June 2024

ASSOCIATION OF APPLIED BIOLOGISTS

Newsletter

***President*: Prof. Mike Gooding, PhD**

CONTENTS

AAB Quick Link
Peter Lea Obituary
Biopesticides Reform Discussion -
AAB Biopesticide Workshop Note
Groundswell 2024
Upcoming AAB events
Update from Annals of Applied Biology
Horticultural Science: From Discovery to Application
The AAB News Hub
AAB Membership
AAB Council

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"

AAB Quick Links

AAB Council

AAB Conference Calendar

AAB Conference Services

AAB Specialist Groups

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!

Peter Lea Obituary

It is with great sadness that we share the news that our highly esteemed colleague, former Annals of Applied Biology Senior Editor, and dear friend, Professor Peter J. Lea has passed away on June 16th.

Professor Peter Lea retired as Emeritus Professor of Lancaster University and was renowned not only in his field, but well beyond.

Peter Lea received his BSc, PhD and DSc from the University of Liverpool in the late 1960's. He was a postdoctoral research fellow in the Department of Botany and Microbiology at University College London from 1970 until 1973. Following this he worked for almost 12 years in the Biochemistry Department at Rothamsted Experimental Station, now Rothamsted Research. In 1985 he moved to Lancaster where he worked at Biological Sciences Department, now Lancaster Environmental Centre, Lancaster University, as Professor of Biology until his retirement over 20 years later. His main research interests have been the pathways and mechanisms by which plants are able to take up nitrogen and convert it to amino acids and proteins that are used as animal and human food.

Peter's work on nitrogen assimilation was extremely relevant to crop improvement and to the work on nitrogen metabolism ever since. The discovery of glutamate synthases (E.C. 1.4.1.13 and E.C. 1.4.7.1) caused a major re-assessment of the way in which ammonium is assimilated in bacteria and higher plants. Two key articles (see below) published with his colleague Prof. Ben Miflin back in the 1970's are classical citations. He has also contributed with a significant amount of important work to the advancement of plant stress responses to abiotic stresses, amino acids metabolism and photorespiration.

ASSOCIATION OF APPLIED BIOLOGISTS

Peter was also heavily involved in numerous other activities and was a member of the Association of Applied Biologists as President Elect 2005–2006 and President 2007–2008. He was also an Annals of Applied Biology Senior Editor for Crop Improvement for almost 12 years. He was a mentor to many students, scientists and editors.

He published/edited dozens of books and book chapters and over 300 papers. He also left his mark publishing important papers in Annals of Applied Biology such as "Asparagine in plants - Lea, P. J., Sodek, L., Parry, M. A. J., Shewry, P. R., Halford, N. G., published in 2007 (150 (1): 1–26), which is the 9th most cited paper of the journal in its 110 years.

Our condolences to his daughter Julia Lea.

References

Lea, P. J., & Miflin, B. J. (1974). Alternative route for nitrogen assimilation in higher plants. Nature, 251(5476), 614–616.
Miflin, B. J., & Lea, P. J. (1976). The pathway of nitrogen assimilation in plants. Phytochemistry, 15(6), 873–885.

Reproduced from Annals of Applied Biology
https://onlinelibrary.wiley.com/page/journal/17447348/homepage/peter-lea-obituary

Department for Environment Food & Rural Affairs

ASSOCIATION OF APPLIED BIOLOGISTS
BIOCONTROL AND IPM GROUP

Biopesticides Reform Discussion - AAB Biopesticide Workshop Note

Summary from meeting between AAB IPM members and UK GOV representatives

In early May members of the AAB Biocontrol and IPM specialist group met with representatives at DEFRA to discuss the future of the regulatory arrangements for biopesticides. Over the past two years a DEFRA official has attended the AAB IPM conference, which has been very useful for everyone to learn about the current challenges and opportunities that might exist during the development of the regulatory environment in this area.

It was gratifying to know that DEFRA value the opinion of the members of the AAB group. This also leads-on from group convenver Professor Toby Bruce appearing at a parliamentary enquiry on Insect decline and UK food security.
https://committees.parliament.uk/event/19534/formal-meeting-oral-evidence-session/

The purpose of this meeting was (1) outline issues with the current regulatory arrangements for biopesticide active substance renewals and data requirements and seek stakeholder views on potential reform options; (2) to explore other possible approaches to making the regulatory arrangements for biopesticides work as efficiently as possible, and; (3) to consider the Biopesticides Scheme. The points that AAB made at the meeting are summarised below:

Meeting Participants.

Rachel McGauley, AHDB
Xiangming Xu, NIAB
Toby Bruce, Keele University
Dave Chandler, Warwick University
Joshua Burnstone, Fargro
Elysia Bartel, ADAS

Government representatives from DEFRA, Welsh Government and HSE.

Topics of Discussion

How can the develop a bespoke regulatory system for biopesticides?

- Important that the guidance is as right as it will encourage innovation in the UK crop production industry.

- UKGOV should look to where the best practices are occurring in encouraging biopesticides on the market and as such should be willing to accept data and useful information; for example the pragmatic approach of many African-countries towards biopesticides is driven by allowing growers, farmers, and small holders to have access to products.

- Efficacy trials can be costly so it's very important that data requirements should be reduced where possible. For example this might include omitting or decreasing these trials for low-risk compounds in order to let the market decide if a product is effective for the intended purpose.

- There was a preference for aligning with an international regulatory approach rather than attempting to put in place GB-specific requirements. It was mentioned that there is scope for a win-win dynamic if the OECD guidelines are used.

- However if the UK was to take its own path in terms of technical requirements, it would need to be flexible to encourage manufacturers to bring their products here. It was noted that a large number of businesses are not bringing new products to the UK, a trend that needs to be reversed.

Discussion about current Biopesticide Scheme
https://www.hse.gov.uk/pesticides/active-substances/biopesticide-scheme.htm

- The scheme is successful in a restrictive window but UK biopesticides industry is not being supported.

- A proactive approach is required to make sure new products are coming to the market. Many exciting products may not be financially viable in the current marketplace, and they need support so that growers can get them

- Stakeholders would like to see a government service delivery approach as ensuring sustainable high-quality food is grown in the UK in a practical and sustainably environmentally friendly way cannot be driven by industry.

- Proactive approach is required to make sure new products are coming to the market. Many exciting products may not be financially viable in the current marketplace, and they need support so that growers can get them. Currently, GB risks moving backwards as new products aren't being introduced, leaving growers reliant on old chemistry.

- Urgency of getting green alternatives to the market because pests are evolving at a much faster rate than the pace at which new products become available.

- CRD requires more resources as the lack of ecologists and biologists in leads to a risk averse approach to biopesticides. **The AAB is keen to work with the regulator to provide training and workshops for novel biopesticides**.

Relevant for this meeting is the recent publication of a Forum article on this broad topic in Annals of Applied Biology

This article in co-authored by Keith Walters, Kristina Grenz, Josh Burnstone, Toby Bruce, Rosemary Collier and Geraint Parry.

This article look at the current contrainst and solutions for development and update of IPM technologies in the UK.

AAB co-hosts a session at Groundswell 2024

Now in it's 8th year the Groundswell Regenerative Farming Festival has turned into somewhat of a very pleasant monster! Up to 8000 festival-goers travelled to the beautiful Lannock Farm just outside of Letchworth to learn about all things RegenAg. Amongst the big-tops, pop-stars, hundreds of exhibitors, tractors, field plots, food trucks and The Earthworm Arms the AAB were honoured to organise a session entitled '**How to run a Good On-Farm Trial**'.

On the AAB side this hour-ling session involved Charlotte White and Jake Bishop and was organised in collaboration with Rothamsted Research (represented by Kelly Jowett and Dion Garnett), ADAS (Susie Roques) and the University of Reading (Richard Casebow).

Farmers are the ultimate applied biologists so this session was aimed at farmers who are curious about starting out with on -farm research, Hard evidence for the efficacy of RegenAg apporaches is difficult to find so we though this session was very timely. It should be important for farmers to do smaller initial experiments to ascertain whether RegenAg approaches will work on their particular soil and climate conditions. If intial experiments are successful (by whicheever metric you are measuring) then they could move ointo somethoing larger.

Our session started with Susie and Jake introducing five simple principles that should be considered when planning On-Farm trails.

Download Presentation

The panel enjoying a lighter-moment. (L-R) Charlotte, Susie, Jake, Dion, Richard, Kelly. Image @Rothamsted

The main principles described were:

1. Collaborate
2. Keep Things Simple
3. Consider Underlying Variation
4. Replicate Treatments
5. Plan Assessments at the outset

Introduction of these basic principles was followed by a set of specific examples from Dion, Richard and Kelly in which they described their own experiences with on-farm trials. These examples demonstrated real-life situations that exemplified the basic principles.

Finally the session was opened for some excellent questions; including a plea for help from one delegates who wants to try experiments but just doesn't know where to start! The advice is to contact academics who might be able to find money for co-designing experiments or of course to contacts ADAS!

Charlotte, Susie and Jake introducing on-farm trials

Overall it was an eye-opening and informative experience to visit Groundswell. In the future AAB will need to think carefully how best we can interact with the farming-community.

One start is the organisation of the Cultivating Wisdom conference in collaboration with the Organic Research Centre and the Agroecological Research Collaboration. Visit Event Website.

Upcoming Events in 2024

PLANT PATHOLOGY

2024

Mathematical Institute University of Oxford

ASSOCIATION OF APPLIED BIOLOGISTS
APPLIED PLANT PATHOLOGY GROUP

Plant Pathogen Surveillance and Decision Support in Action

September 13th 2024

Registration OPEN until July 15th!

9.20-10.00 **Kelvin Hughes** Head of APHA Inspectorate Programme, UK: From detection to destruction, action of the Plant Health & Seeds Inspectorate
10.00-10.20 **Isabelle Sims** ADAS, UK; The Defra Survey of Crop Pests and Diseases
10.20-10.40 **Joshua Koh** University of Warwick, UK: Assessing the performance of various delimiting strategies to identify the infested zones of quarantine plant pests and diseases.
10.40-11 **Matt Combes** University of Warwick, UK: Quantifying the sensitivity and specificity of visual surveillance in plant health

11-11.25 **Coffee**

11.25-11.45 **Avice Hall** University of Hertfordshire, UK: Developing and using a grower friendly decision support system to control Strawberry Powdery Mildew
11.45-12.05 **Mark Ramsden** ADAS, UK: Introducing the IPM Decisions Platform – a Pan-European online platform hosting decision support systems for integrated pest management
12.05-12.25 **Fabrizio Menardo** Universitat Zurich, SWITZERLAND: Population genetics and molecular epidemiology of wheat powdery mildew in Europe
12.25-12.45 **Hagit Hak** The Volcani Institute, ISRAEL: Rapid, direct, and specific on-site detection of RNA viruses in various crop plants using CRISPR/Cas13a
12.45-13.05 **Diana Bucur** Teagasc, IRELAND: Fusarium species in Irish oat crops: insights into Fusarium langsethiae and associated mycotoxin levels

13.05-14.00 **Lunch**

14-14.40 **Fiona Highet** SASA, UK; Monitoring, mapping, and predicting landscape-scale patterns of potato pests and diseases
14.40-15.00 **Yong-Ju Huang** University of Hertfordshire, UK:Monitor and predict phoma stem canker and light leaf spot
15.00-15.20 **James Fortune** Vegetable Consultancy Services, UK: FUSED - Integrated fusarium early diagnostic and management.
15.20-15.30 **Zaiton Sepak** Universiti Teknologi MARA, MALAYSIA: Neoscytalidium dimidiatum a new threat causing internal black rot in pineapple var MD2 in Malaysia'
15.30-15.40 **Afifah Mohamad** Universiti Teknologi MARA, MALAYSIA: Phenological observation of disease infection for Neoscytalidium dimidiatum associated with internal black spot disease of pineapple variety MD2'

15.40- 16.00 **General Discussion**

Cereal Quality for Sustainable Production and Human Health

AAB President's Meeting

Hosted at University of Birmingham and online

September 17th-18th 2024

Rank Prize Lecture:
Guy Poppy, BBSRC Interim Executive Chair and University of Southampton

Keynote Speakers:
Martin Broadley, Rothamsted Research
Cathrina Edwards, Quadram Institute
Nigel Halford, Rothamsted Research: ***Gene Editing to Improve Cereal Quality,***
Catherine Howarth, IBERS: ***Improving the Oat Crop for Sustainability and Quality,***
Alison Bentley, Australian National University: ***The potential of flour blending: food security & beyond.*** *Online talk*
Mike Gooding, (Convenor and AAB President), ***Wheat Wars and Regenerative Agriculture***

Abstract Submission for Oral and Poster Presentations open until June 30th/ July 31st 2024

Website:

ASSOCIATION OF APPLIED BIOLOGISTS
CROPPING AND THE ENVIRONMENT

Hosted online and at University of Aberystwyth, UK

Biomass and Energy Crops VI
October 1st-3rd 2024

Oral Abstract Submission is OPEN until July 15th

Plenary Sessions at *University of Aberystwyth* and *Institute of Biological, Environmental and Rural Science* (IBERS)

Group visits to IBERS Phenotyping Centre and Brignant Field Sites

Confirmed Speakers include:

Louisa Trindade (Wageningen University)
Jeanette Whittaker (UK-CEH)
Gail Taylor (UCL)
Patric ia Thornley (Aston University)
Gerard Tuskan (Oak Ridge National Lab)
Iain Donnison (Aberstwyth University)

Event website:

5th AAB-PLANTED CONGRESS
Agricultural Biotechnology in the Era of Genome Editing

aab PlantEd

29-31 October 2024

Location

Ondokuz Mayıs Üniversitesi, Atatürk Kültür ve Kongre Merkezi Atakum/SAMSUN

Contact

AAB council
Dr.Geraint Parry
geraint@aab.org.uk

Ondokuz Mayıs Üniversitesi
Doç.Dr.Kubilay YILDIRIM
kubilay.yildirim@omu.edu.tr

www.aab-planted2024.com

https://cvent.me/1AOXZa

CRISPR applications and gene editing for

- **climate resilience in agriculture**
- **food and nutritional security**
- **pest and disease resistance in crops**
- **plant biotechnology**

Policy update, public perception and communication

Invited Speakers

GOETZ HENSEL
Centre for Plant Genome Engineering
Heinrich Heine University

SADİYE HAYTA
Genome editing of wheat
John Innes Centre

DENNİS ERİKSSON
Swedish Univ.of Agricultural Sciences

JOHNATHAN NAPİER
Rothamsted Research

Abstracts will be accepted after peer review made by the Congress Scientific Committee and will be published in Aspects of Applied Biology 149

Sponsors

QBiyotek

Plant Biotechnology Journal

aab SEB

Cultivating wisdom:

Agroecology innovation from experts in the field

21st & 22nd October 2024
Birch Community Centre
Manchester
M14 5JT

ADAS

ARC | AGROECOLOGY RESEARCH COLLABORATION

ORGANIC RESEARCH CENTRE

aab
ASSOCIATION OF APPLIED BIOLOGISTS
CROPPING AND THE ENVIRONMENT
SOIL AND ROOT BIOLOGY

aab
ASSOCIATION OF APPLIED BIOLOGISTS
BIOCONTROL AND IPM GROUP

Hosted online and at University of Leicester

Biocontrol and IPM in Uncertain Climatic and Economic Environments

November 12th-13th 2024

Confirmed Speakers:

- **Robert Finger;** *ETH Zurich*
- **Tom Allen-Stevens;** *BOFIN*
- **Catherine Bradshaw,** *Met Office and University of Exeter*
- Representative from **CABI-Africa**

Abstract Submission Deadline: September 23rd

Website: https://cvent.me/zQAWxw

aab
ASSOCIATION OF APPLIED BIOLOGISTS
NEMATOLOGY GROUP

Hosted online and at The Linnean Society, London

Advances in Nematology 2024

December 5th 2024

Confirmed Speakers:

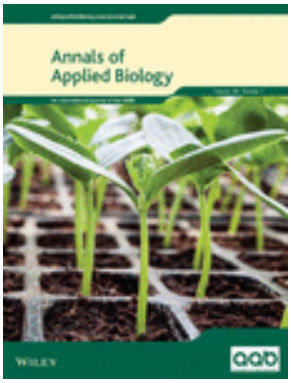
- **Matthew Back;** *Harper Adams University, UK*
- **Alena Pance;** *University of Herts, UK*

Abstract Submission Deadline: Sept 23rd

Website: https://cvent.me/99Y4ok

Annals of Applied Biology
An international journal of the aab

Update from Annals of Applied Biology



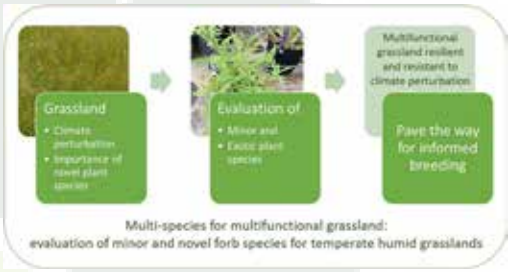
Annals is owned by the Association of Applied Biologists and as such all the journal revenue returns to the scientific community through organisation of events in relevant topic areas.

The July 2024 edition of Annals is now available

https://onlinelibrary.wiley.com/toc/17447348/2024/185/1

Featured Open Access Article

Multi-species for multifunctional grassland: Evaluation of minor and novel forage species for temperate humid grasslands



Dietrun Thielecke, Johannes Isselstein, Martin Komainda

With respect to the pillar of sustainable agriculture to maintain grassland resilient and resistant to climate perturbation, we chose a set of exotic and minor plant species. With a pilot study, we evaluated different plant functions of such plant species, because their exploration seems of importance to maintain grassland functioning. On basis of relevant traits in order to improve herbage provision in future under ongoing climate changes this study may pave the way for informed breeding of distinct plant species.

https://onlinelibrary.wiley.com/toc/17447348/2024/185/1

June 30th was the deadline for submissions for the Annals Special Issue on ‘Advances in Pesticide Application’.

This special issue was launched in association with the January 2024 ‘International Advances in Pesticide Application’ Meeting.

We encourage anyone with a relevant manuscript to consider Annals for their submission, even if submission would be after the initial closing date. We are very flexible with the submission date.

Clare Butler-Ellis (Silsoe) and David Nuyttens (ILVO Vlaanderen) are guest editors for the Special issue.

Collaboration helps to share new ideas and plug expertise gaps

Organised by the Association of Applied Biologists (AAB), the 'Horticultural Science: From Discovery to Application' conference took place at the University of Reading and online. The event was a collaboration between the AAB and the independent Journal of Horticultural Science and Biotechnology (JHSB). *Dr Heather Briggs* reports on some of the highlights.

To address the dynamic challenges facing the soft-fruit industry, Kent strawberry breeder Edward Vinson Plants is now moving towards molecular breeding, which will help breed new desirable traits, revealed the company's director of breeding, Dr Graham Clarkson. The company focuses on variety breeding, plant propagation, and fruit production, which is supplied both directly to consumers and to supermarkets. Graham said: "The key to good strawberry production is to ensure that you have a good plant from a good variety. You need a balance between yield and taste, but the challenge is that getting the better taste creates a payoff that affects yield, as do other traits such as Brix, earliness, and disease resistance".

Dr Graham Clarkson.

In the last five years a more recent development has been the molecular pipeline, and the newest challenge is managing and working with the shortage of labour. "Growers now find it very hard to employ labour, so we are looking to breed varieties that are as easy and as quick as possible to pick". However, he observed that even when a hybrid cross is used, it takes at least eight years to develop a variety. "We are looking to deliver important commercial varieties that will deliver for the grower and consumer, varieties capable of changing the fortunes of businesses for the better".

Collaboration with growers and academics is key, but Graham finds the length of time it takes to breed a variety to be a hindrance, because, when applying for grants, the timescale is too long - payback occurs after 11 to 13 years. "We work with all our growers and customers, we try to speak to consumers where possible, and to academics. We want to share new ideas, fill expertise gaps, and access funding where it is available".

Moreover, when collaborating, confidentiality is critical; contracts and agreements really matter, emphasised Graham. "We are protecting our own IP, but also the IP of our collaborators. Some of our partners may want to publish, so we must all agree to share our names in publications, particularly when we collaborate with students". Collaborations are also in place with competitors, as pre-breeding work can be very successful, he adds. "You have to have a clear understanding of where the collaboration starts and ends". A collaboration with the James Hutton Institute, which is renowned for its soft-fruit genetics, led to the sponsorship of an MSc student who is now completing a PhD in raspberries.

Other contacts drew the company towards a knowledge transfer partnership, bringing industry and academia together and creating the ability to deploy knowledge back into the industry. "To enter into such a project you have to have a specific problem and a strategy to solve it. Our challenge was that if you do interesting things with molecular markers, the payback will be more than ten years away, so we had to be very clear how we justified that". As a result of this collaboration, one post-Doctorate student is now based on the Edward Vinson Plants site in Kent but is employed by the James Hutton Institute.

"Knowledge transfer partnerships offer a benefit to each project partner, the business partner gets knowledge to resolve the challenge, and the knowledge base develops solutions that will hopefully lead to more grants. Moreover, it facilitates the entry of post-Master or post-Doctorate students into industry".

The key to good strawberry production is to ensure that you have a good plant from a good variety.

Collaboration can also increase your potential network for other partners, he added. “We collaborate with floral senescence specialist Prof. Hilary Rogers of Cardiff University, and this brings us into contact with people in her network”. As a result of this collaboration, a former PhD student supported by Edward Vinson Plants is about to start work in the fresh produce industry.

A more recent association has been made with another Kent research facility, NIAB East Malling. “Until recently they were direct competitors of ours, but we are working together on pre-commercial research to get better pre-breeding and have been fortunate in finding UKRI funding available for projects in Kent and Medway”.

Edward Vinson Plants, breeders, propagators, and growers

Graham Clarkson explained that the Edward Vinson breeding programme started as a hobby of the former company Chairman Peter Vinson to breed everbearer strawberries that would be better able to complement June-bearers. This has now become a major commercial enterprise within its own right, producing over 44,000 seedings a year. Breeding takes place in the UK, Spain, Belgium, and South Africa, and the new varieties are also tested in Holland and Germany. In addition, increasing interest is coming from the Great Lakes region of the USA and Canada.

AI – a step-change in horticultural technology

Artificial intelligence (AI) has hit the headlines over the past year and language models appear to have gained a certain command over basic horticulture, said robotics specialist Prof. Simon Pearson, Professor of Agri-Food Technology at the University of Lincoln. Technologies are evolving at a rapid pace in horticulture but there is still a lot of detailed research to be done before robots will be ready for adoption by the industry.

Prof. Simon Pearson, Professor of Agri-Food Technology at the University of Lincoln.

Simon said: “Everyone is getting excited about AI, but if you give it a reality check, it is not yet very good at designing robots, but spookily good at basic horticultural information”. A question put to AI about grey mould on strawberries and how to treat it identified it correctly and gave good advice on how to treat it, including pesticides, fungicides, off-label approvals, and regulatory information. “The world is changing fast, and it is so important in horticulture that we look at the key challenges and how to find solutions, and in Lincolnshire we focus on harvesting operations. Harvesting soft-fruit, for example, is a skilled job which does not tend to pay well, yet the price of food has been identified as the biggest barrier to consumers adopting a healthy diet. This implies that we need greater productivity in the sector”.

There is still a lot of detailed research to be done before robots will be ready for adoption by the industry.

AI cuts across several worlds, so while large language models function in the virtual world, horticulture operates in the physical world, and needs robotics and hardware with AI embedded, he said. This includes AI used for perception, image recognition, manipulation, using autonomy for fleet coordination, and intelligent decisions. These technologies need to be developed to work with robots for activities such as selective harvesting or crop care. AI can also be used for decision-support. “People are very effective at picking strawberries, for example, with good hand and eye co-ordination to harvest swiftly and effectively, and trying to replace these abilities in robotics is difficult. Nonetheless, selective harvesting robotics have improved thanks to better processing capacity”.

A very broad approach across many disciplines is necessary, he pointed out, noting that this is because robots are complex and draw on many technologies, therefore it takes a large team to assemble one. For example, designing robotic harvesting needs input from a robot specialist, a gripper specialist, an image analyst, an expert in autonomous vehicles, and so on. Simon believes that robotic harvesters for strawberry crops are about two years away from commercialisation. “We are getting there, and once we are able to produce robots that cost about the same as [human] labour, this is likely to influence uptake because of the difficulties in finding labour”.

When it comes to using robots for crop protection, there are some already on the market that are proving to be effective at protecting fruit from powdery mildew, he reveals. The robot works at night, using UVC light to control the pathogen rather than applying pesticides, and in 2024 10% of British strawberries will receive this treatment.

Simon added that safety when working with robots

A Thorvald robot treating a strawberry crop with UVC light to control powdery mildew.

remains paramount, and that many are now being designed to react to speech, such as recognising 'stop' in numerous languages.

AI can also be used for crop forecasting, and a recent start-up is Fruit Cast, which aims to reduce waste by helping to ensure a smooth supply chain. The system uses image detection to count every fruit and assess it for weight and phenological state, for accurate yield prediction. It can do 3.5 million assessments per day, which is far more than can be done by a human.

Other uses of robotics include counting aphids in water traps in the field, and the use of hyperspectral imaging for plant breeding. AI is also likely to be used in plant breeding in the future, as it will be able to pinpoint small traits using a combination of sensors, AI, and analytics. Simon remarks that such technologies are now diffusing through, and the use of AI in software is being refined. "In the past we had crop modellers and machine-learning people in different communities, but these are now fusing, which is driving the crop science forward as well as the AI. As a result, we are seeing a step-change in techniques.

Technology is not a panacea however, and it needs an infrastructure, data, and skills, which will need to be addressed for these technologies to be adopted. This will require the involvement of Government to support these innovations. One of the benefits of this new technology is the creation of highly skilled jobs and business opportunities, and the attraction of a new generation into horticulture who previously may not have considered going into this industry".

Propagation of strawberry plants in vertical farming structures

New research is underway looking to improve efficiency in strawberry propagation to cover the gap in supply to meet winter demand, said Vertical Future project manager Katia Zacharaki.

Katia suggested that a key limitation to efficient and profitable strawberry production in the UK is the low volume of propagation material, which results in propagules being imported. "Each year UK growers import £40m of propagation material," said Katia. "Because of the year-long demand for fresh strawberries, there is a real opportunity for vertical farming to tackle the challenge to support off-season growing, so that both propagation material and fruiting plants could be grown in UK".

Vertical Future project manager Katia Zacharaki.

The research will use East Malling-bred cultivars, with the propagation material produced in vertical farms being grown on in three different environments - polytunnel, glasshouse and vertical farms. "This will allow us to assess how the propagules behave when fruiting". Alongside this, they will be monitoring conventionally grown propagation materials of the same cultivar for comparison.

Concerning potential benefits, Katia said that locally produced propagules grown in a controlled environment could even enhance yields and reduce variability, giving greater certainty to producers.

In addition, if the process is undertaken indoors using vertical farming facilities, this could help reduce the time from propagation of the mother plant to fruiting plants and, by being produced in a enclosed environment, the fruiting plants should be free from pests and diseases. Katia added: "Using vertical farming, you can propagate at any time of year, which could help to reduce imports and has the potential to reduce the carbon footprint as well".

The initiative, which is funded by Innovate UK and Defra's Farming Innovation Programme, will involve a collaboration between Vertical Future, NIAB, the University of Reading, and several commercial growers with vertically integrated propagation businesses and industry specialists in technology for environmental control. ■

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)

- Forests may grow more slowly than expected as CO_2 levels rise (New Scientist)
- Tech company to help tackle invasive plant species (BBC)
- Scientists charge 'charcoal sponge' to soak up CO_2 (BBC)
- A surprisingly quick enzyme could shift our understanding of evolution (New Scientist)
- Earth's atmosphere is trapping twice as much heat as it did in 1993 (New Scientist)
- The behavioural science that can help us choose more sustainable foods (New Scientist)
- Marine fungus can break down floating plastic pollution (New Scientist)
- Quantum sensor gets a read on tiny worm implanted with nanodiamonds (New Scientist)

ASSOCIATION OF APPLIED BIOLOGISTS

Association of Applied Biologists
Membership 2024

We are writing to encourage you to join AAB in 2024

Join a commmity 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

Professor Mike Gooding, AAB President

Dr Geraint Parry, AAB Executive Officer

www.aab.org.uk/membership

AAB Council Members

MIKE GOODING PhD

PRESIDENT

AAB Office, Warwickshire, UK
mike.j.gooding@btinternet.com

DALE SANDERS FRS, PhD

PRESIDENT ELECT

AAB Office, Warwickshire, UK
ds10@york.ac.uk

NIGEL HALFORD PhD

HONORARY TREASURER

Rothamsted Research, Hertfordshire, UK
Nigel.Halford@rothamsted.ac.uk

GUY BARKER PhD

GENERAL SECRETARY

University of Warwick, UK
Guy.Barker@warwick.ac.uk

KAIRSTY TOPP PhD

CONFERENCES TREASURER

SRUC, Edinburgh, UK
Kairsty.topp@sruc.ac.uk

MARTIN PARRY PhD

PUBLICATION OFFICER

Lancaster University, UK
m.parry@lancaster.ac.uk

STEVE EDGINGTON PhD

PROGRAMME SECRETARY

CABI, Surrey, UK
s.edgington@cabi.org

JAKE BISHOP PhD

EARLY CAREER SCIENTIST CHAMPION

University of Reading, UK
j.bishop@reading.ac.uk

PHILIPPA BORRILL PhD

EARLY CAREER SCIENTIST CHAMPION

John Innes Centre, Norwich, UK
philippa.borrill@jic.ac.uk

NICOLA SPENCE PhD CBE

HONOURARY COUNCIL MEMBER

DEFRA Chief Plant Health Officer
Nicola.Spence@defra.gov.uk

IAIN DONNISON PhD

HONOURARY COUNCIL MEMBER

Head of IBERS, Institute of Biological, Environmental and Rural Science
isd@aber.ac.uk

ROB EDWARDS PhD

HONOURARY COUNCIL MEMBER

Institute Director, IAFRI,
University of Newcastle
robert.edwards@ncl.ac.uk