Department
for Environment
Food & Rural Affairs

Update on IPM and Pesticide Resistance

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27th November 2025

BCPC Expert Review

Overview

- NAP for Sustainable Use of Pesticides – objectives and key actions
- Horizon Scanning
- IPM projects
- Pesticide resistance
- Biopesticides

National Action Plan for the Sustainable Use of Pesticides

Published in May 2025

Objective 1: Encourage uptake of Integrated Pest Management (IPM)

Objective 2: Set clear targets and measures to monitor use of pesticides

Objective 3: Strengthen compliance to ensure safety and better environmental outcomes

Actions under Objective 1

- **Action 1 -** Increase awareness and knowledge of IPM strategies through the promotion of decision support and planning tools, practical guidance and access to learning and evidence from research and development.
- **Action 7 -** Develop an internal evidence-based horizon scanning capability to identify, understand and mitigate pest control gaps.
- **Action 9 -** Consider how we can make improvements to the arrangements for GB biopesticides to reduce burdens without compromising environmental and human health standards.
- **Action 10 -** Continue to direct funding to facilitate applied research and development on priority areas where alternatives to conventional chemical pesticides are lacking, particularly in major crops.

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Foresight Delphi study

- Utilised the views of expert panellists using the Delphi method in order to identify:

Novel, emerging issues that may have a high impact on the control of agricultural pests, weeds and diseases in the UK over the next 5 to 30 years

- Key themes were
    1. Biopesticides and biological control
    2. Pesticide resistance
    3. Technological innovation and precision tools
    4. Climate change and invasive species

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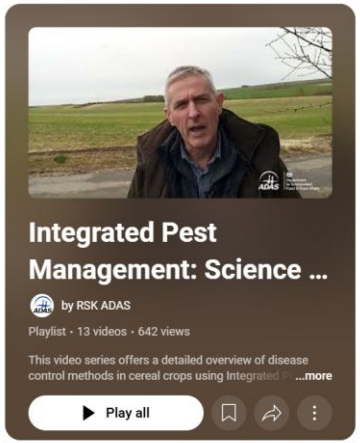
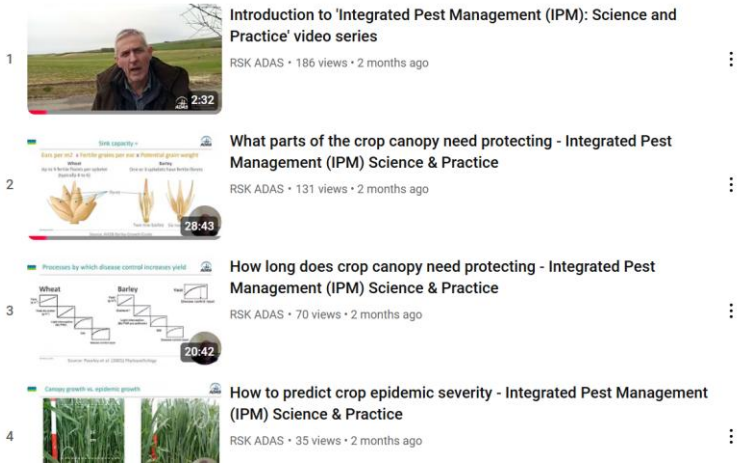
IDM videos

- Neil Paveley and Frank van den Bosch created these – published Autumn 2024
- The series focusses on disease control in cereals, offering expert advice on the biology of the systems about which agricultural decisions are made
- Aim is to equip farmers and growers with the knowledge to help them make the best decisions for their farms, broken down into bite-sized chunks.

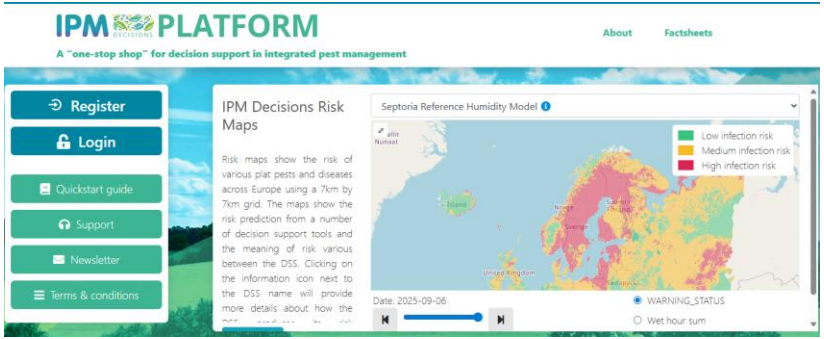


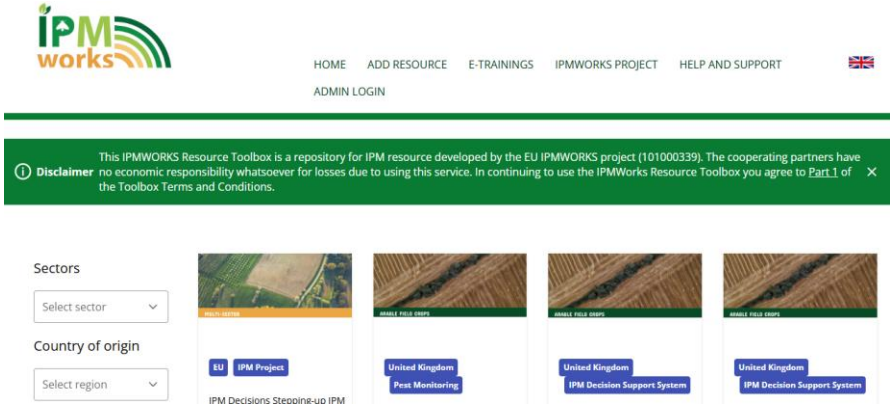


https://www.youtube.com/playlist?list=PLxMZB77n3_OoFIUaWxrvEevz7FiXkl3-A

IPM decisions and IPM works

- Continuation of funding for Horizon Europe IPM works and IPM decisions websites





https://platform.ipmdecisions.net/

https://ipmworks.net/toolbox/en/#/home

IPMNET

Objectives of the network:

1. Increase access to the tools and knowledge required to plan and monitor IPM in action
2. Collect and analyse data from farms within IPMNET to quantify the impact of IPM on key metrics for yield and profitability
3. Share information and facilitate peer-to-peer learning

IPMNET

- IPMNET pilot was launched in Feb 2024, first IPMNET conference was held in Feb 2025
- Pilot was run in harvest season 23-24 in UK – 16 farmers received bespoke IPMNET reports for 23 crops harvested
- IPMNET has established an online presence within the Yield Enhancement Network (YEN) website
- IPM information has been disseminated with a IPM bulletin as a monthly newsletter via email
- IPMNET steering committee has been created which meets twice a year
- IPMNET hubs will be established for key areas of concern – 2 have already been formed on BYDV and companion cropping

IPMNET

- Free membership
- Sharing IPM resources
- Insights on IPM in Action
- IPM Alerts and highlights through the year

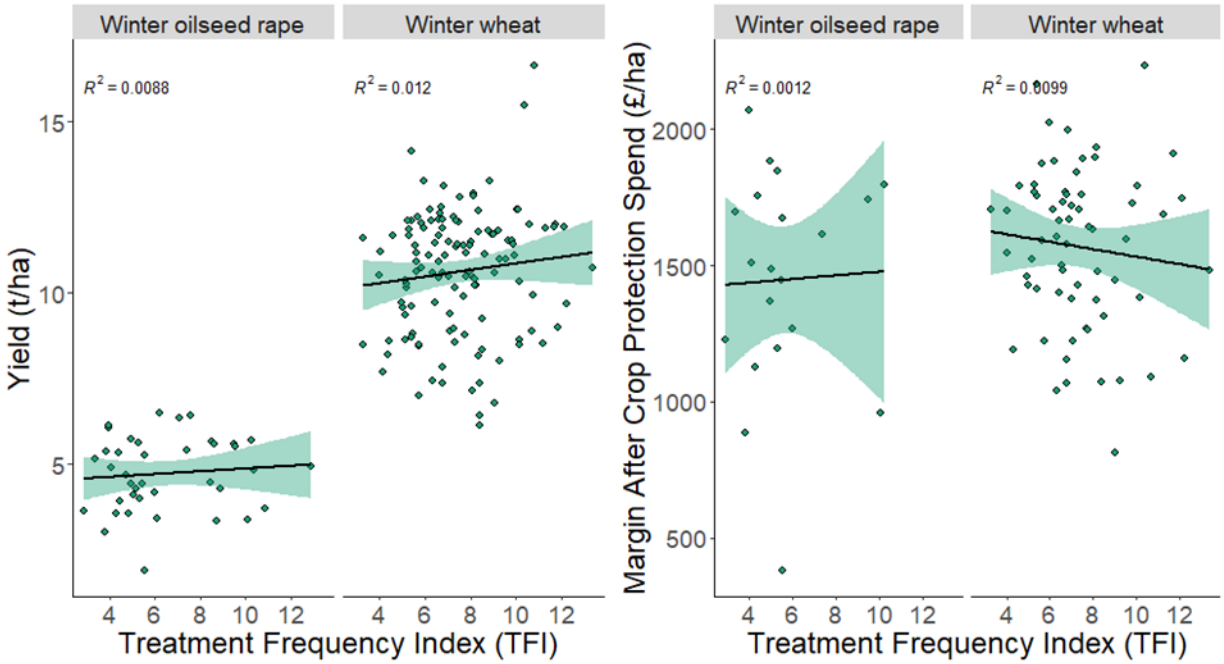
Contact: ipmnet@adas.co.uk

AdvisoryNetPEST IPM DECISIONS IPM works Farm PEP

Department for Environment Food & Rural Affairs ADAS

IPMNET and YEN data analysis

- In the 124 WW fields we looked at, there was no correlation between TFI and yield
- In the 64 OSR fields we looked at, we did not detect correlation between TFI and profit after crop protection spend.
- IPMNET analysis has pulled out ploughing, cover crops, and variety selection as important contributory factors that are associated with lower pesticide inputs



Defra and RPA Comms

- Gov.uk page on IPM published Nov 2024
    - Provides practical information to help farmers and growers increase their knowledge and use of IPM approaches.
    - Includes the aims and principles of IPM, examples of what it means in practice, tools which can support planning and decision making, further external IPM guidance
- Defra IPM podcast – May 2025
- RPA blog on IPM (with video discussing IPM in OSR and mustard) - May 2025

Natural England publications

IPM for Biodiversity Enhancement

- published in August 2024
- Comprises a summary of seven IPM projects conducted between 1981 and 2005, as well as reports concerning evidence of effect of IPM on biodiversity (mostly species abundance) – benefits and trade offs

Weed Control Handbook

- published August 2025

Nature for Pest Management review

- This project will explore the reverse relationship: how biodiversity and ecosystem restoration (as funded through ELMs) contribute to reducing pest pressures, and thus support pest management outcomes.

- Collate and synthesise evidence of biodiversity improvements leading to pest control outcomes, especially in contexts comparable to the UK.

- Focus on land management practices similar to those promoted through ELMs.
  - Arable
  - Grassland
  - Horticulture

Nature for Pest Management review

The review will explore:

- Whether and how these practices influence pest pressures;
- The strength, direction, and consistency of these effects;
- How scale can affect the impact:
  - landscape-scale studies or meta-analyses that assess the role of habitat amount, configuration, and complexity in pest regulation.
  - Consider how contextual landscape factors might influence the success or failure of individual biodiversity-enhancing practices.
- Gaps in evidence (assumptions without empirical support)
- Opportunities to quantify or model economic value of pest regulation as an ecosystem service - what data would be needed to allow this analysis.

Evaluating impacts of SFI IPM actions on invertebrate communities and farm management – 2 year project

Code of Practice

- Defra has commissioned review of the Code of Practice for Using Plant Protection Products for England and Wales and the Code of Practice for Suppliers of Pesticides (the ‘yellow code’)
- Working closely with HSE and the devolved governments
- The review will produce UK-wide codes. Devolved governments will adapt to reflect national arrangements
- Aim to make the codes more concise and accessible, and to reflect current regulations and technology
- Views of those who rely on the codes are essential: 40+ stakeholders across the 4 nations have been invited to complete a survey; workshop to follow
- Publication of updated codes summer 2026

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Pesticide Resistance

Review of resistance of pests, weeds and pathogens to conventional pesticides

April 2025

Authors: Rosie Bryson, Katy Hebditch, Duncan Coston, Isabel Corkley, John Cussans, Sarah Cook

- Review conducted last year by ADAS to investigate and survey those in Resistance Action Groups (RAGs), BCPC and farmers on their views and knowledge on pesticide resistance as well as providing case studies of resistance in different sectors
- The RAGs are composed of researchers, industry, policy and regulators – vehicle for participants to update on cases of resistance
- Commercial sensitivity of agrochemical company data means it is often not shared openly and therefore does not reach regulators or farmers/agronomists
- Farmers are paying for and using pesticides which are no longer effective, meaning they are spending money when unnecessary, they are suffering from more crop damage than expected and they are having an unnecessary load on the environment

Pesticide resistance – Review Recommendations

- Most resistance researchers work at the discipline level – however we need to give farmers information at the crop level as they are simultaneously managing pests, weeds and diseases – can get conflicting messages from different disciplines
- Obtain independent openly available resistance data across the country
- Enhance communication through the RAGs
- Horizon scan and research emerging threats
- Secure long-term funding for a robust resistance monitoring scheme

Pesticide resistance projects 2025-26

1. Design of long-term scheme across herbicides, fungicides and insecticides
2. Pilot run of insecticide resistance scheme
3. Resistance and IPM roadshows run by AHDB over this winter to highlight resistance issue and mitigations for farmers (and agronomists)

Design of long-term resistance scheme – Objectives:

Prioritize monitoring targets

Identify priority pests, weeds and diseases within defined crop systems

Develop sustainable framework

Create guidelines for sampling, lab and data analytics and data management to ensure evidence-based framework

Support decision-making

Engage with stakeholders for added-value approach to monitoring framework, information dissemination and best practice

Work-packages

WP1: Prioritize monitoring targets by indication and crop

WP2: Devise sampling strategies and guidelines

WP3: Identify lab capacity, testing methods and data handling procedures

WP4: Investigate long-term funding and collaboration partnerships

WP5 & WP6: Define dissemination route for best practice approach and project management.

Expected project outcomes

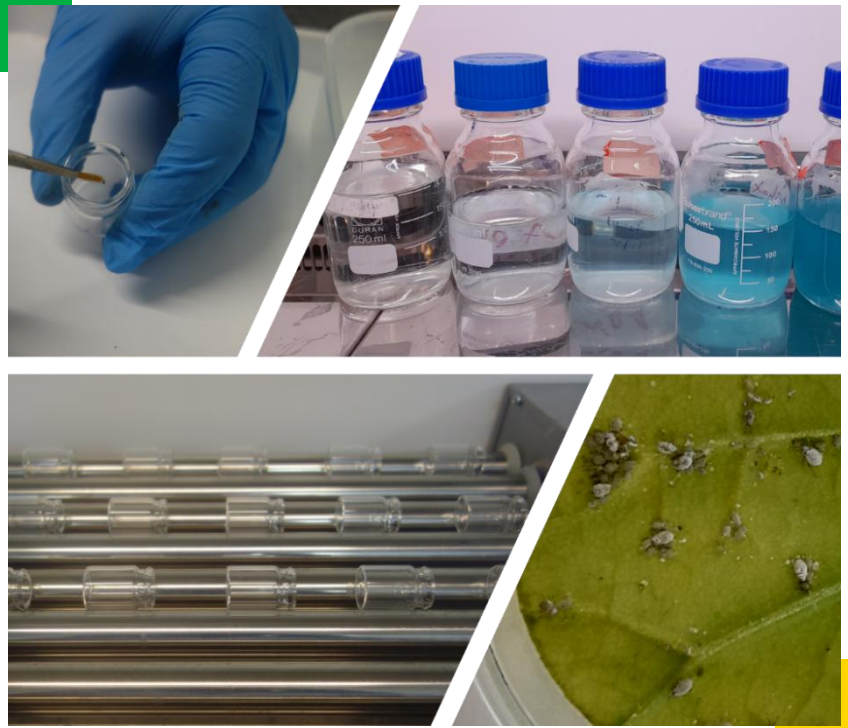
- Proposal for a resistance monitoring programme and dissemination approach in line with resistance management guidelines and IPM principles.
- Summary of key pest, weed and disease targets x crop for a pesticide resistance monitoring programme
- Sampling and analysis guidelines identifying opportunities for added value and increased return on investment.
- Project schematic to outline core activities essential for the successful delivery of a pesticide resistance monitoring programme
- Communication and dissemination strategy supported by the Resistance Action Groups and similar interested parties

Insecticide resistance monitoring - Project background

Aim: Improve knowledge of insecticide resistance of selected invertebrate pests, to allow for better management and use of insecticides.

Objectives:

- Identify key invertebrate crop pests for insecticide resistance monitoring for 2025-2026.
- Coordinate an initial scoping network of industry and academic partners for invertebrate pest sampling and insecticide resistance testing.
- Identify and communicate insecticide resistance patterns and emerging risks identified during the project.



Target species

Peach potato aphid
(Myzus percicae)

Bird cherry-oat aphid
(Rhopalosiphum padi)

Grain Aphid
(Sitobion avenae)

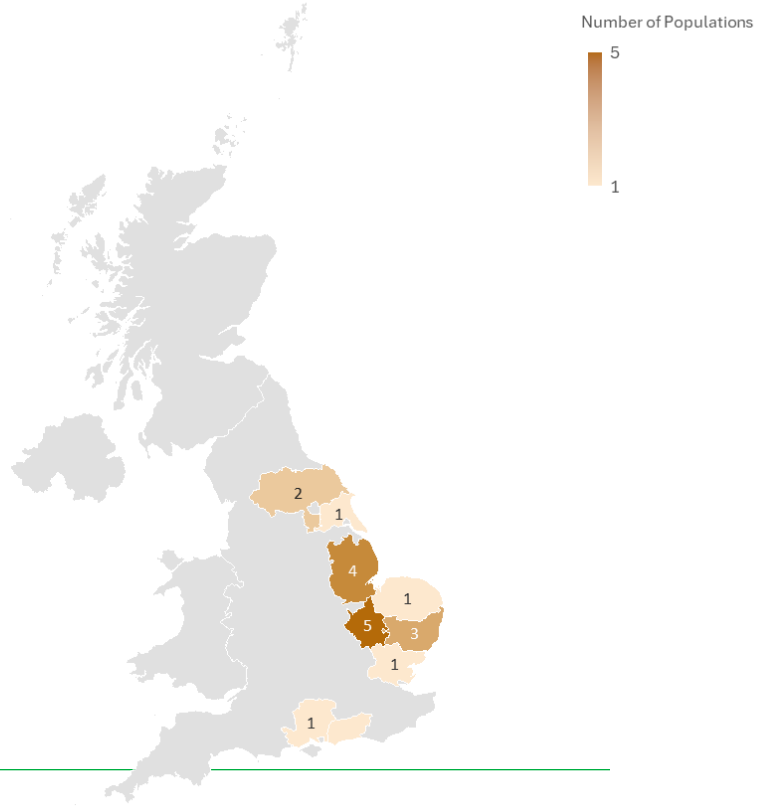
Cabbage stem flea beetle
(Psylliodes chrysocephala)

Current lettuce aphid
(*Nasonovia ribisnigri*)

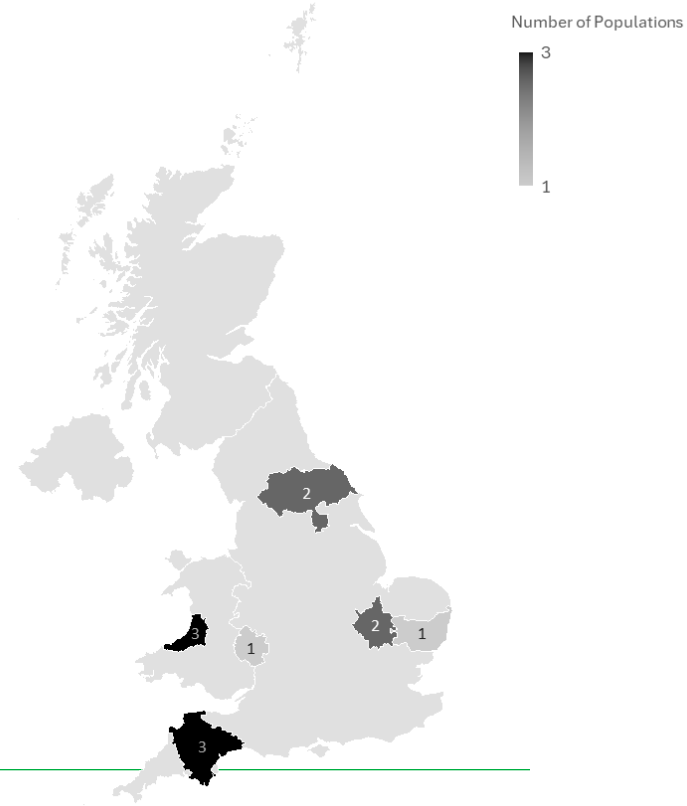
Reports of control failures

Populations collected so far

Peach potato aphid (*Myzus percicae*)



Bird cherry-oat aphid (*Rhopalosiphum padi*)



AHDB roadshows

- The Resistance Roadshow aims to equip farmers with the knowledge, tools and confidence to manage pest, weed and disease resistance effectively across their whole farm business.
- First session – farmer facing 1st principles of resistance
- Pest, weed and disease sessions
- Workshop – resistance real world scenarios – what would you do and why?

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Biopesticides

Defra pesticides NAP 2025 set a target of a reduction in the pesticide load of 10% across all PLI metrics by 2030.

To achieve this, growers need to use less of more toxic pesticides.

How?

- Precision application
- Alternative control methods
- **Replace with less harmful pesticides**

Pesticide Load = volume used x behaviour metrics x toxicity metrics

Defra recognise the important role of biopesticides in achieving our pesticide harm reduction target.

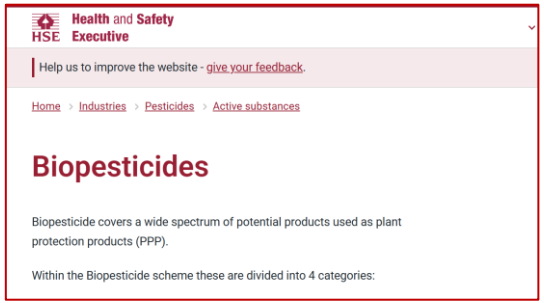
We want more biopesticide uptake by growers.

NAP Action 8: Continue to provide additional support to biopesticide applications

Many biopesticide manufacturers are small, or micro-companies. They find the regulatory regime expensive, time-consuming, and difficult to navigate. To address this, in 2006 HSE introduced the Biopesticides Scheme.

The Scheme Includes:

- Capped fees for biopesticide approvals (much lower than conventional pesticide fees)
- Free pre-submission advice.
- Dedicated HSE Biopesticides Champion



NAP Action 9: Consider how we can make improvements to the arrangements for GB biopesticides to reduce burdens without compromising environmental and human health standards

- Biopesticides are diverse. It can be difficult to know what data are necessary to show they are safe and efficacious.
- New studies don’t need to be commissioned if existing literature can be used.
- Small companies sometimes don’t think about regulatory requirements until later in the development process.

BIRCH network

Biopesticides Innovation ResearCH

- Started in September this year
- UK CEH leading (Dave Spurgeon, Claus Svendsen, Helen Hesketh)
- Creating a network of researchers, industry, policy and regulators
- Working groups to write two evidence reviews this year
- Prioritise lists of further possible evidence reviews for future years
- Utilising the advice of HSE's Biopesticides cloud

https://ibma-global.org/what-is-biocontrol

BIRCH network – Evidence review 1

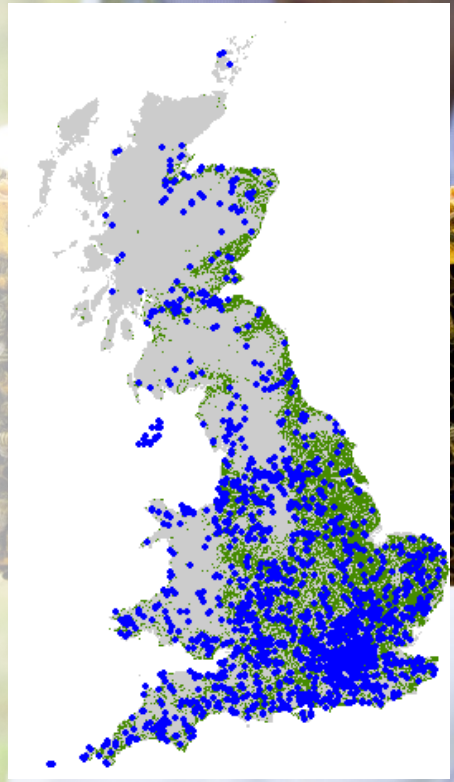
- What is the **nature and authorisation status** of **1) Approved Biopesticides, 2) Biopesticides in authorisation process in Europe/UK; 3) Future technologies?**
- What is the status of approved biopesticides in different countries worldwide? CABI bioprotection portal
- What new biopesticide active ingredients are in development? (search academic literature)
- Narrative report on the state of development and future perspective for different biopesticide classes

Evidence review 2 on Horizon scanning – still in development

National Honey Monitoring Scheme

Aim: To use honeybees to monitor long-term changes in the condition and health of the countryside

- Partnership with >4,000 beekeepers in the UK and overseas
- Running since 2018
- Honeybees are widely kept in the UK - 45,000 beekeepers
- Honeybees forage across large areas.
- Efficient metabarcoding of ~1100 honey and pollen samples per year to identify DNA of plants visited in the landscape.
- Large archive of honey samples



UKCEH Our planet. Decoded.

UKRI Natural Environment Research Council

UKRI Biotechnology and Biological Sciences Research Council

AgZero+

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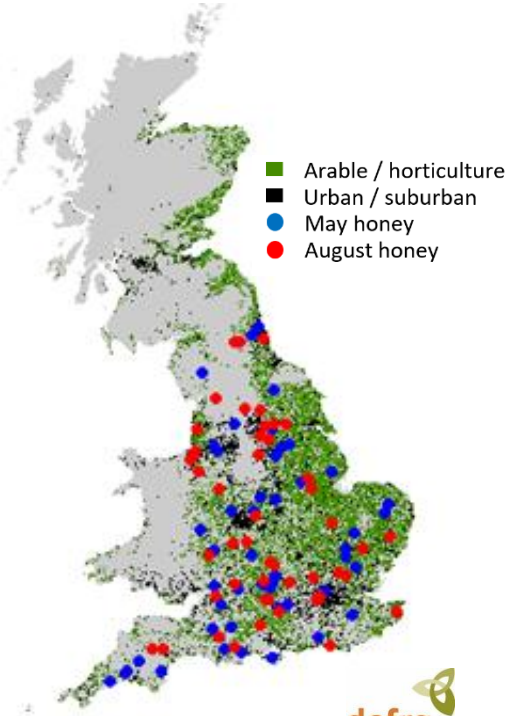
www.honey-monitoring.ac.uk

BEECH - Biomonitoring Environmental Exposures of Chemicals using Honeybees

- **Assessed annually from 2019-2023 (but work ongoing in 2024)**
- **Annually collecting 100 honey samples**
  - 40 samples May & August in arable agriculture
  - 10 samples Urban
  - 10 samples semi-natural
- **Quantify 135 pesticides using Liquid Chromatography–Mass Spectrometry**
  - Insecticides, fungicides and herbicides Includes current and banned PPP



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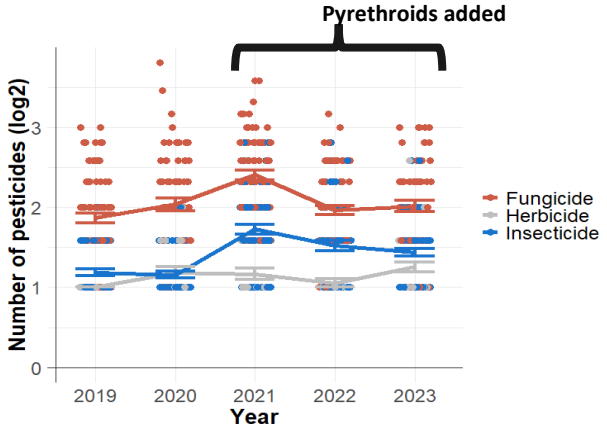
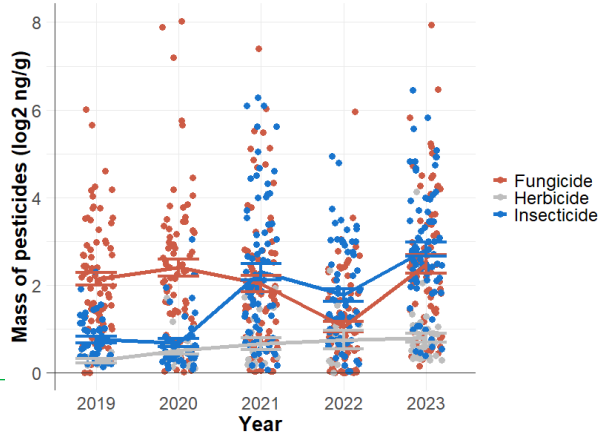
General trends

- Average ~ 5 a.i. in each honey sample
- >15 a.i. reported in one sample
- 70 pesticides reported
- 18 insecticides
- 85% tau-fluvalinate (used in Apisatan)
- 44% clothianidin

Number of active ingredients (log_2 scale)



Mass active ingredients (log_2 scale)



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Summary

- Focusing funding on
    1. IPM resources
    2. Resistance monitoring
    3. Biopesticides

- Strong focus on resources that are farmer focused and accessible

- Horizon scanning for future crop protection issues and directing funding accordingly

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Thank you

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