CONTACT US

June 2020
Issue 5

PHC News

LATEST FROM THE PLANT HEALTH CENTRE

Welcome to the June 2020 issue of the Plant Health Centre's newsletter. In this issue we review some of our latest funded projects including key principles for plant health (page 2), assessing large-scale biosecurity risks to Scotland (page 3), potato cyst nematodes (page 4) and the essential role of modelling outbreaks (page 5).

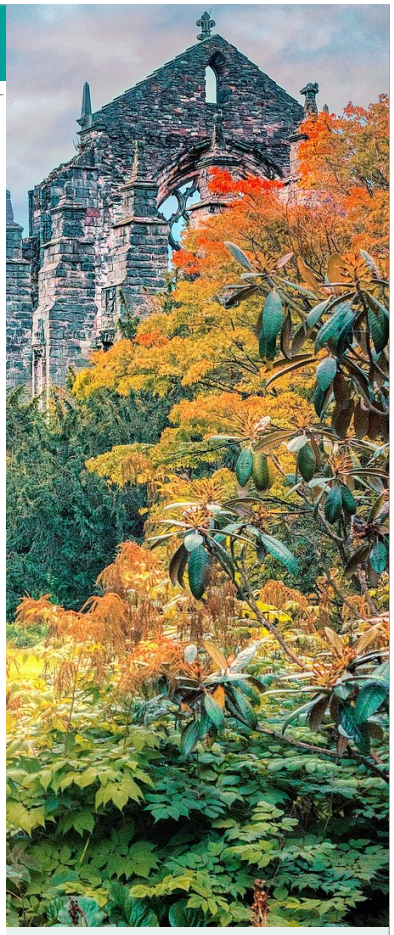
Thanks to all those who attended Scotland's Plant Health Conference held on 12th March 2020 in Edinburgh. Over 100 delegates attended and were welcomed by Prof Gerry Saddler (Chief Plant Health Officer for Scotland) before a day of talks, workshops, posters and discussions. Liam Kelly (RESAS) closed the meeting prior to his departure from RESAS the following week (page 2).

Download the presentations and posters here:

www.planthealthcentre.scot/events/scotlands-plant-health-conference-2020

Other news includes the steps being taken by HTA to help people source their plants safely on-line (page 2), the Centre during the lockdown (page 3), new threats to watch out for in our 'Watching Briefs' (page 3, 5), an extension to our Knowledge Bank (to help people from all sectors find the plant health information they need), the award of two major new grants for those within the Plant Health Centre (page 4), the cost of *Xylella fastidiosa* and our efforts towards the International Year of Plant Health (page 6).

Image below: White-marked tussock moth (see Watching Brief page 5). Credit— A. S. Munson, USDA Forest Services, Bugwood.org; Opposite: Scottish garden. Credit—A Saunton, Pixabay.



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Scotland's Centre of Expertise

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SPECIAL POINTS OF INTEREST

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SCOTLAND'S PLANT HEALTH CONFERENCE 2020

Scotland's Plant Health Conference was held in Edinburgh on 12th March 2020, and was jointly organised by the Plant Health Centre, Scottish Government, Scottish Forestry, SNH and HTA.

The event was opened by Gerry Saddler (Scotland's Chief Plant Health Officer) and he read a speech by Mairi Gougeon (Minister for Rural Affairs and Natural Environment), who was unable to attend. Following an update on the PHC's activities, our new biosecurity projects were described, before moving on to updates on the plant health situation from our four sectors (Natural Environment, Forestry, Agriculture and Horticulture) presented by SNH, Scottish Forestry, AHDB and HTA, respectively. Before lunch another PHC project entitled 'Key Principles for Plant Health in Scotland' was described in preparation for workshops in the afternoon (see below).

Over lunch delegates spoke to authors of posters on a wide range of plant health topics, before going into the afternoon workshops on 'Opportunities and Challenges to Improve Plant Health Practice'. Two further talks by Scottish Government on 'Plant Health Regulations' and 'International Year of Plant Health' completed our conference.

Finally, a big thank you to Liam Kelly (left), RESAS's Plant Health Policy and Strategic Science Lead (who retired shortly after the conference) for rounding off the day by thanking the organisers and delegates, but especially for his continued support for plant health in Scotland and the PHC during its establishment.

View posters and presentations here:

www.planthealthcentre.scot/events/scotlands-plant-health-conference-2020

Read more on the updated Plant Health Regulations presented by Debbie Kessell (Policy Branch Head—SASA) at www.planthealthcentre.scot/useful-links

HTA—'PLANTS NEAR ME'

In these very uncertain times for the horticulture industry, when millions of garden plants are being destroyed due to the closure of garden centres during the COVID-19 outbreak, the Horticulture Trade Association (HTA) and partners have produced a web site listing online plant suppliers for consumers to get the plants they need.

The website called 'Plants Near Me' is available here:

www.plantsnearme.hta.org.uk/

PLANTS NEAR ME

KEY PRINCIPLES IN THE INTERNATIONAL YEAR OF PLANT HEALTH

During Scotland's Plant Health Conference 2020, three workshops took place where participants were asked to challenge 5 key principles for plant health - developed by the Plant Health Centre during a previous workshop between members of the Centre and our invited convenor Richard Ennos (University of Edinburgh). At the end of the workshops there were some excellent suggestions for how these Key Principles could be strengthened and these are currently being used to update the document, which we hope to distribute over the coming months.

More information on our key principles will be published shortly.

THE PLANT HEALTH CENTRE DURING COVID-19 LOCKDOWN

While the COVID-19 lockdown has been difficult for many people, the PHC are continuing to work from home and having regular meetings via video link. It's a big change from our regular face to face meetings and the great interactions we had with everyone at Scotland's Plant Health Conference and other stakeholder meetings. However, until we can get together again, we'll carry on doing what we do from afar.

BIOSECURITY IN THE INTERNATIONAL YEAR OF PLANT HEALTH

During the International Year of Plant Health the Plant Health Centre has commissioned projects entitled: **Assessment of large-scale plant biosecurity risks to Scotland** from three areas:

- Non-specialist and on-line horticulture sales
- Large scale planting for landscaping and infra-structure projects
- Large scale tree planting for environmental benefits

The projects are led by Mariella Marzano from Forest Research with partners from University of St Andrews, the James Hutton Institute, Fera, CEH, RBGE and SRUC, and with an Advisory Group from at least seven stakeholder organisations.

Things are now underway and we look forward to reporting on our findings at a later date.

For more information visit:

www.planthealthcentre.scot/projects

Image below: Scottish view. Credit—Peter H from Pixabay. Above: Members of the Plant Health Centre Directorate meeting on line.

WATCHING BRIEF: BROWN MARMORATED STINK BUG

The brown marmorated stink bug (*Halyomorpha halys*) has a wide plant host range on numerous crops. It is a native pest of East Asia, which invaded North America in 1996 and Europe in 2004, and has since been found in France, Germany, Greece, Hungry, Italy, Lichtenstein and Switzerland. It was reported recently that its invasion of Turkey in 2017 is starting to impact hazelnut production with predictions of up to 30% losses in a country that produces over 70% of the world's supply.

It has been intercepted in the UK on at least four occasions on passenger luggage and imports of stone, sawn wood and clothing.

The PHC recently commissioned a project to investigate its presence on soft fruit in Scotland and the effects that climate change might have on its ability to survive.

For more information visit:

www.planthealthcentre.scot/projects

Images: Brown Marmorated Stink Bug. Credit - Susan Ellis, Bugwood.org.

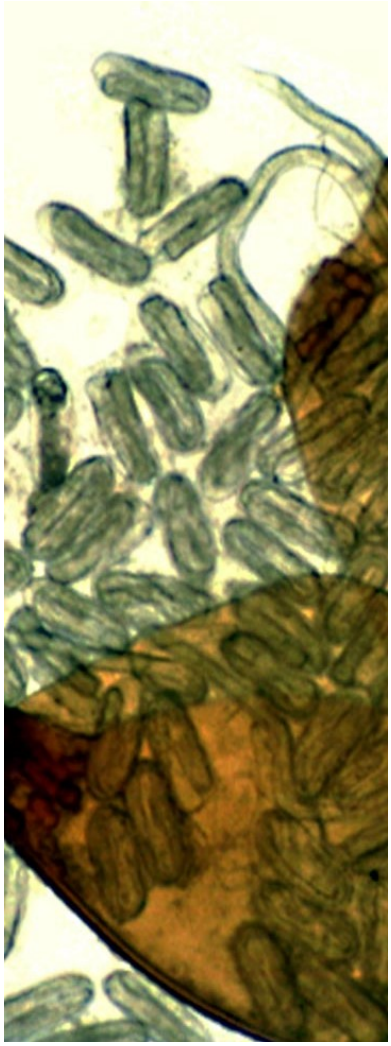


Image: *PCN cyst and eggs. Credit - Ulrich Zunke, Univ of Hamburg, Bugwood.org*

POTATO CYST NEMATODES — WHERE ARE WE NOW?

The UK potato industry is valued at approx. £860 million at farm gate and £3.8 billion at consumer level, with 13% of the potato area for seed production. With over 70% of seed production taking place in Scotland, due to its high health status, seed potatoes are an economically important commodity for Scotland.

It is therefore of concern that the pest potato cyst nematode (PCN) threatens to dramatically reduce the land area we can use for seed production. Of the two species present in Scotland, *Globodera rostochiensis* is largely under control through the use of resistant potatoes varieties. However, there are currently few varieties resistant to *G. pallida*, which is on the rise. Estimates suggest that at the current rate of increase, the presence of *G. pallida* may prohibit the production of seed potatoes on PCN-free land in as little as 30 years.

The PHC have commissioned a report, undertaken by JHI, SASA, BioSS and the University of Strathclyde, to i) identify current control options in Scotland and abroad, ii) identify future risks, iii) investigate the availability and use of resistant varieties, and iv) determine the economic impacts on the industry.

The PHC have also teamed up with two groups from the potato industry set up by the Rural Innovation Support Service (RISS) to tackle the threat from PCN. Meetings with the RISS teams have taken place, with more planned over the coming months, to ensure a coordinated approach to this serious threat.

To find out more about the RISS projects visit:

www.planthealthcentre.scot/useful-links

The full report will be available soon on the PHC website, and includes the main findings and recommended next steps.

AN EXTENSION TO OUR KNOWLEDGE BANK

Last year, following feedback from stakeholders, Katy Haydon and Joanna Taylor from the Royal Botanic Garden Edinburgh, with advice from stakeholders and Scottish Government, produced a Knowledge Bank for plant diseases in the natural environment.

The Knowledge Bank is a web portal for this sector to get relevant plant health information and, due to its success, it has now been extended to the Forestry, Horticulture and Agriculture sectors. For more information visit:

www.planthealthcentre.scot/knowledge-bank

TWO NEW MAJOR GRANT AWARDS FROM BEIS

The PHC has recently assisted in two teams of government, stakeholder and academic partners winning grants worth £ millions from the 'Bacterial Plant Diseases' initiative funded by BEIS (Department for Business, Energy and Industrial Strategy) — part of the UK government, with financial support from the Scottish Government. These projects, due to begin this summer, focus on two potato diseases: i) Zebra chip caused by *Candidatus* Liberibacter solanacearum and its psyllid vectors, and ii) Blackleg disease caused by *Pectobacterium atrosepticum* and its potential nematode vectors. Data from the PHC's Zebra chip project provided information and resources that helped to secure, and will be used throughout, the new project.

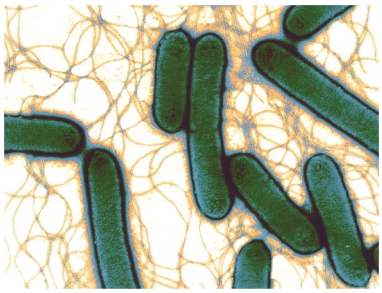


Fig. 1. Pectobacterium atrosepticum*, the causal agent of potato blackleg disease in Scotland. Credit—James Hutton Institute.*

PREDICTING PEST AND DISEASE IMPACTS

During the emergence and spread of COVID-19, computer-based modelling has played a central role in predicting its appearance, spread and impacts. In a similar way, modelling can greatly advance our understanding of the different threats to plant health.

There are over 1000 threats to plants in the UK Plant Health Risk Register. As we can't monitor them all, we must make decisions about which ones offer the greatest threat to Scotland based on factors such as their likelihood of entry, ability to survive and thrive in our climate, and suitable vectors and plant hosts. Modelling has a very important role to play in this, and several of the PHC's projects involve this approach, e.g. *Xylella fastidiosa*, (see issue 4) potato cyst nematode (opposite), the brown marmorated stink bug (see page 3). While the above projects target specific threats, two other projects have been developing generic models for use on a wide range of threats.

The first project by Vincent Keenan, in a joint post between the Centre, BioSS and the University of Strathclyde, is investigating the availability and use of generic models for bark beetles and wood boring pests, including the Emerald Ash Borer (EAB) and the Bronze Birch Borer (BBB). Using a systematic review of existing literature, different modelling approaches were identified. Interestingly, there were 66 articles on EAB, including 30 related to modelling approaches, but none for BBB. The different models were used to help predict the areas in Scotland that might be most vulnerable to EAB establishment and how rapidly spread might occur. It also highlighted areas of biology that are needed to improve the models and how such models might be combined to assess the duel threat of EAB and ash dieback.

The second project by the University of Strathclyde, has extended an existing forestry model developed for Defra, which examines both epidemiological and economic consequences, to improve its capabilities to include non-forest systems, probability of arrival and effects of short and longer term temperatures. In conjunction with a literature review, and workshop to elicit expert opinion, the model was used to predict the spread and economic impact of three threats, i.e. *Xylella fastidiosa*, *Candidatus* Liberibacter solanacearum (Zebra chip) and *Ips typographus* (Eight t-oothed Spruce Bark Beetle) and can be used for others (Fig. 1).

Such generic models can now be used for rapid initial assessments of the biological and economic impacts of threats to Scotland.

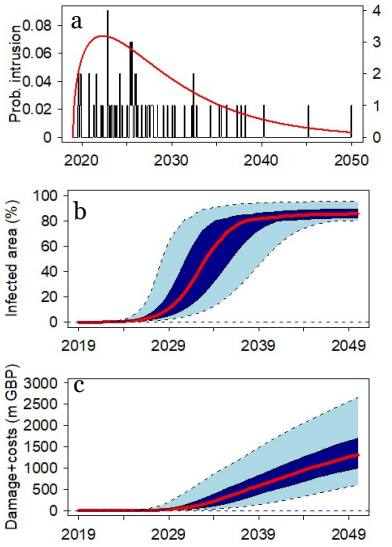


Fig. 1. Example from the second project: a—probability of a pest incursion, b—time vs percentage infected area, c—time vs cumulative economic losses.

Full reports are available at: www.planthealthcentre.scot/publications

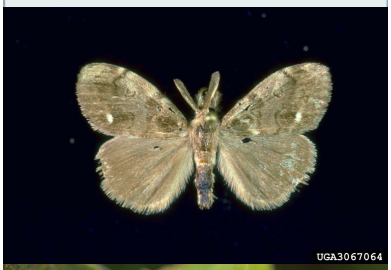
WATCHING BRIEF: WHITE-MARKED TUSSOCK MOTH

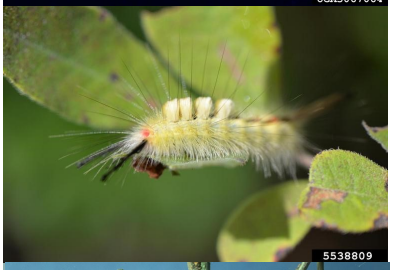
The White-Marked Tussock-Moth (*Orgyia leucostigma*) is native to eastern North America. Hosts include coniferous and deciduous trees and herbaceous plants. Damage is caused by the larva feeding on leaves or twig bark. The moth was recently identified as a threat to Nordic coniferous forests through screening of traded ornamental plants. The moth has since been added as a quarantine pest in the EU and Norway. The phytosanitary risk for EU member states is considered high with high uncertainty.

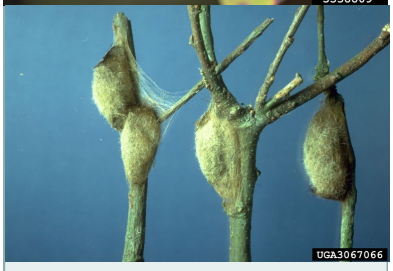
For further information see the EPPO Alert List here:

www.planthealthcentre.scot/useful-links

Images: White-marked Tussock Moth. Adult moth, larva and cocoons. Credits - images 1 and 3: J. Soloman, USDA Forest Service, Bugwood.org; image 2 KA Rawlins, University of Georgia, Bugwood.org.







XYLELLA COULD COST €20 B

In a new study published in the Proceedings of the National Academy of Sciences (PNAS), the cost implications of *Xylella fastidiosa* in European olives have been estimated at over €20 billion over the next 50 years.

For further information visit:

www.planthealthcentre.scot/news

THE INTERNATIONAL YEAR OF PLANT HEALTH

The PHC has been working hard with the Scottish government to put together a series of events for the International Year of Plant Health. While we have been able to undertake some of these events, the lockdown has certainly curtailed the more recent ones. However, we are continuing to interact with our stakeholders through on line events and blogs and, where possible, we are contributing directly to events ourselves. For example, see us at the virtual Arable Scotland event on 2nd July 2020. We also intend to roll over some IYPH events in`to next year.

INTERNATIONAL YEAR OF PLANT HEALTH 2020

To learn more about our IYPH events visit:

www.planthealthcentre.scot/international-year-plant-health

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