards. Smart sprayers were evaluated in comparison with a traditional air-blast sprayer for the effect on canopy spray deposit and off target losses. The smart sprayer reduced in field airborne losses by 90% and by 87% for above the canopies and within the canopy gap measurements respectively. Reducing the spray volume by 73% and spray deposit by only 43% indicated higher spraying efficiency using the smart sprayer.

Hongyoung Jeon introduced he idea of a stereo vision guided sprayer for real time variable rate application. Initial trials were in an apple orchard to detect tree canopies, calculating their volume and prescribing spray volumes to apply them at intended positions. This indicated the potential to reduce the amount of pesticide applied and contamination, but further refinement and tests were needed.

Session Three: Precision Agriculture,

Heping Zhu reported on the performance in field trials of a real-time variable rate sprayer with stereo vision in controlling spray volumes, which showed that the sprayer provided satisfactory and uniform spray deposition regardless of variations in target tree canopy characteristics, while reducing the amount of spray per hectare compared to conventional constant rate spray applications. Fred Kool presented information when using high-resolution imaging for deposition of crop protection products on maize, soya bean and wheat crops. Deposition on the soil was reduced significantly as the crop size increased.

Lars Berger added Artificial Intelligence to variable rate application in bush and tree crops, which indicated further potential savings of 28% and 36% of PPPs on almond and orange crops. Richard Glass presentation was about Spraybot: Developing an automated pre-symptomatic disease detection and precision application system for oil seed rape crops.

Jan Van De Zande then reported on an AAB Workshop in Wageningen to discuss new targeted precision application technology developments to reduce use of pesticides and potentially reduce spray drift and ground deposition as well as residues in food and other products.

Session Four: Training,

Emilio Gil introduced a phone training app, which acts like a video game, to help accomplish the EC Farm to Fork strategy as well as to take into account some compulsory measures included in the EC Sustainable Use of Pesticides Directive (SUD), which includes equipment inspections, waste management and respect for non-spray zones. He then followed this with an introduction to a New E-learning course on Risk Mitigation Measures: New technologies to improve Plant Protection.



Emilio Gil introduces the RENOVATE mobile app.

Session Five: Formulations and alternative products.

William Evans from Magrowtec gave an interesting presentation that called for greater attention to be paid to the nature and content of water, including Dollops and Nanobubbles.

Andrew Chapple presented on a huge breakthrough in formulation, of particular relevance to suspension concentrate formulation design, which could help ensure efficacy even at Very Low Volumes of application (under 50 l/ha). He pointed out that with increasing use of Unmanned Aerial Spraying Systems (UASS), the limited capacity to carry the spray liquid, the application rate is being reduced down to under 30 litres per hectare, but there are also moves to low volume applications of under 100 l/ha with traditional horizontal boom sprayers. As rain can wash deposits of PPPs from leaf surfaces, the addition of adjuvants for rainfastness is needed as well as spreading and drift reducing adjuvants. Pedro Ferreira ended this session by considering application volume and nozzle type effects on pre-emergent herbicide weed control in sugar cane, Which showed that weed control was not affected by application volume or nozzle trialled.



Andrew Chapple introduces his novel work.

Session Six: Drift

Rena Isemer reported preliminary investigations into drift capture efficiency of off-field plant canopies. Currently petri dishes are used to collect drift deposition for risk assessment, including airborne drift that can be collected on non-target plants outside the field. Preliminary wind tunnel investigations indicated that rows of plants capture similar volumes as single plants, but that blocks of plants differ in the quantity captured and that the amount collected depends on the plants used.

Paul Miller reported on the SETAC DRAW Guidance Protocol for Arable Crop Deposition Spray Drift Trials to update the risk assessments of spray drift based on the Rautmann tables. Ramon Salcedo then reported on the influence on drift reduction by combining nozzle profile, droplet size and surfactant concentration, showing that adjuvants had less effect if applications were with anti-drift nozzles with very coarse droplet spectra.

Clare Butler Ellis reported a new drift curve for determining UK aquatic exposure, based on the higher vehicle speeds being used in the UK of 8-16kph. This drift curve can be used to determine the level of drift reduction required and what combination of buffer zones and drift reducing equipment or technology can deliver this.

Andreas Herbst gave a presentation on spray drift from application by drones in vineyards in Germany, which showed less drift than with current practice using crewed helicopters and similar to ground-based air-blast sprayers. Edgars Felkers provided proposals from the agrochemical companies for new spray drift exposure values in orchards and vineyards based on field trials.

Session Seven: Modelling

Jan Vanwijnsberghe gave a presentation on Belgian work looking at optimising spray efficiency in different applications by spray modelling based on experimental work, including application from various nozzles, and drop legs, with the modelling approach and aspects then outlined in a presentation from Pieter Verboven.

Session Eight: Spray deposition and efficacy

David Nuyttens reported work in Belgium looking at the efficiency of various ISO 03 drift reducing nozzles in controlling small weed seedlings with 2 different contact herbicides. He reported that with one herbicide over twice the pesticide dose was required for control of cotyledon stage plants with the coarsest air induction nozzles (resulting in requiring more than the authorised dose for control), with droplet size a better predictor of herbicide performance than spray coverage.

Final Thoughts

Throughout the meeting although there was mention of reducing the volume of spray applied per hectare, there was no mention of ultra-low volume (ULV) spray techniques to avoid mixing pesticides in water, as used widely in forestry, migrant pest control and public health.

Ideally formulations for ULV sprays are based on using an oil, so rain is less likely to wash pesticides off plants and ultimately pollute water. with problems likely to be aggravated by climate changes, particularly heavier rain.

The latest edition of Aspects of Applied Biology, whiuch includes papers from IAPA24 is available on the AAB website -> https://www.aab.org.uk/aspects-of-applied-biology/

Per Gummer Award Winners

At the beginning of the meeting PAG Convener Emilio Gil presented a fantastic tribute video to Per Gummer, a giant of the pesticide application world. This was followed by the award of the Per Gummer award, which supported the registration and travel of two winners. These were Marco Grella from Università degli Studi di Torino, Italy and Patricio Abarca from INIA Rayentué, Rengo, Chile.



Emilio Gil with the Per Gummer award winners

Creating Canopy: the biology and practice of planting trees for people and nature, including FraxNet Ash Health meeting

Nottingham, November 27th-29th

We had a fantastic time at this event with great presentations and a couple of very interesting panel sessions, one of which was organised by The Tree Council.

In this the inaugural event organised by the AAB Applied Tree and Forest Biology it was very pleasing that UK government agencies engaged with the meeting. Although there was little input from foresters, many other sectors were represented and strongely contributed to the meeting,

We received funding from **DEFRA and the Scottish Forestry Trust** to support the travel and accommodation of early career professionals to attend the meeting,

Ten delegates benefitted from this fund and these are some of their reflections from the event.

Name: Katerina Chernyuk, University College Cork. kchernyuk@ucc.ie

Meeting Highlight: This conference was one of my highlights of my year, both because of the people I got the meet and because a lot of the knowledge I took away from this conference is invaluable to my own project. I'm very grateful for this meeting as it gave me an opportunity to meet other PhDs and postgrads working on trees or woodlands within the UK and Ireland as many conferences are geared towards broader subjects and therefore you don't get to connect with others within your own area of study as much. I also met some local practitioners and got their contact details that may become crucial to me as my project progresses.

I really enjoy smaller conferences, I felt that there was sense of comradery among everyone, all being tree or woodland-related scientists, and it was easy to get a chance to talk to everyone you wanted to. It also meant that nearly every talk or poster was of relevance to me and I was very excited for all the talks before I came. I also think the set up of the conference was welldone, I appreciated the two-room set up and both were nice rooms of a nice size to accommodate the number that were there. I also found everyone at the event to be lovely and I felt the more experienced scientists or practitioners were very kind and engaging with the postgrads about our work/projects and it was great to talk to everyone. Of course, the talks themselves were also fantastic and there wasn't a single one that I didn't enjoy or take something from.

Provide a personal perspective on the meeting: I liked that there was a lot of information on what talks/posters would be at the conference in the run-up to it, it raised my excitement level for the event and it was nice to have a bit of a build-up to it. The technical stuff seemed very well-done, even though I don't know what it looked like from an online perspective, the technical set-up from the in-person perspective seemed very well managed and it felt like planners and technicians were very considerate of the online aspect throughout the course of events.

Acknowledgements: I would like to thank DEFRA and the Scottish Forestry Trust for sponsoring me to attend this meeting as well as the AAB and Geraint Parry for setting up this meeting and truly making it a wonderful experience.



Elizabeth Orton welcomes delegates to the FraxNet meeting

Name: Jie Huang, Trinity College Dublin/Teagasc Forestry Development Department jie.huang@teagasc.ie

The Creating Canopies/FraxNet Meeting 2023 hosted by Association of Applied Biologists from November 27 to November 29, 2023, brought together professionals and experts from various disciplines to discuss the latest research in urban canopies and selection of trees for future climate, as well as the threats of different invasive pathogens and pests on Fraxinus (ash trees) globally. The conference featured a diverse range of sessions and discussions, providing valuable insights into the solutions for reforestation and conservation in woodlands with participants from different institutions from both academia and non-academia. It was great to hear the perspective from all stakeholders.

The support enabled me to actively participate in the conference and presented my research titled "Assessing the Genetic Diversity of Selected Alder Plus Trees in Existing Irish Gene Banks". The feedback received and subsequent interactions with fellow participants added depth to my work and offered avenues for future collaboration.

In conclusion, I am immensely grateful for the travel grant provided by DEFRA and the Scottish Forestry Fund, which made my participation in the Creating Canopies/FraxNet Meeting 2023 possible. The knowledge acquired, connections made, and experiences gained will undoubtedly contribute to the advancement of my PhD research which I hope will positively impact the broader scientific community.

Meeting Highlight: The FraxNet meeting presented novel advanced research on two major threats to ash species (Ash dieback by *Hymenoscyphus fraxineus* and Emerald ash borer by *Agrilus planipennis*) in Europe and North America, and discussed the conservation of *Fraxinus spp.* with diverse methods such as different propagation techniques, genomic-assisted breeding and potential hybridisation of disease tolerant and susceptible species.

Provide a personal perspective on the meeting: The Creating Canopies/FraxNet Meeting 2023 was quite an experience! Some ideas brought in the meeting were inspiring. One thing that stuck with me was the emphasis on integrating technology to monitor the potential invasive species at the early stage and to manage forests effectively. It made me realize how crucial it is to blend innovation with conservation.

Acknowledgements: I would like to thank Teagasc Walsh Scholarship Programme, Teagasc Forestry Development Department, Trinity College Dublin, Department of Agriculture, Foods and Marine of Ireland, Coilte, None-So-Hardy Nursery, and my supervisors and all the people who had helped and supported me for this work.

Name: Amy Gresham, University of Readin a.a.l.gresham@reading.ac.uk

As a postdoctoral researcher fresh out of my PhD, the Creating Canopies meeting provided a great opportunity to connect with tree and forest researchers and practitioners and further my professional network as an early-career researcher. There was a great diversity of work presented, from climate change and social science to forest ecology and silviculture. I thoroughly enjoyed presenting on my current postdoctoral work - the iDeer project, funded by Future of UK Treescapes. We received a lot of interest following the presentation and we have made important connections that will contribute to the efficacy of the iDeer project. I was able to meet big names in tree management and research, whilst



Ted Wilson introduces Amy Gresham's presentation.

also catching up with old friends and meeting colleagues in person with whom I had previously only spoken to over Teams. The meeting brought together an exciting mix of people with the potential to make positive change. I hope that this meeting will happen again, and I look forward to seeing what we can do as a community. Many heartfelt thanks to the organisers for making this event such a success.

Meeting Highlight: I particularly enjoyed the Future Tree Planting Strategies panel session, which got quite heated at times, but that made it all the more fun!

Provide a personal perspective on the meeting: It felt great to bring some discussion on deer into this meeting. As deer researchers, we were termed the "forester's friends". Deer are a contentious topic, and we received a lot of interest.

We were even invited to present our work at a policy meeting next year - very exciting!

Acknowledgements: Many thanks to DEFRA and Scottish Forestry Trust for the financial support that made it possible for me to attend this event.



Department for Environment Food & Rural Affairs



Annals of Applied Biology

An international journal of the QQD

Update from Annals of Applied Biology

Annals is owned by the Association of Applied Biologists and as such all the journal revenue returns to the scientific community through organisation of events in relevant topic areas.

The January 2024 edition of Annals is available

https://onlinelibrary.wiley.com/toc/17447348/2024/184/1

What's up for Annals of Applied Biology in 2024 #openaccess https://onlinelibrary.wiley.com/doi/10.1111/aab.12886

Interview with Prof. Evgenios Agathokleous, School of Applied Meteorology, Nanjing University of Information Science and Technology (NUIST), China https://onlinelibrary.wiley.com/doi/10.1111/aab.12867

A semiochemical view of the ecology of the seed beetle Acanthoscelides obtectus Say (Coleoptera: Chrysomelidae, Bruchinae) #openaccess https://onlinelibrary.wiley.com/doi/10.1111/aab.12862

Low water supply differentially affects the growth, yield and mineral profile of kabuli and desi chickpeas (Cicer arietinum) #openaccess https://onlinelibrary.wiley.com/doi/10.1111/aab.12835

The effect of silicon on the antioxidant system of tomato seedlings exposed to individual and combined nitrogen and water deficit https://onlinelibrary.wiley.com/doi/10.1111/aab.12849

Photosynthetic nitrogen utilization of Robinia pseudoacacia, an invasive species, grown in contrasting light conditions: A leaf scale approach https://onlinelibrary.wiley.com/doi/10.1111/aab.12857

Spatiotemporal dynamics of a palm weevils' outbreak and susceptibility of peach palm (Bactris gasipaes Kunth) landraces in a germplasm bank in southwestern Colombia https://onlinelibrary.wiley.com/doi/10.1111/aab.12859

Efficacy of different lures for Phloeosinus aubei and other native and exotic bark and ambrosia beetles https://onlinelibrary.wiley.com/doi/10.1111/aab.12860

Exogenous growth regulators amplify the morpho-physiology, root architecture and dry-matter accumulation in seed potato

https://onlinelibrary.wiley.com/doi/10.1111/aab.12861

Benzoic acid promotes Fusarium wilt incidence by enhancing susceptibility and reducing photosynthesis of faba bean https://onlinelibrary.wiley.com/doi/10.1111/aab.12863

Statistical modelling to examine the impact of changes in crude oil and fertiliser prices on maize prices and future forecasts in India https://onlinelibrary.wiley.com/doi/10.1111/aab.12864

Relative contribution of season, site, scion and rootstock genotype, and susceptibility to European canker to the variability in bacterial and fungal communities in apple leaf scar tissues #openaccess

https://onlinelibrary.wiley.com/doi/10.1111/aab.12865





Dry weight

No. Pods

No. Seeds

Fresh weight 1 Water content





† P. Mg. Zn. Fe. Mn and B

Elevated carbon-dioxide effects on wheat grain quality differed under contrasting nitrogen and phosphorus fertiliser supply #openaccess https://onlinelibrary.wiley.com/doi/10.1111/aab.12866

Modification of anthracnose severity in açaí seedlings by the endophytic fungus Hypoxylon anthochroum strain 2.4996

https://onlinelibrary.wiley.com/doi/10.1111/aab.12868

Annals of Applied Biology has a new twitter account so please follow for updates from recent papers!

https://twitter.com/AnnalsApplBio





Annals recently launched a Special Issue in Association with the January AAB meeting on 'International Advances in Pesticide Application' organised by the AAB Pesticide Application Group.

We encourage submissions of papers that cover topics on any area that looks at the evidence for different aspects of Pesticide Application.

We invite submissions through the usual Annals submission portal mentioning the special issue in your cover letter





AAB are a member of the Royal Society of Biology Parliamentary Steering Group.

As part of this involvement we receive parliamentary updates from Susie Rabin who is RSB Associate Director of Parliamentary & Public Affairs.

January 15th Update

Questions and debates:

> On 18th January there are Oral Questions to the Secretary of State for the Department for Energy Security and Net Zero, including questions on Net Zero and carbon capture. https://whatson.parliament.uk/event/cal46444

> The House of Lords has a short debate on Infectious disease threats to UK biosecurity, including human, animal and plant health, led by Lord Trees on Thursday 18th January. https://www.parliamentlive.tv/Event/Index/c1e1ee77-8c48-4074-8b24-3e058c0b5bfa

Publications: ATO OF APPLED BIOLOGISTS

> The House of Lords Library has published a briefing into 'UK biosecurity: Infectious disease threats'. https://lordslibrary.parliament.uk/uk-biosecurity-infectious-disease-threats/

Government announcements:

> At the Oxford Farming Conference Steve Barclay announced several upgrades to the UKs farming schemes including increases to the Sustainable Farming Incentive and Countryside Stewardship payment rates.

https://www.gov.uk/government/news/biggest-upgrade-to-uk-farming-schemes-introduced-by-the-government-since-leaving-the-eu

Plant Health Series How to communicate science, win friends and influence people

Renowned author, plant enthusiast and media professional **Professor Jonathan Drori** will provide the ground rules for effective science communication and address common misconceptions in plant biology

Friday 2 February 2024 | 14:00-15:00 Online, via Zoom







RSB Plant Health Series: How to communicate science, win friends and influence people

A Royal Society of Biology Plant Health Series event, taking place on **Friday 2nd February** from 14:00-15:00 via Zoom, will focus on communicating science and plant health to the media and public.

Join Professor Jonathan Drori, author of bestsellers Around the World in 80 Trees and Around the World in 80 Plants, as he addresses how to define, understand and engage with different audiences, how to widen your influence beyond your usual networks and looks into the common misconceptions in plant biology. This will be followed by an opportunity for audience Q&A and discussion.

Register to attend this free event at http://www.rsb.org.uk/plantscicomm and direct all queries to Ellie Barrand at events@rsb.org.uk or on 020 3925 3444.

Burleigh Dodds Science Publishing are delighted to announce the publication of **Developing circular agricultural production systems**

This is edited by Professor (UZ) Dr Barbara Amon, University of Zielona Góra, Poland and Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Germany.

The book reviews the emergence of circular agriculture as an approach to improving the sustainability of the agricultural sector.

The book also addresses recent advances in understanding and developing closed-loop systems to optimise crop nutrient cycles and resource use, as well as ways BURLEIGH DODDS SERIES IN AGRICULTURAL SCIENCE

Developing circular agricultural production systems

Edited by Professor (UZ) Dr Barbara Amon, University of Zielona Góra, Poland and Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Germany



agricultural wastes can be recycled back into agricultural production or used as feedstock to produce a range of bio-based materials.

Special Offer

Receive 20% off your order of either book using code CIRC20 via the BDS Website. Discount code expires 31st March 2024.

https://shop.bdspublishing.com/store/bds/detail/workgroup/3-190-125575



IOBC-WPRS Joint Meeting of Integrated Protection of Soft and Stone Fruits

"Harvesting the Future: Embracing the Synergy of Integrated Pest Management, Crop Technology and Organic Solutions in Soft and Stone Fruit Cultivation"

September 15th – 18th, 2024, Warsaw, Poland

Second Announcement

Dear colleges,

You are cordially invited to the forthcoming Joint meeting of the subgroups "Soft fruits" and "Stone fruits" organized by the International Organization of Biological Control/ West Palearctic region (IOBC/WPRS) Integrated Protection of Fruit Crops Working Group.

The meeting will be held from **15-18 September 2024 in Warsaw** (Poland) at the Mercure Hotel Grand.

Following a substantial pause due to in-person meetings, we are now delighted to announce the revival of our soft and stone fruit meeting. To foster greater synergy, we have planned a back-to-back event that combines the "Joint meeting of the Integrated Production of Soft and Stone fruits" with the IV International Organic Fruit Symposium and II International Organic Vegetable Symposium. Both events will feature a shared pest management session and social activities, promoting a deeper understanding and cooperation in our scientific fields.

Integrated Fruit Production (IFP) and Integrated Pest Management (IPM), in essence, involves the integration of biological and other control measures in complementary ways, laying the groundwork for understanding the correlation between damage and beneficial insects in agricultural systems. It provides a detailed depiction of the equilibrium position among pest populations and how farmers and growers can leverage this knowledge to their advantage. Therefore, we firmly believe that by fostering an outward focus among our IOBC scientific research groups and promoting collaboration with other scientific groups, like ISHS, we will successfully embrace this discipline, and anticipate seeing the positive impact of this approach in our current events.

English will be the official language of the meeting. Proceedings with all contributions, both oral and poster presentations will published as full papers or extended abstracts in the IOBC/WPRS Bulletin.

We look forward to seeing you in Warsaw!

The AAB News Hub

A dedicated section for generic news content which may be of interest to our members and associates. These articles may range from current events, blogs, or discussion topics right the way through to some professionally published content. We are more than happy to receive additional content from our readers. If you come across an article or a newspaper column which you think would be of interest to our members please feel free to send it to John (john@aab.org.uk)

- <u>Butterflies could lose spots as climate warms Exeter University</u> researchers (BBC)
- Kew Gardens names mysterious plants and fungi new to science (BBC)
- <u>We finally know how tardigrades can survive extreme conditions</u> (NewScientist)
- Extreme droughts are worse for plants than we thought (NewScientist)
- <u>Devon tree planting: Work to recreate lost rainforest</u> (BBC)
- <u>New coffee genetic map promises better brews</u> (BBC)
- <u>Young science writer award goes national</u> (BBC)
- Friendly fungi help forests fight climate change (BBC)





We are writing to encourage you to join AAB in 2024

Join a commity of 1000+ like-minded professionals that also has significant financial benefits, especially for early career professionals (ECPs).

2024 Membership fees:

Regular members: £65 Early Career Professional members: £22 (anyone within 5 years of finishing full-time education; bachelor or graduate study including career breaks) Retired members: £33.50

Membership benefits:

- **Reduced fees for ALL AAB events.** Regular members pay £100 and ECP members pay £50 **LESS** than equivalent non-members to attend AAB in-person events. ECP members can join events as an online delegate for free.

- 20% discount on Article Publishing Charges when publishing to Plant Biotechnology Journal

- ECPs are eligible for travel grants to any AAB event (up to £300)

- All members are eligible for Carer grants (up to £500)

- Eligibility to apply for Federation of European Society of Plant Biology short term mobility grants (up to €3000)

- Consideration for Fellowship of AAB (F Appl. Biol.) after seven years of continuous membership

- 30% discount for online purchase of 'Aspects of Applied Biology'

- Reciprocal 50% reduction in membership fees with the Royal Society of Biology

- Invitation to contribute events and job opportunities to the monthly AAB newsletter circulated to 3500+ scientists

- Opportunity to join an AAB Specialist Group, which determine AAB activities.

Applied Plant Pathology Biocontrol and IPM Food Systems Nematology PlantEd Gene Editing Soil and Root Biology Applied Tree and Forest Biology Cropping and the Environment Horticultural Quality and Food Loss Pesticide Application Plant Physiology and Crop Improvement Virology

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