An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

Horizon Scanning for Emerging plant pests

The DAFM Pest Risk Analysis Unit (PRAU)

Andy Bourke and Conor McGee

Plant Sciences Division
Department of Agriculture, Food and the Marine
November 4th 2021

Introduction

- Representing the DAFM Plant Science Division laboratories today are the PRAU staff members:

Andy Bourke

- The purpose of today:

(1) Is to introduce the expanded Plant Sciences Division Laboratory
(2) Present the newly formed Pest Risk Analysis Unit (PRAU)
(3) Discuss our Horizon scanning and Risk Assessment Activities

Conor McGee

Plant Sciences Division

- Fungi and Oomycetes – Richard O'Hanlon (SI)

- Honeybee Health – Mary Coffey (AAI)

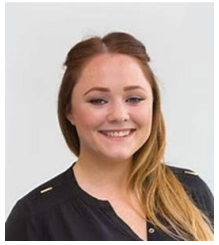
- Bacteriology – Maria Destefanis (AI)
  – Thuy Doh (AAI)

- Viruses, viroids and phytoplasmas – Maria Destefanis (AI)
  – Michele Dellabartola (AAI)

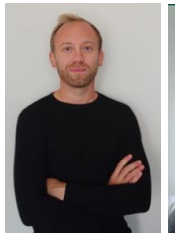
- Insects and Mites – Robyn Earl (AAI)

- Molecular diagnostics – Amanda Brechon (AAI)
  Louise Cullen (AAI)

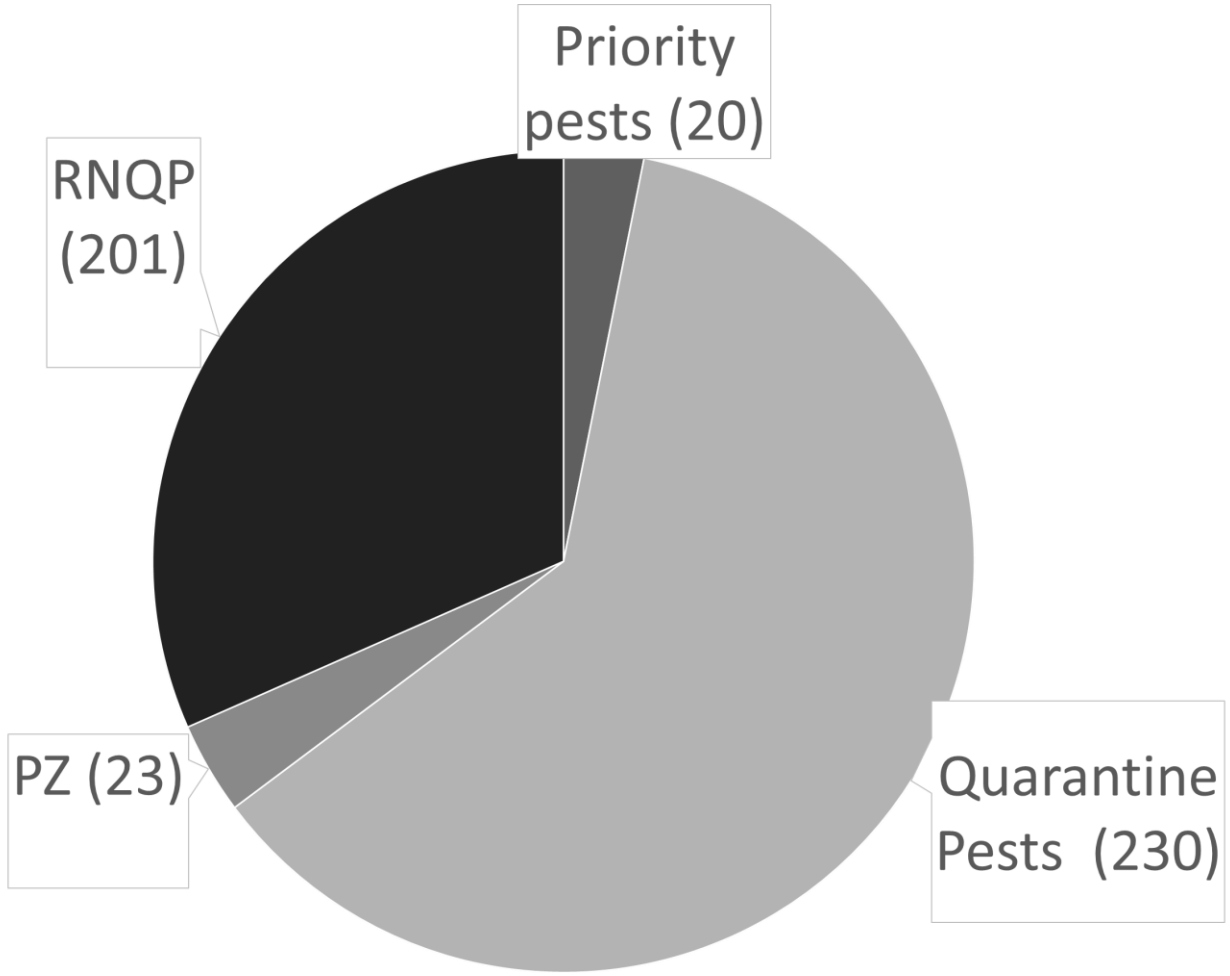
- Nematology – Mary Jo Hurley (AAI)



- Pest Risk Analysis – Conor McGee (AI)
  Andy Bourke (AAI)



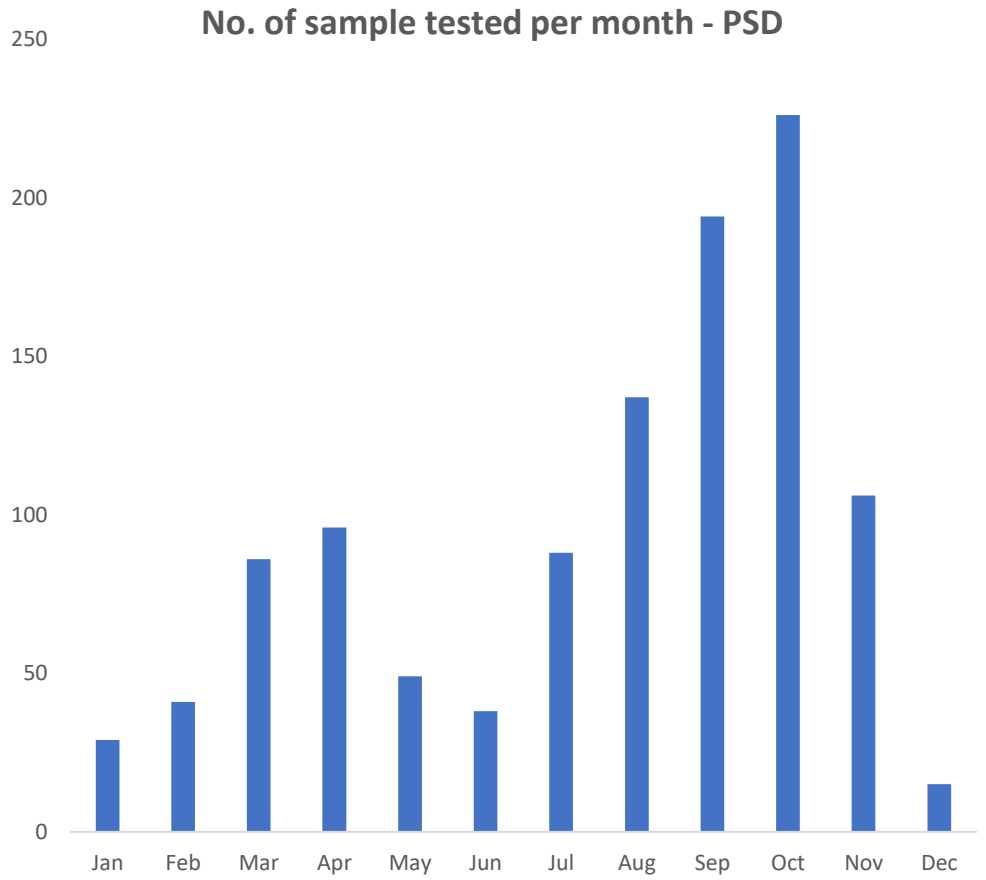
Plant Health Regulation - Pests



Diagnostics - 2020

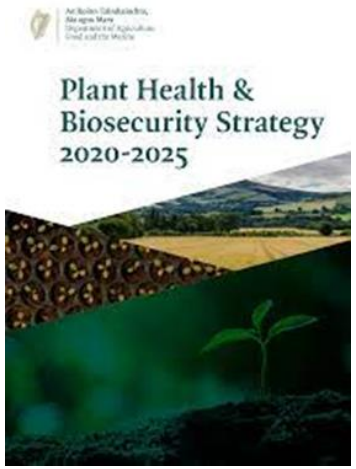
- In 2020 PSD Laboratories received 700 samples (~2500 analysis) for pests and coordinated the analysis of ~2500 samples in conjunction with the Cork laboratories

Target organism	No. Tests
A. plannipennis	38
H. fraxineus	41
OPM	11
P. citricarpa	8
P. ramorum/P. kernoviae	112
Spodoptera frugiperda	29
ToBRFV	31
X. fasitdiosa	100
Feed pests	121
Other	173
Erwinia amylovora	1420
Ralstonia and *Clavibacter*	550
BNYVV	270



Pest Risk Analysis (PRA)

- The PRAU was created in 2020 as part of the PSD
- Risk analysis was identified as integral to protecting the Irish agri-economy and environment in the Plant Health & Biosecurity Strategy (2020-2025)
- Our main purposes are to perform horizon scanning, undertake risk analysis on plant pests and trade pathways and provide support on request for plant health related issues
- Essentially, its our role is to identify emerging pests threats, assess the level of threat they pose to Ireland, and recommend appropriate measures for how to keep them out



PRA- Why Undertake PRAs

- Under international trade laws, phytosanitary measures against trade must be technically justified
- EU criteria for identifying pests for which phytosanitary measures can be taken against are outlined in Reg 2016/2031
- PRA is the accepted method to justify regulation of pests and pathways

- Ireland utilises phytosanitary measures on plant trade to a relatively high degree. We currently have the highest number of recognised Protected zones (23) of any EU member state. These exist to prevent pests which have already established in the EU from entering and establishing in Ireland

Oak processionary moth: *Thaumetopoea processionea*

Plant Pest Threats

- **Recent arrivals to Ireland (examples)**

Phytophthora ramorum;

Hymenoscyphus fraxineus causing Ash Dieback*;*

Bruchus rufimanus (Broadbean weevil);

Paropsisterna selmani (Eucalyptus Leaf Beetle);

Calonectria pseudonaviculata (Box blight);

Cameraria ohridella (Horse-chestnut leaf miner) .....

Plant Pest Threats

- **Evolving threats from known Pests: EU regulated (examples)**

  - *Xylella fastidiosa*
  - PZ pests (OPM, *Ips* spp.);
  - Tomato brown rugose fruit virus (ToBRFV);
  - *Agrilus planipennis* (Emerald ash borer)*;*
  - *Anoplophora glabripennis* (Asian long horn beetle)*;*

- **Xylella**

- ***Agrilus planipennis****

- ***Anoplophora****

* 3D models from https://sketchfab.com/disc3d

Horizon Scanning – What is to come?

- **On the Horizon (currently unregulated)**

- Horizon scanning (what exactly do we mean?): The PRAU continuously monitors a range of sources to identify emerging plant pest threats:

  - Scientific literature
  - Trade journals
  - Media (international, national and social)
  - Expert panels (EFSA ALPHA Horizon scanning WG; EPPO)

• New species • New locations • New hosts

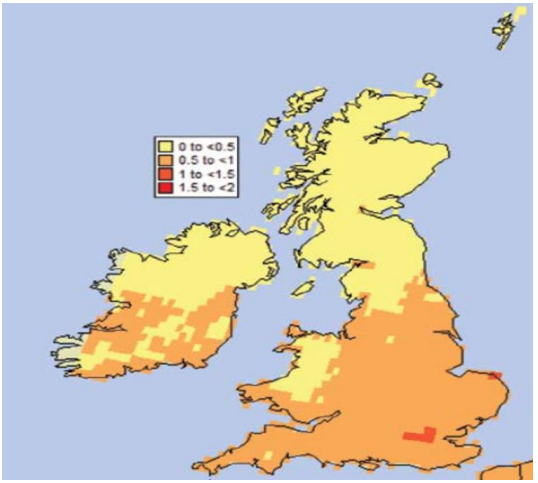
HS – What is to come?

- A number of plant pests have been identified over the course of them previous year, that we continue to monitor all, some we have risk assessed/planning to risk assess. Some examples

- *Halyomorpha halys* (Brown marmorated stink bug)

3D model from https://sketchfab.com/disc3d

BBC 7th October 2021



Projected potential number of H. halys generations per year for current Irish climate (taken from Powell *et al.,* 2021).

HS – What is to come?

- Host plant threats

- Beech

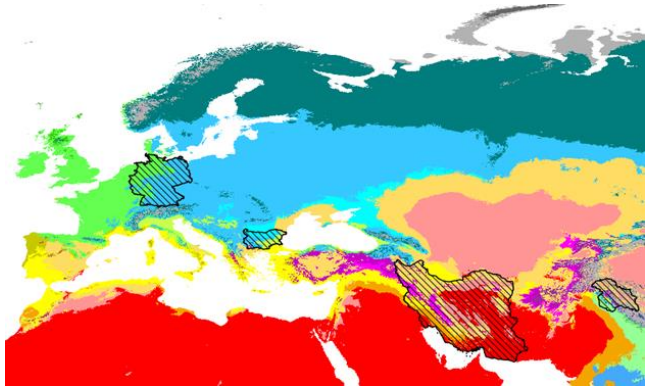
Litylenchus crenatae (Beech leaf disease)

Petrakia liobae

- Apple

Diplodia bulgarica (apple canker)

Diplodia bulgarica black canker on apple trees (from Hinrich-Berger et al., 2021)



Current known distribution of Diplodia bulgarica imposed on current Koppen-Geiger climatic classification

HS – What is to come?

- Host plant threats

- Agapanthus — *Enigmadiplosis agapanthi* (Agapanthus Gall Midge)

Images of adult and larvae. From: RHS.

From The Telegraph. August 2021.

- Aquilegia — *Peronospora aquilegiicola*

Thines *et al.*, 2019 and Thines *et al.*, 2020

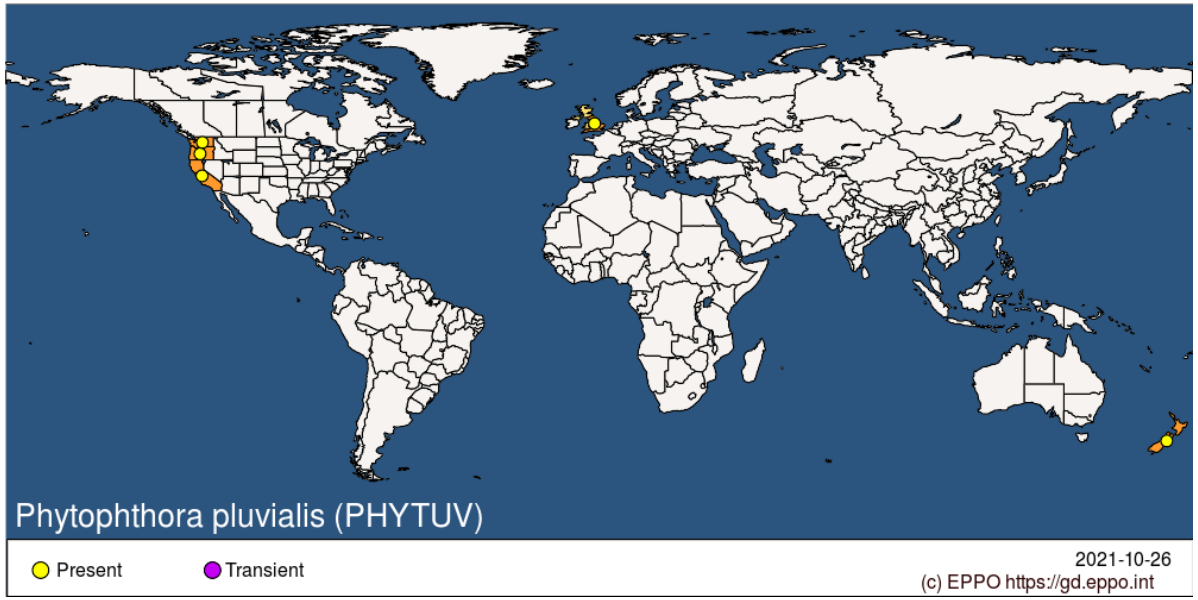
EPPO Reporting Service no. 05 - 2021

HS – What is to come?

- V. recent plant threats

- *Phytophthora pluvialis*

Example of *Phytophthora pluvialis* lesions on a tree stem. From Forestry Commission (2021-10-20) Guidance on *Phytophthora pluvialis*



Conclusion

- The Plant Science Division performs its PRA and diagnostics work in conjunction with the border inspectors of ICOPS and the regional plant health inspectors of HPHDs

- The role of the Pest Risk Analysis Unit (PRAU) is to identify and highlight emerging plant pests

    - We undertake these activities to aid in:
        - Preventing their introduction
        - Provide information for in early detection should they arrive
        - Facilitate preparedness through raising awareness in the relevant industries and state agencies

- For pests the PRAU identify whose introduction could be mitigated against through exclusion and regulation – recommendations will be made

- Many pests will arrive through unregulated channels – Hitchhiking (*H. halys*), natural dispersion (moths)

- Many may not be able to currently establish in our climate (though this may change in the future)

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Thank you for your attention