

The background of the cover is a photograph of a greenhouse filled with rows of potted flowers. The flowers are in various colors, including red, purple, white, and orange. The plants are arranged in neat rows on a dark surface, likely a greenhouse floor. The lighting is bright, and the overall scene is vibrant and colorful.

THE GROWER

SPRING 2021

THE TECHNICAL JOURNAL FOR HORTICULTURE

**The evolution of
growing media**

**The EU exit and the
impact on pesticides**

**DEMONSTRATING
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- **A focus on ornamentals**
- **SmartHort: Lean management in practice**

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COMMENT



Hayley Campbell-Gibbons

Chair of the AHDB Horticulture Board
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As the country emerges out of lockdown, it's heartening to have events and visits in the diary again to meet growers face to face and get out and about.

As an organisation, and an industry, we have not yet been able to engage with each other as we used to; as we took for granted even. Our Knowledge Exchange has moved completely online in the last year, with more growers than ever attending virtual events.

There will be a positive legacy from that shift of course, but nothing beats being stood shoulder to shoulder seeing our research work in action at a field trial, trade show or at one of our Strategic Centres. The interactions and collaborations that AHDB facilitates on common growing issues are a motivating force in a sector that is – in all other walks of life – ruthlessly competitive.

This year will be a vintage one, having all been kept apart for so long. It may become vintage for other reasons of course. Perhaps more important than the journey we have been on this year as we've endured the pandemic is the one yet to come.

As I write this column, we still do not know how Ministers will formally respond to the AHDB Horticulture ballot, but the direction of travel is clear, and AHDB Horticulture has started the process of winding down. We will aim to provide a soft landing for our contracted research projects to ensure that outputs are still delivered to growers from investments made on their behalf, allowing Defra and the industry time to decide if, how and what from our portfolio of work and services they may wish to hand over to a new arrangement or partner. I know that there are aspects of our work that the industry won't want to lose.

I would especially like to thank the horticulture team at AHDB for all of their continued hard work, dedication and resilience in what has been an exceptional year. It is a privilege and a pleasure to work among such committed and brilliant colleagues.

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Meet the team



Hayley Campbell-Gibbons

AHDB Board and Horticulture Sector Chair

My name is Hayley Campbell-Gibbons and I am the AHDB Board and Horticulture Sector Chair. I am proud to introduce you to the Horticulture Knowledge Exchange team, who are here to answer any questions that you may have.



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NEWS & UPDATES

IN BRIEF

New mushroom resources

An exciting new suite of web pages has been launched to help growers identify, control and prevent diseases in mushrooms. These pages provide helpful hints and tips, as well as links to further research. Find out more at ahdb.org.uk/knowledge-library/mushroom-diseases

The AHDB Pest Bulletin

Have you subscribed to the AHDB Pest Bulletin? These email alerts are an excellent addition to your pest control toolbox. Sent weekly during the growing season, they provide a useful forecast and pest report to help inform your control programmes. Sign up now at ahdb.org.uk/keeping-in-touch

Join us at the 2021 BTGA Conference

The 2020 British Tomato Growers' Association Conference was a fantastic success, with a diverse programme providing interest for delegates from across the industry. Dr Phil Morley, Technical Officer for the TGA commented that "the British Tomato Conference 2020 is now the benchmark for other conferences and forums who wish to present a great-value, interesting, relevant and entertaining conference event online. The event was universally acclaimed by attendees and spectators as a great success." The digital format was widely applauded and will be replicated again in 2021. This year's conference is already in development and plans to be bigger and better. It will take place on 23 September 2021, so please do save the date now; registration details will be shared in due course by the TGA.



KEEP IN TOUCH

You can stay up to date with the latest news and updates by signing up to our newsletters. Be the first to find out about the new resources and upcoming events, and keep your crop protection toolkit up to date with the latest research. Find out more at ahdb.org.uk/keeping-in-touch

Our regular podcasts provide useful insights and the chance to hear from industry experts and other growers. You can listen to new and previous episodes at ahdb.org.uk/podcast

Don't forget you can find and register for upcoming events at ahdb.org.uk/events, or watch past recordings at ahdb.org.uk/horticulture-events-archive

LESSEN THE IMPACT OF LTAEU WITHDRAWAL

The Chemicals Regulation Division (CRD) has now announced the withdrawal of the Long Term Arrangements for Extension of Use (LTAEU), with effect from 31 December 2020. This may mean that several products could be lost to industry if an EAMU cannot be obtained for them.

All applied products must now have a current on-label approval for use or an EAMU. LTAEU products can no longer be applied as the scheme has already closed. We are asking growers to get in touch to inform us about specific products that are preferentially used but no longer available under LTAEU.

AHDB has identified LTAEU exemptions that have not been transferred to EAMU status.

Following discussions with the NFU, AIC (Agricultural Industries Confederation), AgChem companies and various consultants and growers, we have developed a list of targets for new EAMUs.

In the coming months, AHDB will work with authorisation holders and CRD to determine whether such uses can be adjusted both to meet risk assessment standards and remain effective. We will continue to liaise with AgChem companies on a regular basis, working together to bring new products to the ornamentals industry.

Queries and requests for new EAMU submissions can be made to eamu@ahdb.org.uk



LIGHTING CALCULATOR

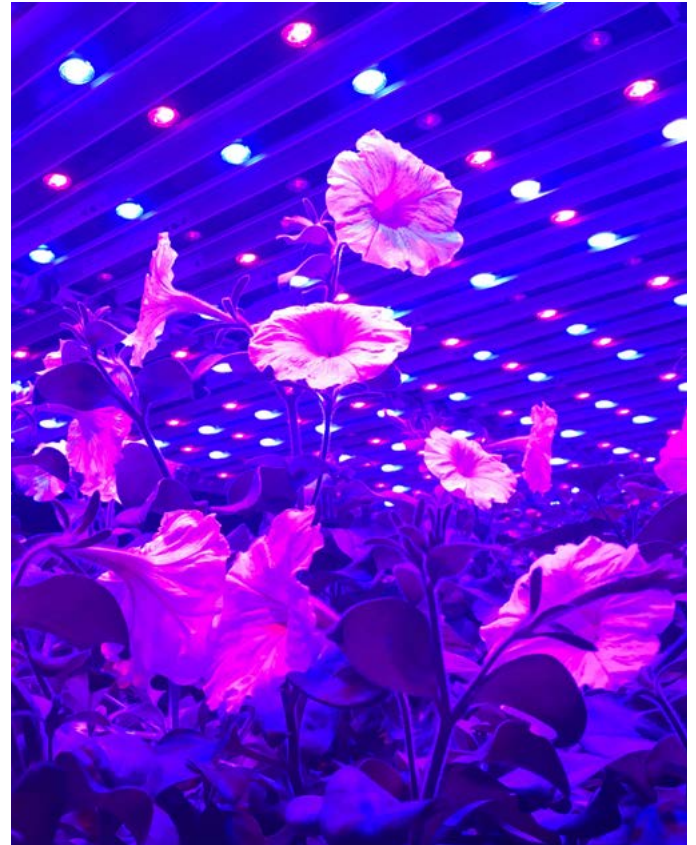
The emergence of LEDs as a viable light source has opened up new possibilities for horticulture that previous systems, based on sodium or fluorescent lamps, could not provide. As well as their established energy-saving and long-life properties, LEDs can be manufactured to produce not only full-spectrum white light but also particular wavelengths, from far red to UV, making it possible to irradiate particular plants, or growth stages, with only the spectra to which they respond.

This proliferation of options has driven the need for specification tools, and GrowSave has looked at those currently on offer. These include:

- The Horticulture Luminaire Calculator – a powerful and free tool, aimed at the end user and based on a framework for evaluating horticulture luminaires
- OSRAM Horticulture Tool – allows the designer to apply the results to a user-defined greenhouse layout
- Hortinergy – evaluates heat demand, solar radiation and running cost of a specified greenhouse project

The GrowSave team concluded that the Horticulture Luminaire Calculator was the most appropriate tool, when comparing the installation, operating costs and light output of LEDs with HPS for a new-build installation.

You can find more details about the different tools at ahdb.org.uk/GrowSave/led-lighting-calculators



Integrated pest management (IPM)

Prevent, detect, control: Moving crop protection towards a more sustainable future.

A new digital platform for the latest IPM updates from AHDB technical experts and access to key agronomic resources and knowledge. Plus, signposting to easy-to-use online tools and services.

What is available:

- Regular technical features and blogs for cereals, oilseeds, horticulture and potatoes
- Key IPM team contact information
- Podcasts, videos and webinars

Visit ahdb.org.uk/ipm and don't forget to bookmark or save it as a favourite.

EU exit and the IMPACT ON PESTICIDES



Joanne McTigue answers your questions on the impact of the UK's exit from the European Union on plant protection product legislation.

Following the UK's exit from the EU, we are now working under a new GB regime for plant protection product (PPP) legislation. While some of the implications of those changes are clear, the complexity of moving to an independent regulatory system means there are still areas that we are waiting for clarification on.

Who now regulates pesticide use in the UK?

There is now an independent pesticides regulatory regime for Great Britain (England, Scotland and Wales). Any decisions taken by the EU will no longer apply in GB, although will likely still have a bearing given that the EU is an important export market for the UK.

Decisions on active substance approvals, maximum residue levels (MRLs) and new PPP authorisations within GB are now made solely by the Health and Safety Executive (HSE).

For Northern Ireland, EU legislation for PPP continues to apply. HSE continues as the regulator for the whole of the UK.

How do GB and EU plant protection product legislation differ?

All EU legislation, including active substance approval status and MRLs, has been retained in GB law. With time, we expect some level of divergence. This may be due to the timing or differences in the decisions made.



“ Any decisions taken by the EU will no longer apply in GB, although will likely still have a bearing given that the EU is an important export market for the UK. ”

There are 443 actives on the new GB-specific pesticide approval register. HSE has awarded a three-year extension to all active substance approvals that are due to expire by 31 December 2023. However, it is important to note that this isn't an automatic extension to all these actives. HSE has reserved the right to look at those active substances sooner if another jurisdiction finds that there is a concern with human health or environmental risk. For example, we expect mancozeb to be one of the actives that is reviewed before that extension period ends.

It is important to note that we are looking at considerable changes in the pesticide regime over time. We believe we'll see continued loss of active substances as time goes on, although we hope for some balance, with an increase in bioprotectant approvals.

Will there be a change to maximum residue levels?

We now have a separate MRL system and register for GB that operates outside of EU levels. We're expecting there to be divergence from EU and NI levels over time.

Where EU MRLs are lower than GB MRLs, export restrictions may apply to the commodity treated with that active substance.

How is AHDB responding to these legislative changes?

In response, we have created a new active substance risk register. Risk registers help us to visualise and track gaps in control options. They give us the tools to make sure those gaps are filled.

The new risk register includes both GB and EU approval dates so we can keep track of the status of our actives. We also track information on candidates for substitution, endocrine disruption data, toxicity, resistance risk and MRL status.

This will give us a clear picture on any differences between GB and the EU and will help us to understand which products are going to be useful for growers in the long term.

Are mutual recognitions possible now we have left the EU?

In short, no! Mutual recognitions exist as a legal entity, so as we are now outside the legal system of the EU, we can't just 'lift and shift' authorisations into national legislation as we have done in the past.

In principle, we can use any EU authorisations as a 'risk envelope'. This is where an existing PPP authorisation is similar to the use being sought in terms of crop habit, application method, harvesting practice and so on. Climatic conditions between the EU use and UK use must also be comparable.

However, as it is difficult for the GB regulator to now access the original documentation and EU data, it is much more complicated to attempt. HSE is investigating options to address this. Authorisation holders are able to provide copies of this documentation, but this can be a more difficult process.

“ Risk registers help us to visualise and track gaps in control options. They give us the tools to make sure those gaps are filled. ”

Will mutual recognition for Northern Ireland still be possible?

Provided the MRLs comply with both GB and EU regulations, we believe so, though at the moment we don't have a definitive answer. We understand the UK is working on a co-authorisation system with Northern Ireland. Further information is on the CRD website.

We are also still waiting for clarity on the impact for basic substances, such as the use of beer, sunflower oil or sodium chloride.

To find out more, please contact:

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For further information, please visit:
hse.gov.uk/pesticides/Brexit



How is the EU exit impacting the ornamentals industry?

Teething problems or long-term challenges? We explore some of the early issues facing importing and exporting ornamental plant products now Great Britain is trading as a third country with the EU.

“When we left the single market, there was a misconception that it would be business as usual. But there are significant differences when trading as a third country, compared with being a member of the single market,” explains Sarah Baker, AHDB’s Senior Strategic Insight Manager.

While there are no tariffs or quota restrictions under the trade agreement negotiated with the EU, there is now trade friction. This means the logistical movement of goods across the border is no longer seamless and involves plant health certification, extra paperwork, complying with third-country equivalence and physical inspections at ports.

Rules of origin

Restrictions under the rules of origin terms exist to make sure those within the Free Trade Agreement are the sole beneficiaries of the deal. This means that goods received from outside the UK or EU need to be ‘sufficiently processed’ before they can be re-exported.

“There is a 15% tolerance within this,” explains Sarah. However, she warns, “If you are sending bunches of cut flowers across to the EU and some of those flowers are not of UK origin, then you need to be very careful that you can prove you meet these rules of origin in order to avoid tariffs.”

Plant inspections

As a temporary measure until 1 January 2022, plant inspections can be made on growers’ own sites, as long as they have registered to be a ‘Place of Destination’ (PoD). From 1 January 2022, all inspections of high-priority plants will be made at Border Control Posts (BCPs), and as of March 2022, physical and identity checks on all regulated plants and plant products are carried out at BCPs. While this should reduce a lot of the additional administration involved with arranging inspections on site with APHA, there is a concern about the potential hold-up of perishable goods at port.

Victoria Clarke, Plants Import Policy Manager, Defra, said: “Service level agreements will be set in terms of the time taken for inspections at port, but these may differ between each port, depending on how busy they are.”

Guy Nettleton, Principal Plant Health and Seeds Inspector, APHA, assured: “Our primary objective is biosecurity, but that must be done with a very clear aim of facilitating trade. There is an appetite from government to recruit staff where necessary and provide cover outside of normal working hours to meet the demands of trade.”

From January 2022, all inspections will also need to be paid for.

The introduction of electronic phytosanitary certifications is in progress. This should provide instant recognition, lessen chances of fraudulent activity and reassure that certificates have made it to their destination in good time, confirmed Jason Pollock, Exports Lead at Defra.

This article was written following our webinar, ‘EU Exit – impact on the ornamentals industry, trade agreements, plant movements and plant passporting’. You can watch the full webinar at bit.ly/EUExitWebinar

Full information about importing and exporting can be found on the APHA and Defra sites – gov.uk/guidance/import-plants-and-plant-products-from-the-eu-to-great-britain-and-northern-ireland

All information correct at time of writing, March 2021.

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Find out more with the AHDB EU exit web pages:
ahdb.org.uk/eu-exit

GROWER PERSPECTIVE: J.A. COLLISON & SONS

- Cut-flower producer
- Lincolnshire/Norfolk border
- 35 million stems per year
- Main crops: tulips, scented stocks, lilies and asters

J.A. Collison & Sons imports significant quantities of plant materials from the EU, including 27 million tulip bulbs and 3.5 million stock plants. Here are some of the steps they have taken to maintain trading.

“We registered as a PoD to avoid delays at port. One of the big challenges has been coordinating the plant inspection visit with APHA, as we can’t guarantee when our delivery will arrive on site. We could previously expect our goods to arrive a couple of hours after getting to port; this can now be any point throughout the day. The inspectors are meant to arrive within four hours of goods arriving on site, which means a lot of calls back and forth with APHA.

“As we buy a lot of our bulbs from a Dutch bulb cooperative group, we have set up a Dutch company so we can continue to bring in the bulbs we buy from Holland. It was going to be extremely difficult to coordinate phytosanitary certificates from all the different growers and be responsible for all the paperwork. This was challenging to set up but is now working.

“To ensure nothing is held up at the border, we send a clear list of requirements to our suppliers, freight forwarders and hauliers. All the paperwork needs to be correct, which we’re proving is possible, but it is taking an additional 30 minutes per consignment to get right. Coordination with APHA takes extra time too. This all adds cost.

“Eventually we’re expecting to see exporters pass on their costs to us, as it is more difficult for them to get their goods through customs and also there are fees in Holland for their documentation.

“We’re facing the challenges day by day, but it will be much harder for the smaller growers. I anticipate we’ll see the industry consolidate as a result in the future.”



SCEPTREplus sets sights on new pest, weed and disease targets

With over 20 trials set to take place to find new and alternative plant protection products for a range of horticulture crops, the SCEPTREplus project is as busy as ever in its final year, explains Joe Martin.



When we launched the SCEPTREplus programme in 2017, our aim was to identify sustainable control options that fit with integrated pest management strategies that we could realistically get to market.

As we move to the final year of the project, with 259 promising new products already identified and 19 EAMUS and 2 on-label approvals secured, the demands for new targets and control options has only grown.

The withdrawal and gradual restrictions of key actives continues apace. Our exit from the EU is only likely to accelerate further loss of access to plant protection products. And with new threats that arrive in the UK, from tomato brown rugose fruit virus, lettuce Fusarium or the confirmation of the brown marmorated stink bug recently, the need for alternative control options will only grow.

One of the most important elements we put in place for SCEPTREplus was its ability to respond annually to new threats and challenges. We needed to make sure the trials were responsive to the critical needs of the industry.

The trials we have now agreed for the final year of the project are no exception. We are continuing to work on some trials that we felt would benefit from further experimentation or were postponed because of COVID-19 with many of these trials looking at new targets.

Following consultation with industry and analysis from our risk register, we selected these trials based on critical need, where alternative control options were either lost or likely to be withdrawn in the future.

Cavity spot in carrots

Previous research trials to successfully inoculate cavity spot in carrots has pathed the way for one of the new SCEPTREplus trials. It means, for the first time, we can accurately test fungicide and biocontrol options for use in integrated pest management strategies.

Previous field-based experiments to trial control options have failed despite best efforts because there was no, or low levels, of cavity spot present in the plots.

Thanks to John Clarkson and his team at the University of Warwick, research projects funded by AHDB and subsequently VEGin have developed a new method that results in higher levels of artificially inoculated cavity spot disease.

This means we can now reliably assess a range of control treatments for cavity spot in the field which could lead to new and alternative plant protection options for growers in the future.

In this year’s SCEPTREplus trial, four crop protection products will be tested, including the current industry standard metalaxyl-m for comparison. The carrots will be assessed in late spring 2021.

Alternatives to thiram and metalaxyl-m

The withdrawal of the seed treatments thiram in 2019 and the glasshouse-use restriction recently placed on Metalaxyl-M have had a significant impact on disease control across a whole range of horticultural crops.

In response, we have confirmed three separate trials to evaluate alternative seed treatment control options. The studies will screen seed treatments for:

- Damping-off in leek caused by *Fusarium culmorum*
- Spinach stemphylium
- Damping-off caused by *Rhizoctonia solani* in cauliflower

We anticipate the results will be relevant to broader research on the control of damping off pathogen and seed-borne diseases in other horticultural crops. Reports will be made available in autumn.

To find out more, please contact your AHDB Knowledge Exchange Manager:

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Full list of trials for 2021

	Pests	Diseases	Weeds
Fruit	Egg-laying deterrents for spotted wing drosophila	New strategies to control apple canker	
	New acaricides for gall mite control on blackcurrant		
	Integrated control options for blueberry gall midge		
	Shield Bugs on tree fruits		
Ornamentals	Control of sciarids and shore flies		
	Control of spider mite on field and container HNS		
Field Vegetables	Flea beetle control in brassicas and baby leaf	Treatments to control fusarium on lettuce	Broad leaf weed control in legumes
		Onion neck rot	
		Development of new strategies to control carrot cavity spot (macrocosm experiment)	
Protected Edibles	Integrated control of tomato russet mite	Treatments to control fusarium on lettuce	
	Integrated control strategies for glasshouse mealybug	Control of powdery mildew on protected crops	
	Development of integrated strategies to control mirid bug and macrolophus		
Cross-sector	New strategies for whitefly control	Identification of seed treatment strategies to replace Thiram and Metalaxyl-M	
		Seed treatment project	

SCEPTREPLUS

SCEPTREplus is a four-year programme that aims to support the approval of sustainable plant protection products and develop integrated pest management programmes. Visit ahdb.org.uk/sceptreplus for more details.



PREVENTION STRATEGIES FOR DOWNY MILDEWS

Tim Pettitt of Cornwall College recently spoke to AHDB's Cathryn Lambourne, Crop Protection Senior Scientist, and Kim Parker, Crop Protection Scientist, about the challenges of controlling downy mildew diseases across horticulture and the importance of prevention in managing this disease on his team's work to ensure we are all up to date with the latest EAMUs.

Downy mildew (DM) epidemics are typically rapid and if left unchecked under favourable conditions can render entire crops unmarketable. With no effective curative fungicides currently available, prevention is heavily reliant upon prophylactic products. This approach puts enormous selection pressures on the pathogen to develop fungicide resistance and the reducing armoury of available fungicides only serves to increase this pressure. Nevertheless, there are other potential components of an effective prevention strategy that, depending on crop and DM disease system, are becoming increasingly feasible.

Preventing disease entry

An important component of any disease prevention strategy is the interception of infective inoculum. Contaminated and/or infected seed is often strongly implicated in DM outbreaks, where very low numbers of infected seeds can quickly cause widespread disease. Detection of viable inoculum is key and recent AHDB-funded work, initially in basil and spinach seed, is highlighting ways in which this can be achieved (Tom Wood, NIAB). Seedling growing-on tests and conventional molecular assays can often only offer limited results. However, a procedure which uses the differential absorption of a photoreactive DNA-binding dye into dead cells can now be used to discern live from dead infections. With further necessary refinements, this test will be used to:

- test the efficacy of seed treatments

such as heat, and b) to screen seed batch quality, providing a much-needed tool for these industries.

Protected cropping: reducing environmental risk

For protected cropping, manipulation of environmental conditions provides a means to prevent or delay disease development. AHDB-funded research in the last decade has explored this opportunity for management of basil downy mildew (*Peronospora belbahrii*) in relation to key factors such as relative humidity and lighting.

High relative humidity encourages sporulation and infection, while a reduction to 80–85% using heating and venting and/or circulating fans effectively reduces disease. Consistently maintaining lower humidity can be

“ To be able to manage risk effectively, you ideally need to know two things: are there spores of the pathogen near my crop and are the environmental conditions around my crop favourable to allow those spores to infect? ”

difficult and costly. However, shorter break periods of low humidity at key times can kill infective spores.

Humidity and temperature are strongly linked and while DM can stay active over a broad range of temperatures (approx. 5–25°C), optima frequently fall in the range 15–20°C and, outside this range, the rate of disease can be slower. Higher temperatures (30°C+) can significantly reduce infection, although such treatments are only economic in warmer climates.

Previous AHDB research on the relationship between humidity and temperature for basil downy mildew has enabled a simple risk matrix to be developed for this disease (Figure 1).

To generate spores, DMs require a period of darkness and high humidity. Production of basil downy mildew spores occurs almost exclusively in the dark. Using lighting treatments to break up dark periods has shown effective



reductions in several DMs, including basil downy mildew, with varying efficacy with wavelengths, intensities and durations. With the explosion in LED technology, this area merits further investigation. The use of such treatments in combination with seed treatment, humidity management, cultural measures (crop hygiene and spacing), effectively timed fungicides and resistant varieties where available, may pave the way to effective integrated DM prevention.

Field production: forecasting and decision support

To be able to manage risk effectively, you ideally need to know two things: are there spores of the pathogen near my crop and are the environmental conditions around my crop favourable to allow those spores to infect? The MILIONCAST model utilises environmental data to forecast the likelihood of phases in the onion DM (*Peronospora destructor*) life cycle occurring. Following an update and some validation work, the model now sits on the CropMonitor Pro website and is currently available free for all UK onion producers to use. Alongside this, growers have been collecting onion DM spores in several locations in the UK and feeding this data into their crop areas on CropMonitor Pro. This provides not just current risk but also a forecast risk as the weather data looks four days ahead. Additional work to optimise the spore detection is ongoing, with the ultimate goal of providing growers with all the tools needed to make effective mildew management decisions from their office.

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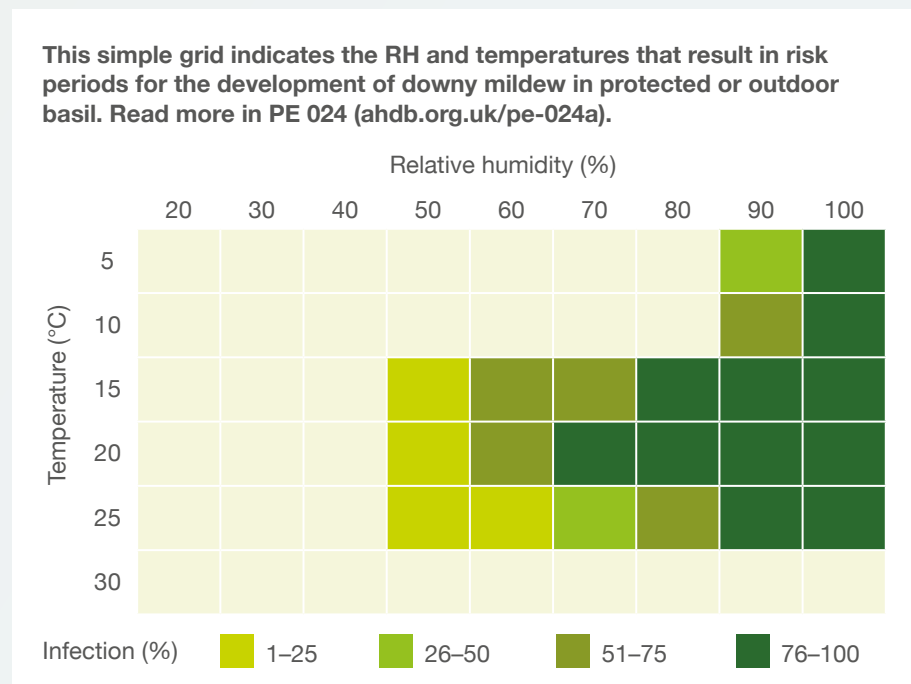


Figure 1. Risk matrix for basil downy mildew

Find out more about the control of downy mildew at: ahdb.org.uk/news/new-drive-to-control-downy-mildew-and-blight or use this helpful resource for more information about the diseases of lettuce crops: ahdb.org.uk/knowledge-library/diseases-of-lettuce-crops



STRATEGIC CENTRES: Shaping grower-led research



Debbie Wilson, Head of Knowledge Exchange, reflects on the vital role our Strategic Centres play in delivering value for growers.

I think we can all agree that seeing is believing? With tight profit margins and lack of time, growers don't have the luxury of jumping into new techniques and technologies without convincing evidence. This is why AHDB has committed to developing an ambitious network of 100 Strategic and Monitor Farms.

So what does this network deliver?

The business-focused Monitor Farms are set up regionally for some AHDB sectors. Host Monitor Farms use the AHDB Farmbench tool to benchmark and evaluate business performance, identify priorities for improving and track the progress of changes made. The input and debate from farmers signed up to each Monitor Farm group helps the host farm project achieve success while stimulating and supporting change for all the farmers involved. A win-win!

AHDB Strategic Farms take a different approach. Each host farm business carries out demonstrations linked to important technical challenges.

However, the farmer-to-farmer learning resulting from the open discussion between the group of farmers connected to each Strategic Farm again promotes productive change. This powerful model combines the experience of farmers tackling common challenges with the support of technical experts to achieve effective outcomes through hands-on experience with the live demonstrations.

We're clear that open benchmarking doesn't work for the short supply chains in horticulture. However, growers sharing technical experience with common challenges has underpinned industry discussion and study groups across horticulture for many years.



Growers often succeed by getting a leading edge with a new variety or other point of difference, which they will continue to do independently. Many growers also understand that some challenges, such as tackling important pests and diseases and improving productivity and environmental performance, are best tackled together. This is where the Strategic Farm model works so well for horticulture and why we now have a dedicated set of 13 Strategic Centres for the sector, which are featured in this edition of *The Grower*.

The Cut Flower Centre hosted by Rookery Farm in Lincolnshire was the first Strategic Centre for horticulture, which has been funded from levy income for over 10 years. The huge range of species and varieties of cut flowers is well represented by the centre and the grower steering group makes sure the work carried out is commercially relevant. The newer Bedding and Pot Plant Centre helps to deliver to a sector with a wide range of species, varieties and growing systems in a similar way.

More recently, we've found Strategic Centres to be just as successful for more focused crop species. Our Field Vegetable Centres, for example, deliver to specific crop species, with the host



sites having the right growing conditions for each of the carrot, pea, brassica, and onion branches of work underway. Alongside the long-standing variety trials for each of these crops, the Strategic Centres have provided capacity to run grower-led demonstrations. Development of the programme continued in 2020 by expanding to leafy salads and herbs, and field vegetable growers are seeking more Strategic Centre work going forward, with very clear ideas of what needs to be achieved.

Strategic Centres now also stretch across a range of our horticultural crop areas. We co-fund the soft fruit WET Centre and set up the new Plum Demonstration Centre, which successfully hosted a range of demonstrations in 2019/20, including information of relevance to the wider tree fruit sector.

The diversity in horticulture means our Strategic Centres must adapt to the needs of each sector, which you can see we've achieved from the range described here and the detail that follows in the rest of this edition of *The Grower*. We've also successfully developed the SmartHort Strategic



Centres, which, with the focus on practical implementation of Lean techniques rather than on technical aspects of crop production, work successfully across horticulture crop sectors. We're hoping to look at the process of recruiting our next set of SmartHort Strategic Centre host sites this autumn, so look out for communications on this.

Looking to the future, we are now building on this great foundation with plans for new centres for cucumbers

and for hardy nursery stock. We're also potentially looking at new Sustainability Centres in 2022 that will operate across a range of horticulture crops by focusing on effective management resources, including carbon and water.

Our Strategic Centres work well because of the true collaboration they have with growers, so please get involved, either by contacting us (see page 5), looking out for future calls for growers to host sites or by simply joining in with the discussion at the centre(s) relevant to your interests.

To find out more, please contact your AHDB Knowledge Exchange Manager:

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You can learn more about our range of Strategic Centres at ahdb.org.uk/farm-excellence/horticulture



STRATEGIC CENTRES: BRASSICA FOCUS

Five Strategic Centres demonstrate the results of grower-led research in the field vegetable sector. Each focuses on specific cropping areas, including alliums, brassicas, carrots, and peas. A year on from its launch, Knowledge Exchange Manager Dawn Teverson reflects on trials carried out at our Strategic Centre for Field Vegetables, based at East of Scotland Growers Ltd (ESG) in Scotland.



AHDB is currently working in partnership with farmer-owned cooperative ESG and Kettle Produce to carry out the trials. Both are major suppliers of broccoli, cauliflower, Brussels sprouts and swedes to supermarkets in the UK. The work programme complements that undertaken by similar AHDB centres in Cornwall and Lincolnshire, ensuring growers in each regional area are provided with the resources to research issues unique to their areas.

In partnership with ADAS and NIAB, the two-year programme of trials is looking at methods of preventing downy mildew in broccoli and cauliflower and the impact of biostimulants on crop health and vigour. Herbicide screening pre- and post-planting, as well as the use of herbicides that have shown promise in AHDB's SCEPTREplus programme, are also being trialled on site.

James Rome, Agronomist at ESG, explains: "We are finding that downy mildew is a growing concern in brassicas, particularly here in Scotland. This is due to the way we process the crops as we produce prepared broccoli in florets. We wanted to trial a range of fungicides to try and minimise its impact and approached AHDB for support."

Angela Huckle from ADAS is leading the trials on behalf of AHDB and ESG. "We are comparing a number of conventional fungicide programmes, such as Amistar and Revus, alongside a biological fungicide to treat the crops. Downy mildew can become systemic and once it's in the broccoli or cauliflower head, it creates grey streaking in the stems, making the brassica unsaleable.

"In the broccoli downy mildew trial, although disease levels were low, we were still able to determine that at the first assessment there was a significant reduction in foliar downy mildew in the broccoli sprayed with Revus + Phase II. It became clear this product gave the greatest reduction in mildew lesions throughout the trial. Revus was recently authorised for use in flowerhead brassicas and Brussels sprouts and during the trial it performed better than the current standard, Amistar. I would hasten to add that it is good to integrate both modes of action in a fungicide programme to consolidate resistance development."

A suite of herbicide trials using the three most promising products to come out of the AHDB SCEPTREplus programme

are being run to look at how they respond on broccoli, points and Brussels sprouts, which are all commonly grown in Scotland.

Angela said: “A coded product in the trial – AHDB 9987 – should gain authorisation in 2021, and the trials showed it to be safe to use over all the crops and is best used pre-planting, or very soon after planting before weeds have germinated. It demonstrated control of grasses and weeds, particularly fat hen. This product could provide a useful alternative to metazachlor in the future.

“For post-planting use, once weeds have emerged, AHDB 9875 gave very good, and almost complete, control of the weed species in the trials. This product is a bit further from authorisation. The results from the trials are significant and have provided us with really useful information.”

The brassica crops were planted at the end of May 2020, with the herbicide trials the first to be carried out. Applications of three different products were applied to crops of broccoli, cauliflower and Brussels sprouts.

Additional funding from AHDB allowed Lizzie Sagoo, Soil Scientist at ADAS, to carry out a range of soil assessments, including visual evaluation of soil structure (VESS), soil tests for pH, P, K, Mg, organic matter and soil texture and potentially mineralisable nitrogen (PMN).

Dr Steve Roberts also conducted trials (CP 191) at ESG, testing a range of broccoli varieties for head rot (spear rot), which is known to be more of a problem where excessive nitrogen is applied.

As a result of both pieces of work, growers have asked the Strategic Centre to look in more detail at nitrogen response in broccoli and the relationship with head rot. The aim is to discover the economic optimum amount of nitrogen that can be applied to optimise yield and any influence on head rot or quality.

A range of species will be assessed to determine which are most suitable to be grown before planting broccoli.

Growers in Lincolnshire and Cornwall were also interested in this area of work, so we hope to look at various aspects of nitrogen response of brassicas and cover crops in both regions in 2021.

To find out more, please contact your AHDB Knowledge Exchange Manager:

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To find out more about all our Strategic Centres for field vegetables, visit: ahdb.org.uk/farm-excellence/horticulture



James Rome, Agronomist, East of Scotland Growers

“ We are finding that downy mildew is a growing concern in brassicas, particularly here in Scotland... We wanted to trial a range of fungicides to try and minimise its impact and approached AHDB for support. ”



Angela Hucke, ADAS, measuring broccoli heads

Grower-led brassica trials to help reduce crop loss in storage

The annual value of cabbages lost in storage in the UK due to disease can be around £4.5m. Dawn Teverson, Knowledge Exchange Manager, spoke to Lauren Colagiovanni about the results of recent trials.

Autumn 2019 was particularly wet, and as a result of the challenging harvesting conditions for cabbages going into store, some growers recorded losses of up to 50% when they took their crop out of storage in the spring of 2020. Previous SCEPTREplus trials had identified the biological product Serenade ASO as being useful in the control of *Botrytis* and *Phytophthora*. However, it did not provide adequate protection under these extreme conditions.

Trials have been set up in response to concerns raised by the Brassica Growers Association, with the aim of finding alternative storage treatments to prevent disease. AHDB is working with growers and the Allium & Brassica Centre in Lincolnshire to test a range of new treatments to help reduce the number of cabbages lost in storage from diseases caused by extreme wet weather.

The cabbage storage trials are part of the additional funding made available for grower-led research through the field vegetable Strategic Centres. At the core, this project continues the trialling of up-and-coming varieties of carrots, onions, vining peas and brassicas that AHDB has supported for several years. The introduction of the Strategic Centre approach has added capacity to carry out grower-led demonstrations, with support for each of the four crop groups to address and demonstrate solutions to the key issues for growers and helping research to translate into applicable technology. Crop group association representatives agree on which topic will be addressed and how this can best be achieved, which ensures AHDB is working together with industry to find solutions. This also provides a swift route for addressing emerging issues.

The cabbage storage demonstration is hosted at the Allium & Brassica Centre in Lincolnshire. Ten treatments, including several bioprotectant products, have been applied to cabbages which were harvested in November and drenched before being put in store. They will be taken out of store in the spring of 2021 and assessed, with residue samples being taken from the most promising treatments.

James Rome, Agronomist at East of Scotland Growers, explains: "In a wet harvest year like 2019, wastage levels can be in excess of 50% among long-term stored white cabbage due to *Botrytis* and *Phytophthora*. This AHDB work to find alternative storage treatments to reduce wastage is essential to the long-term economic success of this crop in the UK."

Dawn Teverson, AHDB Knowledge Exchange Manager, said: "We are pleased that this new Strategic Centre approach for field vegetables has, through discussion with growers, allowed us to respond rapidly to a critical industry issue.

"We previously secured Serenade ASO, a bioprotectant, through our SCEPTREplus programme, which is a useful product to prevent losses in storage for 'normal' seasons. But the extreme disease pressure last season means we now need to look at additional options for growers."

Simon Jackson, Specialist Agronomist at the Allium & Brassica Centre, AHDB's Strategic Centre for Field Vegetables in Lincolnshire, who is leading the work, said: "The loss of iprodione in 2018 and metalaxyl-m in 2019 as post-harvest drenches proved devastating to the UK storage cabbage industry last season.

"We are excited to be helping to look at alternative storage strategies. Ten different treatments which were applied to the crop when it went into storage in late November will be assessed during spring 2021."

An event, either in the field or digital, will be held as soon as the results are available so that growers can see for themselves the effectiveness of the products being tested.

"Previous research undertaken by us under the AHDB SCEPTREplus programme should also lead to a new post-harvest treatment being approved in time for the autumn 2021 harvest," continued Simon.

AHDB's SCEPTREplus programme aims to support the approval of sustainable plant protection products and develop integrated pest management programmes for key pests, weeds and diseases on horticultural crops.



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For further information about the trials and the Strategic Centres for Field Vegetables, visit ahdb.org.uk/farm-excellence/strategic-centre-for-field-vegetables-brassicas

For more information about SCEPTREplus, visit ahdb.org.uk/SCEPTREplus

STRATEGIC CENTRES: Leafy salads focus

Our recently launched Strategic Centre for Leafy Salads has been helping growers understand the benefits of different weeding equipment.



“ Weed equipment demonstrations were set up to showcase impacts on weeds. ”

AHDB Horticulture’s Strategic Centres fall under the our wider Farm Excellence programme. Guided by industry and crop associations, the centres’ aims are to inspire growers by demonstrating innovation through grower-led demonstrations, in commercially viable settings.

With a reducing pesticides armoury, pest, disease and weed control is an increasing challenge for growers. In 2020, in response to a request from the British Leafy Salads Association (BLSA), we were delighted to fund a new Strategic Centre for Leafy Salads, looking at mechanical weed-control options.

Based at G’s Growers in Cambridgeshire, a variety of weed equipment demonstrations were set up to showcase impacts on weeds in a commercial crop of iceberg lettuce. This included mechanical, physical, heat and electrical weeding equipment. Bruce Napier of NIAB led the work, with G’s staff, Emma Garfield and Rob Parker, providing guidance. Rob also pointed to the rising costs of hand weeding as another driving factor behind the need for the trials.

Bruce explained that demonstrations were on a single block for each treatment. Land was prepared, with first treatments being applied mid-August. The crop was transplanted late August and early September, but treatment applications were not done at the same time as originally planned, due to coronavirus disruptions. Weed counts occurred at 7 and 14 days after treatment application.

The demonstrations covered four options: a control area with no weed-control technology applied, chemical control, mechanical control and heat. Both pre- and post-planting weeding treatments were applied.

Initial plans to disseminate results from this work alongside the trial plots on site were unfortunately cancelled due to coronavirus restrictions. Instead, results were initially presented to growers in a well-attended webinar, where a lot of questions were raised on the form weeder. A shortened presentation of the work is now available on our Strategic Centre page for those who would like to find out more about the results.

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To find out more or to watch the presentation of the trial results, please visit: ahdb.org.uk/farm-excellence/strategic-centre-for-field-vegetables-leafy-salads



Seeking new aphid control strategies

Grace Choto, Knowledge Exchange Manager, explains how we're seeking new effective strategies to control aphids by connecting growers with research specialists.

Last year, our Aphids Day webinar set out to address control issues of this key horticultural pest, due to the loss of effective control options, such as neonicotinoid seed treatments in lettuce. We asked experts and growers what we can do differently to improve control using IPM strategies. We also considered what gaps there were in our knowledge or tools to achieve this.

While aphids are a common pest across all crops, IPM strategies are impacted by different growing systems and the extent of the damage caused by the pest.

Promising strategies for fruit crops

Some recent examples in our fruit research show potential promise for new aphid control strategies.

Initial trials of intercropping garlic in strawberry indicated it could help control the pest the following year. Wildflower strips can also contribute to reducing numbers, but growers need more guidance on these and further research is currently being undertaken at NIAB EMR.

Work has also been done to use sugar at the base of apple trees in early spring. This diverts ants from climbing the trees, where they normally protect aphid colonies, and leaves the aphids open to predators. Such novel systems may need further commercial demonstrations to aid uptake.

Improving risk forecasting

We currently monitor aphid activity through Aphid News and the Pest Bulletin, which help inform control decisions.

“ Initial trials of intercropping garlic in strawberry indicated it could help control the pest the following year. ”

If we were to run the model on more farm-owned weather stations, could that give us more accurate data and improve decision-making and control?

The future

During the webinar, growers shared where they would like horticulture research to focus in the future to support them with aphid control:

- More chemistry
- Evidence to help integrate biopesticides into IPM programmes
- Studies to improve spray application
- Better trap cropping
- Improved measures to boost natural enemies before the main crop

Our intention is to continue our work on aphids through both farmer-led trials at our Strategic Centres and our applied R & D research. SCEPTREplus and our EAMU team will continue to seek authorisations for novel and alternative plant protection products, such as the bioprotectant FliPPER that was secured for a range of crops. Our AMBER programme will continue to seek ways to improve the effectiveness of bioprotectants.

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You can watch the full webinar of our 'Aphids Day' online at bit.ly/AphidsDay



UNDERSTANDING TOMATO BROWN RUGOSE FRUIT VIRUS

AHDB funded Dave Kaye (RSK ADAS) to conduct case studies with three UK growers who had experienced a ToBRFV outbreak on their sites. Here, Nathalie Key summarises the findings from his report.



Table 1. Key features of the grower sites

	Grower site one	Grower site two	Grower site three
Site	6.5 ha block	2 x 4 ha compartments	1.2 ha glasshouse
Growing media/system	Substrate	Nutrient film technique (NFT) and substrate	NFT
Varieties	Delisher, Roterno, Piccolo	Arlinta, Piccolo, Roterno, Yellorita	DRC564

First identified in Israel in 2014, *Tomato brown rugose fruit virus (ToBRFV)* is a highly infectious virus of tomato and pepper. ToBRFV is now present on many of the world's largest production areas and can have a significant economic impact on commercial production.

Grower site one

Infection was confirmed after samples were sent to the Plant Health and Seed Inspectorate (PHSI) and a diagnostic laboratory outside the UK.

Soon after arrival on site, plant symptoms started and included deformed, twisted nettled heads and needle-like

leaves (only observed in Piccolo). The symptom distribution and progression indicate the entire crop was infected at the same time and it is possible that the recirculating irrigation system may have contributed to virus spread.

All the plants were removed before fruit set to prevent further infection. Before site disinfection, infected material was disposed of via landfill. The source of infection remains unconfirmed. No outbreaks developed in the subsequent crop and the site was declared virus-free in June 2020.

Grower site two

This outbreak occurred sequentially across two compartments that were under construction and virus spread may have been facilitated by contractors on site. PHSI statutory surveillance confirmed infection.

The symptoms occurred in the mature crops and were the same in each growing system. In addition to showing similar symptoms to those observed at site one, they also featured reduced fruit and truss size, fruit abortion and weaker stems with reduced diameter. Symptom expression seemed to coincide with the switching on of LEDs.

The infected material was removed on a conveyor system, baled and incinerated on site (under an exemption licence). All equipment and site architecture was thoroughly cleaned with Jet 5 (1:125 rate), Unifect G (1:25 rate), followed by fogging with Jet 5 (1:12 rate, with 1 litre of Jet 5 per 200 m³ of space) carried out by staff. No further outbreaks have been reported.



Grower site three

At this site, no symptoms were visible before the virus was confirmed by PHSI statutory surveillance.

Symptoms, including leaf lesions and chlorosis, leaf tissue death, lesions on the centre of stems, reduced fruit and truss size, and rugose fruit symptoms, coincided with water stress caused by an irrigation breakdown. These initially developed in patches around the glasshouse, suggesting the infection was not introduced during propagation.

The crop was terminated early and the glasshouse temporarily closed after the final harvest. Infected material was removed and incinerated on site (with exemption licence). The disinfection protocol was being planned at the time of the case study.

What did we learn?

These case studies have informed some best-practice guidance, which can be read in the full report on the AHDB website. Key points include:

ToBRFV avoidance

- Regularly update biosecurity and hygiene protocols and monitor the implementation of these protocols with all your staff
- Ensure all staff and essential visitors strictly follow these protocols on site, including appropriate use and disposal of PPE, and disinfection of hands and machinery
- Ensure that seed received from suppliers complies with relevant UK legislation. Test young plants for ToBRFV before dispatch from the propagator

Identification and management of ToBRFV

- Ensure staff are trained to monitor and identify ToBRFV symptoms (these may not develop consistently or an infected crop could be asymptomatic)
- Maintaining high levels of plant vigour and avoiding stress may delay symptom onset. This should be prioritised where an infection is confirmed but crops are asymptomatic
- Do not wait for PHSI statutory surveillance if you suspect an outbreak. Contact your local inspector or email planthealth.info@apha.gov.uk/call 0300 1000 313

Clean-up and eradication of ToBRFV on sites

- Carefully remove infected crop debris and either incinerate on site (with exemption licence), dispose of via deep burial, put through a biodigester or send to landfill. Vacuum production areas after sweeping, jet wash, disinfect, then fog
- Clean all equipment in the infected area before disinfecting, and consider treating irrigation storage areas and water
- Use disinfectants demonstrated to be effective against ToBRFV at their maximum rates, and after disinfection, swab and test high-risk areas to confirm eradication

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Read the full report and detailed disinfection and biosecurity recommendations at ahdb.org.uk/knowledge-library/tomato-brown-rugose-fruit-virus

Keep up to date with information and changes to legislation and outbreaks by visiting the Defra Plant Health portal and EPPO.

STRATEGIC CENTRES: Ornamentals focus

Wayne Brough, Knowledge Exchange Manager, reviews the broad range of work undertaken by the ornamentals Strategic Centres on behalf of industry.



Cut Flower Centre

The Cut Flower Centre (CFC) was set up to become the primary site for cut flower technical demonstrations in the UK. It identifies and evaluates new potential seasonal cut flower species for the UK market and provides technical and cultural information

relating to production. Priorities are identified by the grower-based project management group.

The centre supports a range of activities, many of which are focused on new product development, evaluating a range of annual and perennial plant species for use as cut flowers. Potential

new products have been identified, including a range of hardy plant species providing foliage, berries, stems and flowers, a number of seed-raised fillers, ornamental grasses and individual plant species like astartia and scabious.

Identification of safe, new herbicide products for weed control has featured

regularly in the CFC work programme. Recent herbicide programme evaluations in China aster, gladioli, larkspur, peony and sweet William are an example of this.

Similarly, disease control is an important part of the programme. This includes taking an IPM approach to try to tackle the issue of fusarium management in column stocks, examining varietal resistance, potential hydroponic production, soil ameliorants and a range of fungicides and biofungicides.

Downy mildew was a particular problem in 2018 on column stocks, and after a series of pathogen sensitivity assessments undertaken in association with Fera, advice was disseminated to amend industry spray programmes and improve disease control on UK crops.

Assessing the phytotoxicity risk of new products will become a regular item, and we have already examined the safety of Frupica SC (mepanipyrim) on delphinium, phlox, solidago and veronica to give growers more confidence in its use for powdery mildew control.

Adoption of peat alternative growing media is less of an issue volume-wise in the cut flower sector than in other ornamentals sectors. However, work has been ongoing for three to four years to identify alternative growing media in cut lily production. The various blends examined in 2019 demonstrated that several peat-reduced and peat-free mixes can produce flower stems that are comparable to peat-based media.



Bedding and Pot Plant Centre

The Bedding and Pot Plant Centre (BPPC) acts as an umbrella for a range of near-market and other technical work. Demonstrations are hosted by several sites, appropriate to the topic area being examined.

Chemical growth control has been a recent focus. A number of plant growth regulator products have been lost to industry or had their labels amended. Conversely, several new active ingredients have become available, so we have examined the potential of these products as replacements. Work was carried out on bedding plants (at the plug stage and pre- and post-transplanting) and poinsettias. One product that has proven of interest, particularly on poinsettias, is Terpal (ethephon and mepiquat chloride), allowing growth-control programmes to be devised which are no longer dependent solely on Stabilan 750 (chlormequat).

New fungicides with efficacy against powdery mildew are also now available to the sector, but many have limited safety data for ornamental crops. Under a work programme as part of the BPPC, these products, including Frupica SC, Karma (potassium hydrogen carbonate), Reflect (isopyrazam), Sercadis (fluxapyroxad) and Topas (penconazole), were applied to over five different bedding plant species to provide further confidence in their use commercially.

We have also examined the potential of forcing herbaceous plants into flower during late March, with the minimum use of heat and other husbandry inputs, to generate impulse sales prior to the start of the summer bedding season. This work proved the concept, and species such as *Arenaria montana*, *Campanula persicifolia* 'Takion Blue' and *Geum coccineum* 'Koi' were forced into flower by week 14.



A high percentage of tender, unrooted cuttings are now imported into the UK each year from the EU and further afield and quality problems can develop during delays in transit or because of incorrect storage. The BPPC work indicated that effective rehydration (via dip treatments) had the single most significant beneficial effect on rooting and plant quality. However, dip treatments are often impractical on a larger scale, and in these situations, effective rehydration can be achieved by timely use of irrigation post-sticking.

Assessment of new poinsettia varieties for the UK market has been ongoing for several years within various AHDB-funded projects. During 2020, a range of non-red varieties were grown on five different commercial nurseries as part of the BPPC project. Comments were recorded throughout the season and shared with industry via podcast and web page summary.

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For further information about these centres, visit:

Cut Flower Centre at ahdb.org.uk/cut-flower-centre

Bedding and Pot Plant Centre at ahdb.org.uk/farm-excellence/bedding-and-pot-plant-centre

NEW THRIPS ON THE BLOCK

Wayne Brough, AHDB Knowledge Exchange Manager, highlights a potential new threat for the UK protected horticulture sector.

A new thrips species has been confirmed on protected crops in the UK. Primarily on ornamentals, including primrose and cyclamen, the pest has also been noted on pot herb crops, including basil and rosemary. However, the pest has a wide host range, including cucumber, lettuce, pepper, strawberry and tomato. Identified as Japanese flower thrips (*Thrips setosus*), the thrips species is not native to the UK but is not currently classified as a notifiable quarantine species.

Originally from South-East Asia, it has also been recorded in a number of Northern European countries, being first detected in the Netherlands in 2014 on hydrangea, and in 2016 in the UK on poinsettia.

The pest, like some other thrips species, feeds on the underside of leaves, causing scarring, and also on flowers, damaging petals. In addition to causing direct plant damage, like western flower thrips (WFT), it can transmit Tomato spotted wilt virus. The adult has a much darker body than WFT, with a pale patch on the base of each wing. At the moment, control of the pest is proving problematic using the usual range of

biological control agents commercially applied for thrips control. UK growers are finding that the predatory mite *Neoseiulus cucumeris*, commonly used for control of WFT, does not seem to give control of *T. setosus*.



To understand more about the biology of the pest, and ultimately improve control measures, AHDB commissioned Jude Bennison of ADAS Horticulture to undertake a review of current problems and potential IPM-compatible control measures for *Thrips setosus*, and also of other new thrips species (for example *Dichromothrips corbetti* – ‘vanda thrips’) on phalaenopsis orchids in the UK. As part of this review, Jude contacted entomologists at both Koppert

Biological Systems and Wageningen University and Research in the Netherlands to find out how Dutch growers are dealing with *T. setosus*. Promising control is being achieved in the Netherlands, for example, on hydrangea using another species of predatory mite, *Transeius montdorensis*, on the advice of Koppert. Research is also being done at Wageningen University and Research on controlling new invasive pests including *T. setosus*, and, so far, *Orius* species predatory bugs are showing promise. The review of new thrips problems will be available on the AHDB website soon.

To find out more, please contact your AHDB Knowledge Exchange Manager:

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For help with thrips identification, see the AHDB poster ‘Knowing and recognising thrips in your crops’.

Taming troublesome aphids

Elysia Bartel and Jude Bennison, ADAS, spoke to Wayne Brough, AHDB's Knowledge Exchange Manager for ornamental crops, about some of the recent work undertaken in the SCEPTREplus programme of work to improve aphid control on hardy nursery stock.

The melon and cotton aphid (*Aphis gossypii*) is a serious pest of certain hardy nursery stock species. This small, yellow, green or almost black aphid species can multiply quickly in warm conditions and clusters towards the top of plants, causing distortion and plant death in severe cases.



Melon and cotton aphid (*Aphis gossypii*)

This aphid is resistant to some insecticides, such as pyrethroids, and it can be problematic to control with the current range of conventional products. Biological control, using parasitoids and predators in an IPM programme, is important for tackling this pest, but plant protection products are also important to knock down fast-growing populations and to clean up crops before dispatch. Growers need new products to control this aphid, especially those compatible with IPM, while providing different modes of action to help prevent resistance development.

A trial at ADAS Boxworth in the SCEPTREplus programme tested six novel plant protection products for efficacy against *A. gossypii*. Five bioprotectants and one conventional insecticide were compared with an untreated control and Mainman (flonicamid), used as the industry standard. The products were tested on *Hebe* 'Purple Pixie', grown in a polythene tunnel.

The trial plants were infested with *A. gossypii* one week before the first application of treatments – all were applied in 600 L/ha water at manufacturer-recommended rates and timings.

One bioprotectant showed real promise, significantly reducing numbers of *A. gossypii* from six days after the first application and providing 80% control after 13 days. This product also significantly reduced a natural infestation of peach-potato aphid (*Myzus persicae*) six days after the first application. A conventional insecticide significantly reduced *A. gossypii* numbers after 22 days and *M. persicae* numbers from 13 days after the first application. Two other bioprotectants, significantly reduced numbers of *M. persicae* 13 days from first application. One of these, Eradicoat Max (maltodextrin), is now authorised for use on all non-edible crops grown under permanent protection with full enclosure. (All reductions relative to the untreated control.)



Peach-potato aphid (*Myzus persicae*)

To find out more, please contact your AHDB Knowledge Exchange Manager:

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For further information on aphid control, watch the archived AHDB/ BPPC webinars 'Why am I having difficulty controlling aphids on my crop?' and 'SCEPTREplus: Improving the robustness of pest and disease control in IPM programmes for ornamental crops'.



Aphid control trials run at ADAS

STRATEGIC CENTRES: FRUIT FOCUS

AHDB's Knowledge Exchange Manager for fruit introduces the two Strategic Centres for fruit growers, reflecting on significant achievements to date and their thoughts for the future.



“ The orchard has significant potential to not only demonstrate ‘best practice’ in plum production, but also the results from a range of other tree fruit research projects. ”

Our Strategic Centres provide the platform by which we demonstrate the results of grower-led research within a commercially viable setting. For fruit growers, there are currently two such centres. In soft fruit, the Water Efficient Technologies (WET) Centre, set up in 2017, showcases the latest precision-technology developments in strawberry and raspberry crops, including precision approaches to pest and disease control. The Plum Demonstration Centre is our centre of excellence for tree fruit growers, demonstrating best practice, the latest practical research and the implementation of new technology.

Both centres are part-funded by AHDB and run by NIAB EMR from its Kent site.

The Water Efficient Technologies (WET) Centre

The WET Centre plays a vital role in demonstrating research in practice, with a focus on irrigation and fertigation technology in substrate-grown strawberries and raspberries. Initial work identified that significant savings in both water and fertiliser use could be made in soilless substrate production when employing innovative technology. Increasingly, growers are adopting these systems, improving the yield and quality of their crops.

In 2020, AHDB completed a five-year project to improve integrated disease management in strawberry (SF 157). This showed that we could significantly reduce the number of applications of conventional fungicides to control strawberry powdery mildew using a risk prediction model. Complementary trials on a commercial strawberry farm near Evesham have further demonstrated this, along with the potential to employ biofungicides when the risk of infection is low.



Last year also saw raspberries introduced to the WET Centre as four new automated venting polytunnels were erected. These have been used for both Malling™ Bella and Malling™ Charm – two new raspberry releases from the East Malling Rubus breeding programme. Precision irrigation is being deployed to optimise coir moisture content, average daily irrigation run-off and coir pore E.C., while minimising emissions to ground, air and water.

The WET Centre continues to grow and opportunities are being explored to extend the centre to include blueberries. Plans are also in place at NIAB EMR to increase both the numbers and types of demonstrations of new technology being run each year.

The Plum Demonstration Centre

The Plum Demonstration Centre has provided an opportunity to showcase the outcomes of the Innovate UK research project entitled ‘Sustainable increase of the UK plum production’. This focused on increasing yields, reliability of cropping, extending the production season from July to October and raising fruit value by improving quality. Recent work has also centred on integrated pest and disease management projects, seeking to develop novel approaches to controlling the principal pests and diseases faced by growers.

Currently, the centre incorporates a number of activities, including demonstrating the performance of plums grown on different rootstocks, the use of different training systems and mechanical weed control and root

pruning for vigour management. Demonstrations are also being run to allow growers to compare plums grown outdoors and under protection and those using different fertigation techniques. A total of 23 new varieties are also being grown, helping to show how the production season can be extended.

The orchard has significant potential to not only demonstrate ‘best practice’ in plum production, but also the results from a range of other tree fruit research projects. Our research into spotted wing drosophila (SWD) control in cherries has highlighted how best to monitor for SWD adults; this is being put into practice at the Plum Demonstration Centre. Further, SWD research on lengthening spray intervals and the use of bait sprays can also be demonstrated at this orchard in the future.

The results of research into the enhancement of beneficial insects in apple orchards (TF 223) using wildflower strips, hoverfly attractants and earwig refuges (Wignests) is being implemented, and records of our findings will be made available in due course. More information about this work is included in our ‘Enhancing beneficial insects’ webinar. You can still watch the recording via the Plum Demonstration Centre web page.

There is space around the orchard to allow for future expansion and the site could extend to include other tree fruit crops, including apples, pears and cherries.

To find out more, please contact your AHDB Knowledge Exchange Manager:

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Find out more about the WET Centre at ahdb.org.uk/farm-excellence/WETCentre, including links to recent webinars, videos and further research.

Find out more about the Plum Demonstration Centre at ahdb.org.uk/the-plum-demonstration-centre, including links to further research, webinars and useful videos.

Steady progress towards delivering higher yields and quality for soft fruit

Scott Raffle and Mark Else (NIAB EMR) review the latest results from the WET Centre to help growers maximise their soft fruit crops.



Between 2011 and 2013, commercial growers were using between 49 and 108 m³ of water to produce a tonne of fruit from substrate-grown strawberries. Using the new Malling™ Champion variety and precision irrigation techniques, the Water Efficient Technologies (WET) Centre has significantly reduced this volume to between 37.5 and 44.9 m³ in 2020.

The WET Centre aims to demonstrate modern technology while developing ways of improving production to drive up yields and quality in the industry. This includes precision irrigation using high-performance sensors and data loggers from Delta-T, tailored coir mixes from Cocogreen, a Netajet Octa nutrition rig from Netafim, and Stoller nutrition products. Rainwater harvesting and reuse, automated tunnels and environmental control, and the use of the everbearer strawberry Malling™ Champion are also important features of the centre.

Yields from Malling™ Champion in 2020

In 2020, Class 1 yields of Malling™ Champion were 76% higher than in 2019. This increase may reflect a corresponding increase in photosynthetically active radiation (PAR) compared with the long-term average, partly due to new film which had been installed, increasing the light transmission. Increased Class 1 yield was also found in the commercial area of the centre compared with the advanced area, due to higher light levels.

Following the hot weather in August, there was a reduction in fruit size, although truss kinking may also have contributed to this, as it is known to reduce a 20 g berry to a 10 g berry.

Forecasting yield

Previous work has demonstrated significant variation in total yields between the rows within individual tunnels, making it more difficult to estimate yields accurately.

An Innovate UK project led by Berry Gardens and involving NIAB EMR and the WET Centre is developing a model to help growers to predict yield with more accuracy. This has shown that rows 3 and 4 of a tunnel of six rows are the warmest, with row 6 being the coolest; this translates into higher yields for rows 3 and 4. The model uses a base temperature in calculating the predicted yield; if this temperature is inaccurate, the accuracy of the model is compromised. As different strawberry varieties require different base temperatures, the work is developing an optimum base temperature for a range of varieties at present. However, there is more to do to understand exactly why the yields differ between rows.

Effect of light on photosynthesis

We know that the rate of photosynthesis in the plants increases with higher light levels until a light saturation point is reached, after which the photosynthetic rate remains constant. Row 4 was seen to receive two hours more PAR than row 1. However, based on this, row 1 still produced more yield than we would expect. This will be investigated further, along with ways to maximise PAR where 'Smart Venting' in the advanced area of the centre has reduced light levels.



Effect of coir bag colour

Previous work had shown black bags to produce a warmer soil rhizosphere than white bags; black bags were 4°C warmer by day and 1°C by night. In 2020, the bags were 2°C warmer in May, but only 1°C by August, when the crop canopy had enclosed the bag. The Class 1 yields in 2020 were 5% higher in white bags and there was some evidence of higher PAR values above the white bags earlier in the season. Berry fresh weight was 4% higher from plants in white bags. Interestingly, the plants in black bags used more water (52 litres, compared with 44 litres, per plant). Further work is investigating the effects of bag colour on root respiration rates and resource allocation and whether shoot water deficits limit berry fresh weight in black bags during hot weather.

Plans for 2021

Work plans for the WET Centre in 2021 will build on the findings of 2020 and will try to answer the questions raised. Ongoing work will include assessing the effects of Lumitect film on crop productivity and berry quality, and the cropping potential of the primocane raspberry varieties Malling™ Bella and Malling™ Charm.

Ultimately, the aspiration of all the partners is to translate the findings of the centre into uptake of the technology by UK strawberry growers to increase their yields and quality while reducing use of resources such as water and nutrients.

To find out more about project TF 223, contact your AHDB Knowledge Exchange Manager:

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The above results were recently presented in a webinar which can still be viewed on the AHDB website at: ahdb.org.uk/horticulture-events-archive

Further information about the work at the WET Centre can be found on the official site at: ahdb.org.uk/farm-excellence/WETCentre

NET ZERO GATHERS PACE

The NFU Energy team provides an update on recent activity as the industry continues to strive towards net zero.



The last few months of 2020 and early 2021 have seen an upturn in announcements and statements by organisations keen to demonstrate that they are taking the environmental issue seriously and making commitments to achieve net zero carbon emissions in a given time frame. These have been key themes delivered in recent GrowSave activity.

During the Tomato Growers' Association Conference, the issues on the future supply of heat to glasshouses, in the context of reduced carbon alternatives and the requirements for electricity and CO₂, were discussed, coinciding with almost impeccable timing of the Government's announcement of their 10-point plan. The challenge will be managing a drive towards electrification of heat and supply of CO₂. 'Are the days of combined heat and power numbered?' was asked, and the answer, at the moment, is that it has rarely looked more attractive. However, it will almost certainly be more and more difficult to justify large-scale investment in it throughout the next 10 years and out towards 2040.

The British Protected Ornamentals Association conference sessions took a similar theme but focused a bit more on how to measure carbon emissions and the tools available to do so. The NFU has assessed many calculators over the last 18 months and come up with the top three most suited to agriculture (see page 7 for more information). However, none of these fits protected horticulture well and a bespoke calculation will be needed to quantify many of the business decisions in this sector.

Coming almost full circle, a stand-alone webinar was hosted by GrowSave on the theme of net zero. Over the hour session, the issues were discussed in greater detail regarding calculations and tools, as well as expanding on practical measures that growers could take to begin their journey into reducing carbon emissions. You can watch the webinar again at ahdb.org.uk/horticulture-events-archive

What is clear from all recent discussions and events is that it is great to have an aspiration and goal, but we must now also start to take practical actions to reduce emissions.

STARTING THE JOURNEY TO NET ZERO

Key messages from the webinar

Energy is a good place to start, as actions directly affect immediate emissions. The nationwide decarbonisation of the electricity grid will benefit us all, without affecting our business.

Decarbonising the gas grid is more difficult to achieve and therefore growers need to think about how they can reduce emissions on individual sites.

Paying attention to energy efficiency directly reduces CO₂ emissions and makes any renewable or low-carbon alternative easier and cheaper to deploy.



Energy efficiency – not glamorous, but essential

With ambitious targets in place, it is more important than ever to understand how energy efficiency can be increased.

The Climate Change Committee recently announced that the UK needs to cut its emissions of carbon dioxide by 78% (against 1990 levels) by 2035, rather than the previous target of 2050. This is a call to halve the time taken. The global effort to reduce emissions has always been a two-pronged assault: to cut consumption through efficiency improvements and to decarbonise by moving to renewable energy. However, renewables tend to hog the limelight because of the hardware involved, e.g. solar panels, wind turbines, hydroelectric dams, etc. Energy efficiency, meanwhile, is not seen as a technology, just common-sense practice.

That may not be entirely fair. Good control of energy-consuming plants is certainly an important tool, but low-energy technology upgrades, such as replacing older boilers, motors or lighting, can present valuable investment opportunities for any business, with proven benefits and reasonable returns on investment. In the horticulture sector, air leakage and radiation are major factors of heat loss from glasshouses. Sealing frames and openings can still achieve impressive savings, while thermal screens, or even simple bubble wrap attached to the perimeter, will reduce radiant heat loss. With care, sodium lighting can be replaced by LED.

Historically, energy efficiency has been the target of incentives and legislation. The Energy Savings Opportunity Scheme (ESOS), mandatory for larger businesses, requires a four-yearly audit, resulting in a costed list of potential projects. Phase 3 of ESOS will land in 2023; in the meantime, energy efficiency still offers low-cost, high-impact ways of reducing your overall spend on energy.

Changes as the RHI scheme closes

The Government, in response to the closure of the non-domestic RHI scheme, has set out two major changes which will affect all biomass boiler participants. There is time to prepare for these as they only come into effect in 1 April 2022 and it's worth determining the implications for your system now.

Fuel quality

The introduction of a fuel quality standard is considered important to ensure that fuel burnt in biomass boilers is good quality and not causing adverse emissions.

If you buy fuel from the Biomass Suppliers List (BSL) or Sustainable Fuel Register (SFR), then your fuel will meet the fuel quality standard from April 2022. However, if you are

registering the fuel on these schemes or are supplying your own fuel, you will need to provide evidence that it meets the fuel quality standard.

There are quality standards in existence, for example the Woodsure certification scheme or ENplus certification scheme, which can be used to demonstrate compliance.

Maintenance standard

The regulations also require participants to conduct a mandatory annual maintenance check. The Department for Business, Energy and Industrial Strategy believes this will help to ensure and encourage the efficient running of boilers, as costs to the consumer and harmful emissions are reduced. This will require participants to complete checks to industry-agreed standards. Guidance is being developed by HETAS and MCS, but any equivalent standards can be used and are expected to form part of regular servicing actions. The onus will be on the participant to prove that the required standard has been completed by confirmation of ongoing obligations.



“ Good control of energy-consuming plants is certainly an important tool, but low-energy technology upgrades ... can present valuable investment opportunities for any business. ”



ENERGY MARKET NEWS

The energy market has faced exceptional challenges and volatility in the past year, as the NFU energy team explains.

Overall, 2020 was a tumultuous year, and the energy market was no exception; seeing the imbalanced electricity market reach both highs of £4,000/MWh and lows of -£71/MWh, mirrored by the day-ahead N2EX market (in which many horticultural CHP operators trade) reaching a peak of £1,500/MWh and trough of -£39/MWh. Although there is always a seasonal swing in energy prices, 2020 saw some unusually extreme weather, alongside changes to both the supply and demand of electricity because of coronavirus, Brexit and the commissioning of increased renewable energy. Closely linked with electricity demand, natural gas also saw drastic price changes.

While it is easy to explain away an exceptional year as a unique culmination of circumstances, some of the underlying causes and effects will remain for the long term. Here, we explain the reasons for the volatility to highlight why extremes of prices may become more likely in the future.

Lockdown

The national lockdown in March 2020 changed the way many companies did business, which brought with it a change in the way energy was consumed in the UK. Many large electricity-consuming processes no longer occurred, which, combined with the rise of people staying at home, changed both the peak electricity demand and the daily electricity usage profile.



As the vaccination programme kicks in and businesses start to return to more normal trading, some effects will remain. The prevalence of home working will continue to have a smoothing effect on daily demand profiles, as would any reduction in manufacturing or other similar energy-intensive business.

Net zero

For the last 20 years, the proportion of renewable electricity on the grid has been increasing, initially backed by the Renewables Obligation and later Feed-in Tariffs schemes. Due to the developments in wind and solar technology, they have become some of the cheapest options for electricity generation, further increasing their representation in the grid mix. In the past year, wind and solar have accounted for 20.7% and 4.3% of generation, respectively.

“ The implementation of Brexit has seen the UK leave the EU internal energy market at the end of 2020. ”

Net zero target commitments have increased dramatically over the last 12 months as governments, industry bodies and commercial organisations work out how to be more sustainable. Interest in self-generation technologies and energy-efficiency actions serve to reduce fossil-fuel-based energy requirements. Set against this, we should also remember that any increase in heat pumps and electric vehicles will impact the electricity supply and demand in a way not seen before.

Weather

In early summer 2020, we experienced a series of prolonged heatwaves and periods of relatively high wind, which compounded with the reduction in electricity demand caused by the national lockdown to produce periods of low, and even negative, electricity prices. The abundance of electricity and high ambient temperatures then drove down the cost of natural gas, since less of it was needed to meet energy demands.

In response to the saturated electricity grid, a temporary solution was implemented on 7 May which allowed the grid to instruct DNOs to disconnect embedded generation. This was mainly targeted towards smaller generators – CHP, hydro, wind and solar. The solution expired in October, and since then a consultation has been opened to develop long-term guidelines, should it be required again. It will address criticism from renewable generators who felt that fossil-fuel generators should have been the first to be disconnected.

Capacity market

Conversely, there have been times when the grid has struggled to meet demand, its supply margin has fallen below the threshold at which a notice is issued, warning generators in the capacity market (CM) that they are about to be called to generate. This autumn/winter has seen the first CM notices issued since 2016.

In the event, the notices (on 15 September, 3 December and 8 January) were all cancelled before they came into effect. High system prices and response to the early warnings had the desired effect and the grid was brought back into balance before capacity market actions were needed.

Brexit

The implementation of Brexit has seen the UK leave the EU internal energy market at the end of 2020. This makes buying electricity via the UK–EU interconnector a more cumbersome and expensive process; those buying and selling on the day-ahead market have had to bring forward their trade times by approximately one hour. The UK has historically used the interconnector to import between 5–10% of its electricity demand, meaning this change had a significant impact on overall energy prices. The effect of the commissioning of a second interconnector, to give 2 GW of overall energy flow, will remain to be seen.

While the winter weather was not as extreme as early summer, the strain on the electricity supply caused by leaving the EU internal energy market was exacerbated by periods of very low wind, pushing gas and electricity prices to staggering heights in January.



ESTABLISHING A LEAN MINDSET

Lean can help save you time and money, but did you know it can help boost staff morale too? Darryl Beck, an ornamentals grower, shares how he has developed a new Lean mindset and improved their propagation process too.

DARRYL BECK

At the time of writing, Darryl Beck was the Senior Production Manager at Kernock Park Plants in Cornwall. He took part in our Strategic SmartHort Centre workshops that aimed to boost productivity in the horticultural workforce.

KERNOCK PARK PLANTS

- Independent wholesaler of young ornamental plants
- 4 hectares
- 11 million plants produced annually

“ When I’m assessing any kinds of problems at work, I now have the skills to approach them in a more consistent and logical way. ”

My role is wide-ranging. I liaise with different production departments to improve our efficiencies, as well as recruitment and managing personnel. I also look after plant husbandry and management.

The SmartHort Strategic Centre was a very practical and engaging course and, as part of it, we worked on projects in our own business. My project looked at ways to improve our propagation efficiency.

Last year, we produced 14 million plug plants in cell trays. The holes are created by machine, but during transit the trays move and the holes get filled back in. By the time it gets to the propagation area, where the cuttings are inserted, the team has to remake the holes. That is an obvious wasteful activity.

I calculated it was taking 30 seconds to hand-drill each tray. We produce around 190,000 trays a year, so if you multiply that time across our total annual output, it would save us around £14,000 a year in labour costs if we could cut out that process.

Finding simple solutions

The straightforward solution would have been to move the plug-making machine, but it just isn't practical to move that large piece of machinery.

So I developed a simple board with pegs on; when you put it down over the tray, it opens up the holes again. We're trialling this at the moment, so I don't have the final figures, but the potential is significant. It doesn't sound ground-breaking, but it has the very real likelihood of saving us £14,000 a year from our labour bill.

Runners, repeaters and strangers

One of our company's strengths is its large product range. We produce over 1,200 varieties – so where do you start implementing Lean with a product range like that? I was trying to compare our business to a factory that made just a couple of non-living products. So one of the concepts we covered in the course was understanding your 'runners, repeaters and strangers'.

You have to focus on the plants you're producing most frequently, in the highest volumes – the runners. You start with those crops, make tweaks, and if you make gains, you can quickly multiply out and quantify the potential savings. Strangers are the plants you only produce occasionally.

Developing a Lean mindset

Lean is very much part of the culture here at Kernock Park Plants. I applied for a place on this course to understand the principles behind Lean and to be in a position where I could input that with the team.

What has been significant for me is just having developed a general Lean mindset. When I'm assessing any kinds of problems at work, I now have the skills to approach them in

a more consistent and logical way. It's a very efficient way of identifying where your wasteful tasks are, where you can add value and where you can reduce non-value-added tasks.

I am working on an internal guide to form part of our training for new team members and existing people, so it becomes an integral part of our culture here.

Employee engagement

We are always trying to think about how we can improve employee engagement. Lean just ticks all the boxes. It gives you a means of gaining labour efficiencies, but in a way that engages other employees as well.

It is a collaborative process, so people can see how it makes their work easier and better, and they feel empowered by it. So not only are there savings in terms of time and money, but also in the satisfaction of employees. That is a real tangible benefit of Lean.

There is more we can do and, obviously, an important part of the Lean process is the idea of continuous improvement and that is what we are working on here.

To find out more, please contact your AHDB Knowledge Exchange Manager:

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Due to coronavirus restrictions, we have moved our Strategic SmartHort Centre workshops to online learning modules. If you'd like to learn how to implement Lean into your own horticulture business, you can watch our training modules at ahdb.org.uk/smarthort-lean-modules



The evolution of growing media

Neil Bragg, Substrate Associates, and Wayne Brough, AHDB Knowledge Exchange Manager, examine recent developments which have impacted peat use, and the future for alternative growing media.

Project CP 138 'The transition to responsibly sourced growing media use within UK horticulture', funded by Defra, AHDB and industry, improved our understanding of the physical parameters of new raw materials and blends and how such parameters impact media performance. The work also went some way to providing more confidence to industry in terms of selection and management of peat-free media, with two notable exceptions – the mushroom (casing) and vegetable propagation (blocking media) sectors, where further work is still required to resolve unique issues.

The concept of 'responsible sourcing' has also moved on, with the development and release of the Responsibility Index Mark for point-of-sale promotion in 2021 and onto amateur bagged product in 2022. This has been developed by the Responsible Sourcing Task Force, which was set up in 2011 by Defra with input from industry. The scheme is unique as a means of comparing the environmental credentials of any raw material used as either stand-alone or component mixes

for growing media. More details of the scheme can be obtained from the Growing Media Association UK.



So where now? The Defra target to remove peat from commercial production of plants in England still stands at 2030. The latest GMA/HTA Growing Media Monitor Report (co-sponsored by Defra and AHDB), which surveys trends in the composition of UK growing media, indicated a

decline in the use of peat in growing media. For the first time, peat now accounts for less than 50% of the constituents in growing media products (for both amateur and professional products; 63% in professional mixes alone), but the movement has been relatively slow – too slow for NGOs and Ministers.

As a result, Defra undertook a week-long series of roundtable meetings with interested parties, including growers and growing media manufacturers, to examine further government measures to reduce peat use in horticulture. A Defra-industry consultation is expected later in the year. The HTA also announced in January a 'Peat Task Force' across the horticultural supply chain to promote their sustainability roadmap for a peat-free future for the industry.

Alongside this there have been other developments which have impacted the current situation regarding peat use in growing media. In the Republic of





timber products to allow inclusion in mixes. Other additives, such as anaerobic digestate, are being considered.

A long-standing barrier to adoption has been the increased costs of peat-free media and who in the supply chain will absorb these. At the moment, there is some optimism in the ornamentals industry that price increases to cover other input costs related to Brexit may provide an opportunity for the necessary price rises to cover peat-free media too, which would be welcomed by growers while allowing a more rapid uptake of alternative growing media blends. However, these price increases cannot put the UK horticulture industry at a disadvantage.

Currently, the situation is extremely fluid and it's a case of watch this space, with physical, economic and political pressures all acting upon the evolution of growing media.

To find out more, please contact your AHDB Knowledge Exchange Manager:

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Read the **10 top tips for going peat-free** on the AHDB website.

Ireland (ROI), there has been no peat harvesting since September 2019, and despite the Irish Government looking to introduce Environmental Protection Agency licensing for sites greater than 30 ha, Bord na Mona has now said they will not be going back into peat harvesting, focusing on renewable energy initiatives. At present, there are sufficient stocks of UK and Irish peat for the 2021 season, but as 80% of UK peat comes from ROI, this poses serious questions for the 2022 season.

Other immediate issues facing the growing media industry concern the availability of components, such as bark

and coir. The industry is struggling to secure sufficient quantities of both, especially as the coronavirus pandemic has limited the current availability of shipping containers. The cost of container lease has risen by a factor of 10 in the last six months.

To add to this, there is also an issue following Brexit, with regard to plant health. Peat and coir may be traded between third countries and the EU member states, but other materials, such as bark and wood fibres, have to meet specific criteria. APHA/PHSI (Plant Health) have been very proactive and guidance notes have been issued with reference to the criteria for treating



“ The Defra target to remove peat from commercial production of plants in England still stands at 2030. ”



Are you looking to increase the labour productivity of your horticulture business?

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What does carbon auditing mean for horticulture?

Wayne Brough, AHDB's Knowledge Exchange Manager for ornamentals, and Jon Swain of NFU Energy recently spoke to us about how carbon auditing could impact horticulture and the importance of striving towards net zero.

Both our recent podcast, 'GrowSave-ing carbon? Net zero and what it means for horticultural production', and webinar, 'Taking steps towards net zero', explored the importance of carbon auditing for the horticulture industry and discussed some of the practical steps you can take to improve efficiency of carbon use in your business. AHDB is also considering how carbon auditing may be rolled out to some of our horticulture Strategic Centres in due course to help growers understand how auditing can be beneficial to their business.

WAYNE BROUGH

"Carbon auditing and the generation of carbon footprints for horticulture is not new. This was the hot topic a number of years ago that slowly ground to a halt because of lack of clarity about audit scope, insufficient data to account for business inputs and an obvious deficiency of applicable audit schemes to address the specifics of horticulture.

"Now, the industry is faced with renewed pressures for carbon auditing, and for those dealing with multiple retailers it may well become a necessary due-diligence requirement for continued trading. But undertaking an audit could be more beneficial than this, it could show where cost savings could be made in a business, or where investment is required. It may also ensure that the industry as a whole maintains its well-deserved green image.

"However, the issues of audit scope and scheme applicability still remain, and there is an urgent need to ensure some level of carbon auditing commonality within horticulture to assist with comparison between sectors and businesses and also to monitor individual business progress to footprint targets."

JON SWAIN

"The term carbon footprint is often misused. A carbon footprint is a very defined, particular type of calculation, requiring you to know the carbon emissions throughout the total life cycle of a product, or similar. Often, this is not what is needed, nor is it very easy to achieve.

"Assessing carbon impacts (carbon auditing) of changes needn't always be this involved and a carbon audit for a product or process can be simpler. It is recommended to set appropriate boundaries for the start and end of the calculation and then to remain with these throughout the audit process so the results are comparable.

"Carbon-auditing tools are designed to take out the complexities of finding emissions factors and making calculations correctly, although there are few suitable for whole business horticultural systems and often bespoke calculations are more appropriate."

Watch our 'Taking steps towards net zero' webinar to find practical tips for your net zero journey. You can find the recording at ahdb.org.uk/horticulture-events-archive

In our recent podcast, 'Growsave-ing carbon? Net zero and what it means for horticultural production', Nathalie Key was joined by NFU Energy and Neame Lea Nursery to explore the carbon emissions targets of net zero, carbon auditing work in an ornamental commercial environment, including the relationship with wider retail, and what this could mean for the wider horticulture industry.

To find out more contact your AHDB Knowledge Exchange Managers:

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