Department
for Environment
Food & Rural Affairs

IPM R&D: An overview of Defra's involvement in current projects

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Overview

Defra funded projects

1. Additions to crop pest and disease survey
2. Review of agronomic trends
3. CSFB in winter OSR
4. ELM Test and Trial
5. IPM Theory of Change

Other areas

1. Genetic Improvement Networks
2. Biopesticides
3. IPM toolbox plans

Additions to Crop Pest and Disease survey

Survey has run for 45 years and assesses winter wheat & winter OSR

- 300 winter wheat fields and 85 OSR fields across England and Wales
- Collects IPM related information such as sowing date, pesticides used, cultivar, field cultivation
- Assess levels of OSR CSFB, pollen beetle and seed weevil and are now measuring beneficials from this year onwards
- Other additions this year: participation in agri-environment schemes, use of cover crops, use of companion crop
- Aim to make data freely accessible – currently working on dedicated website which should be ready soon

Additions that we have funded this year:

1. Mobile app for data collection
2. Automation of farmers questionnaire data entry
3. Molecular diagnostics (fusarium and microdochium) – develop a molecular diagnostic test to detect mycotoxin producing fusarium species in wheat

Agronomic trends review

Review of Potential Impacts of Trends in Agronomic Practice for the Management of Crop Pests and Diseases, Including IPM Strategies to Mitigate Risks

- Review has 3 key phases:

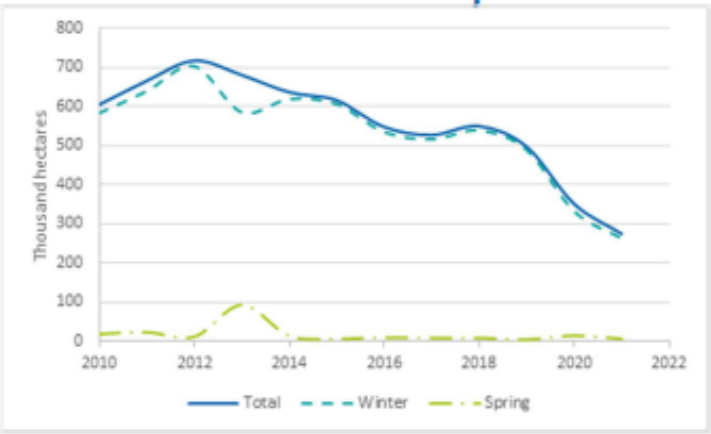
1. Review of trends in agronomic practice over the last 10 years

2. Consideration of the potential impacts of these changing trends on risks and prevalence of key crop pests and diseases

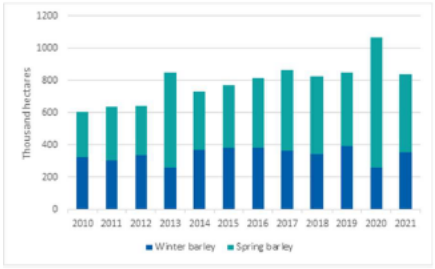
3. Recommendations for non-chemical control mechanisms to mitigate these risks including IPM strategies and crop breeding priorities

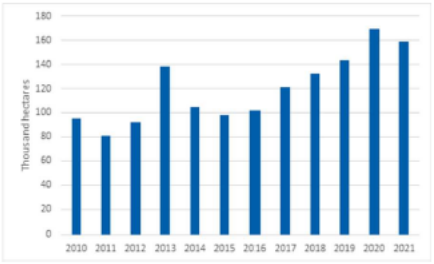
Trends from 2010-2020

Oilseed Rape

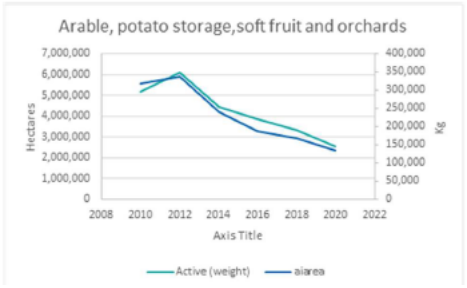


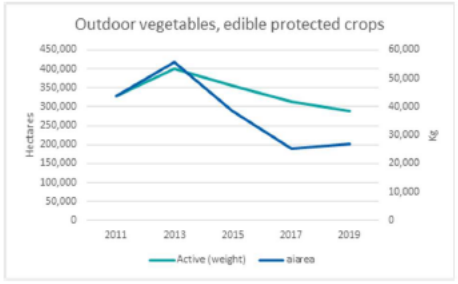
Barley and Oats



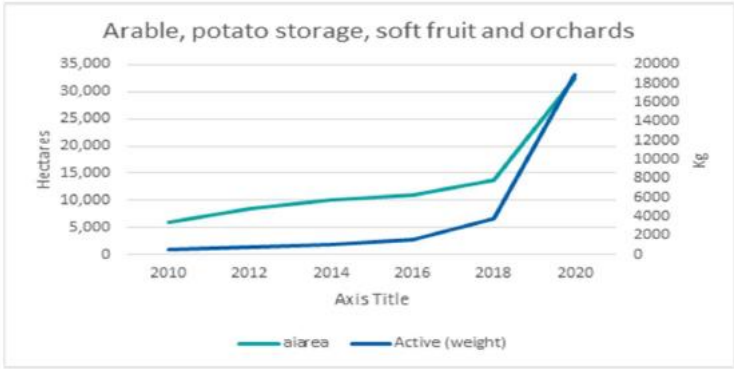


Insecticides





Biological pesticides



Trends from 2010-2020

- Increase in area using cover crops (in 2010 in England it was 2.2% of total crop area and in 2016 was 4.2%, in Wales it was 8.7% and in 2016 was 15.7%)
- Wider species range included in cover crops
- Cultivation techniques have moved away from deep non-inversion towards shallow cultivation and direct drilling
- Significant increase in use of yield mapping to target poor areas

Cabbage Stem Flea Beetle in OSR

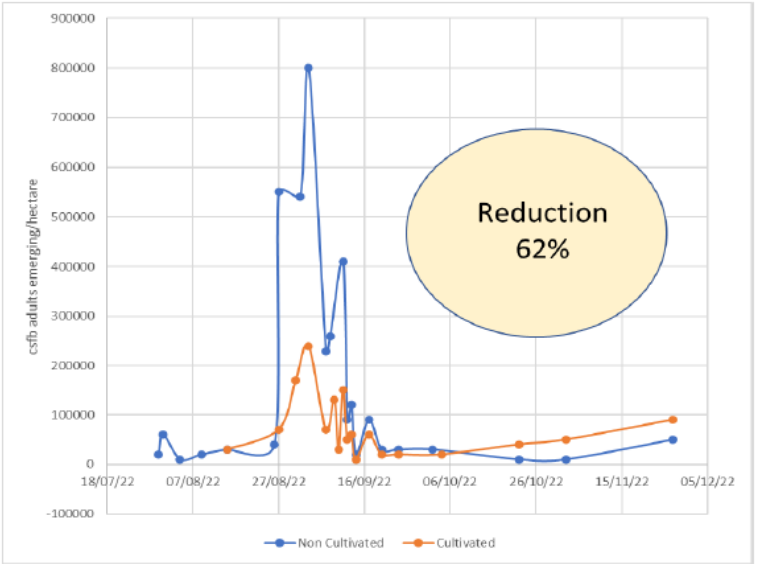
- Aim is to understand more about the life cycle
- This project:
  - Designed and produced new emergence traps to use within arable crops throughout the calendar year.
  - Traps were monitored weekly at, at least, 3 sites and data being recorded from June 2022 to March 2023.
  - Analyse results and feedback to growers



CSFB

- Current thinking based on data from 1980s suggests they all emerge before harvest
- Early results suggest that emergence continues till much later in the season (December)
- Vulnerable stage where there is access to soil after harvest

- At 2 sites shallow cultivation reduced emergence by 60% (1 field reduced by 90% with deeper cultivation)
- Allowing OSR volunteers actually thought to increase population of CSFB – contrary to previous advice of using them as trap crop



https://www.fwi.co.uk/arable/crop-management/pests/new-advice-on-volunteers-for-tackling-flea-beetle-in-osr

Other related projects

- ELM Test and Trial
  - Led by ADAS, NFU and SRUC
  - Focuses on role of IPM within SFI and associated guidance to aid decision making
  - Creating video and written guidance to inform farmers and growers on IPM strategies
  - Feedback on farmer's understanding and engagement with SFI

- IPM Theory of Change – how can we bring together and communicate information about sources of support through an IPM toolbox
  - Fera and University of Exeter conducting case studies with farmers and growers with differing levels of adoption of IPM
  - Exploring how effective incentives and toolboxes are in improving IPM uptake
  - How can Defra improve support through an IPM toolbox

Defra's Genetic Improvement Networks

- Defra's Genetic Improvement Networks (GINs) on Wheat, Oilseed Rape, Pulses and Vegetable crops
  - aim to improve the main UK crops towards increased productivity by being grown more efficiently, with reduced environmental impact and increased economic potential.

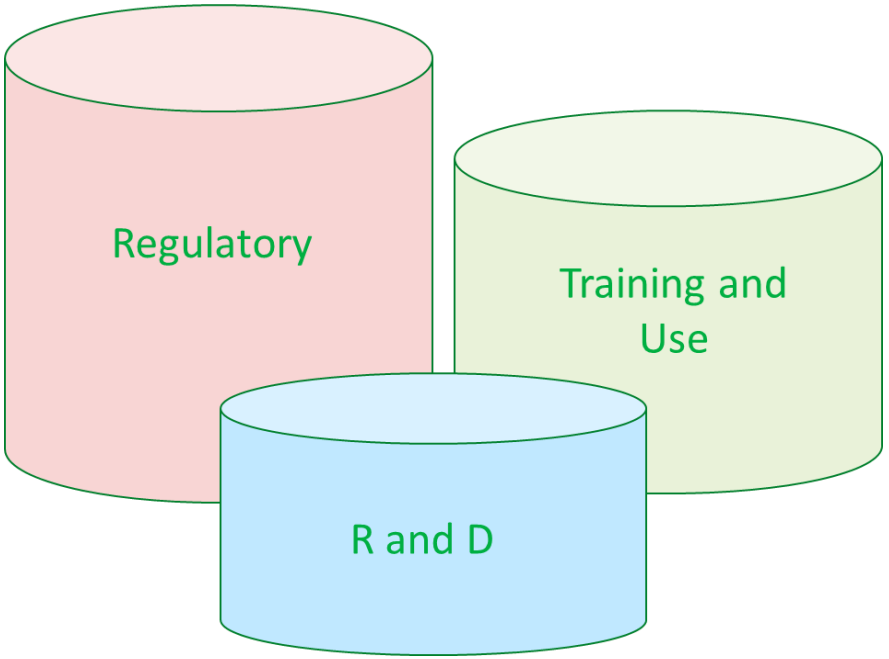
- Bring together industry-led R&D on genetics and focus on longer term issues such as resource efficiency, sustainability, resilience and nutritional quality, which complement and augment commercial breeding programmes.

- Across the GINs we have identified genetic traits that have **improved resilience to** climate change and **common pests and diseases**, and we are working with breeders to incorporate these traits into elite UK crop varieties.

Biopesticides

Feedback from draft NAP consultation:

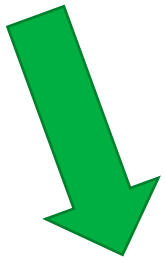
- Biopesticides should be viewed as part of an IPM approach.
- Regulatory processes need to be robust, but also proportionate and tailored to biopesticide category.



Biopesticides – latest plans

Identify issues with current processes, regulations and data requirements

- stakeholder feedback and further engagement
- OECD guidance
- EU microbiologicals update



Those requiring no legislative change

- Impact assess and implement where practical

Those requiring legislative change

- Impact assess
- Consult
- Add to appropriate legislative vehicle

Future funding aims

- Continue to support R&D
- Understand the yield impacts and benefits of IPM approaches
- Map the evidence on IPM to identify research gaps and developing non-chemical alternatives
- Further build the evidence base for the environmental impacts of pesticides

NAP and IPM toolbox

- **Advice** – working with key advisory bodies to support the implementation of IPM advice
- **Guidance** – supporting the development of ‘what works’ guidance as well as updating the Code of Practice
- **Peer to peer learning/networks** - exploring opportunities to support farmer/grower led networks
- **Decision-making tools** – increasing awareness of Decision Support Systems/Tools
- **Formal Training** – working with training providers to further develop the IPM offer in training and CPD for farmers and growers, as well as agronomists.

Thank you

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