



# Mind The Gap

**Managing pests with a decreasing choice of chemical options**

5 December 2024

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## Crop Protection from Plant Pests - Gaps?

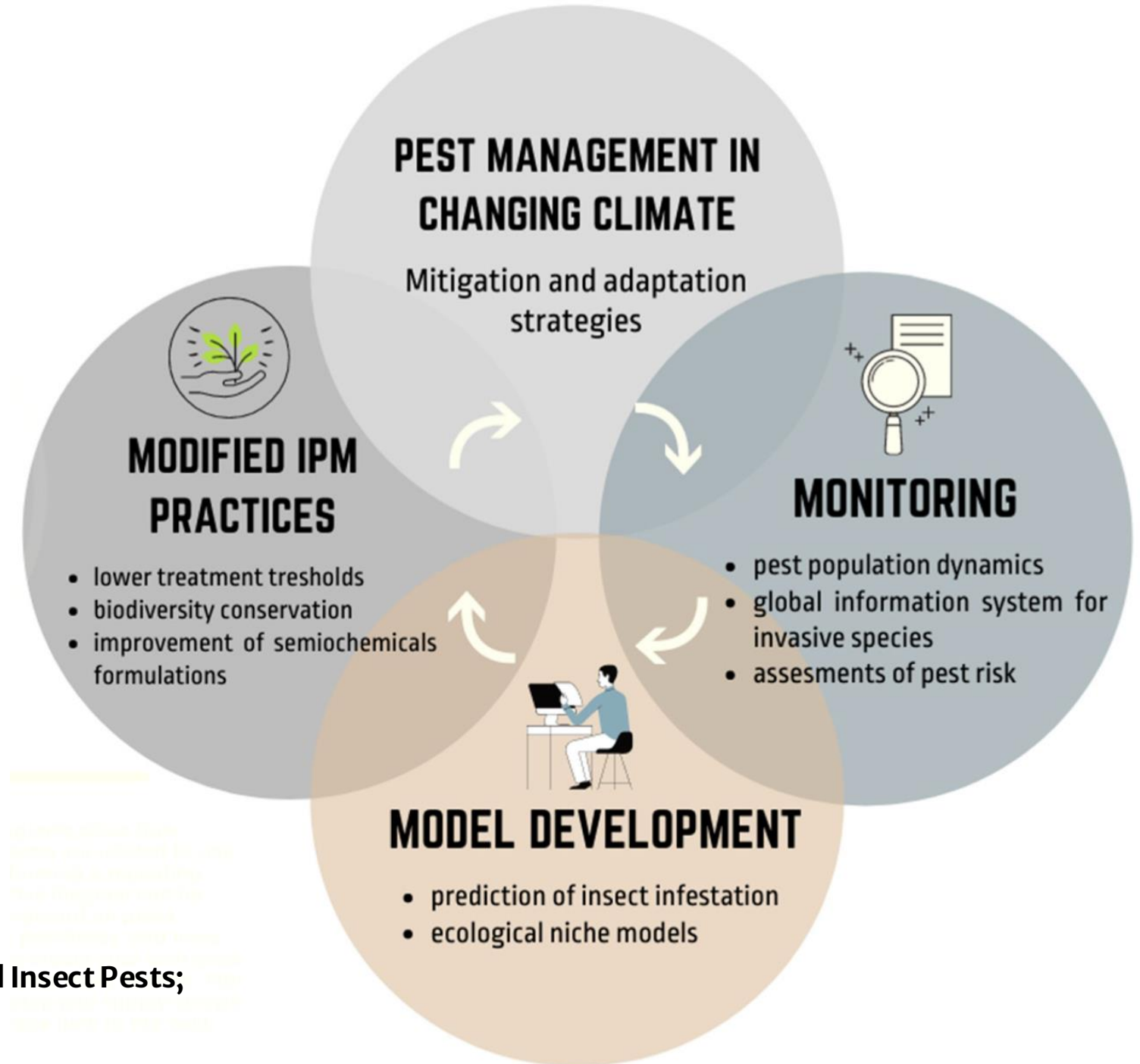
- Changing climate, new pests and new pest/crop interactions
- Loss of active ingredients and more regulation governing use of products
- Developing integrated systems

## Crop Protection from Plant Pests - Gaps?

- Changing climate
- Requirement for increased sentinel monitoring, changing pests and beneficials, new pest/crop interactions
- Loss of active ingredients and more regulation governing use of products
- Developing integrated systems

## Gaps for changing climate

- Climate change will favour some insects and inhibit others, while impacting distribution, diversity, abundance, development, growth and phenology.
- Increased northward geographic distribution; increased overwintering survival rate and ability to develop more generations.
- Increase in the number of pest outbreaks involving a broader range of insect pests.
- More insect-transmitted plant diseases
- Invasive pest species likely to establish more readily in new areas
- Reduced effectiveness of biological control agent and loss of natural enemies.



The Impact of Climate Change on Agricultural Insect Pests;  
Skendžić S. et al. (2021)

<https://doi.org/10.3390/insects12050440>

## Crop Protection from Plant Pests - Gaps?

- Changing climate
- Loss of active ingredients and more regulation governing use of products
- Reducing PPP impacts and improving PPP efficiency or substituting it with other methods, including biological control, improving curative approaches
- Developing integrated systems

# Gaps for PPP, including biocontrol

## MAJOR KNOWN TARGETS FOR INSECTICIDAL ACTIVITY

### Molecules disrupting insect's nervous system

- Organochlorines
- Pyrethroids
- Formamidines
- Organophosphates
- Carbamates
- Spinosyns
- Neonicotinoids
- Botanical preparations

### Metabolic targets

- Organosulphur compounds
- Dinitrophenols
- Organotins
- Pyrazoles
- Pyridazinones
- Fumigants
- Botanical preparations
- Inorganic compounds

### Growth regulators and others

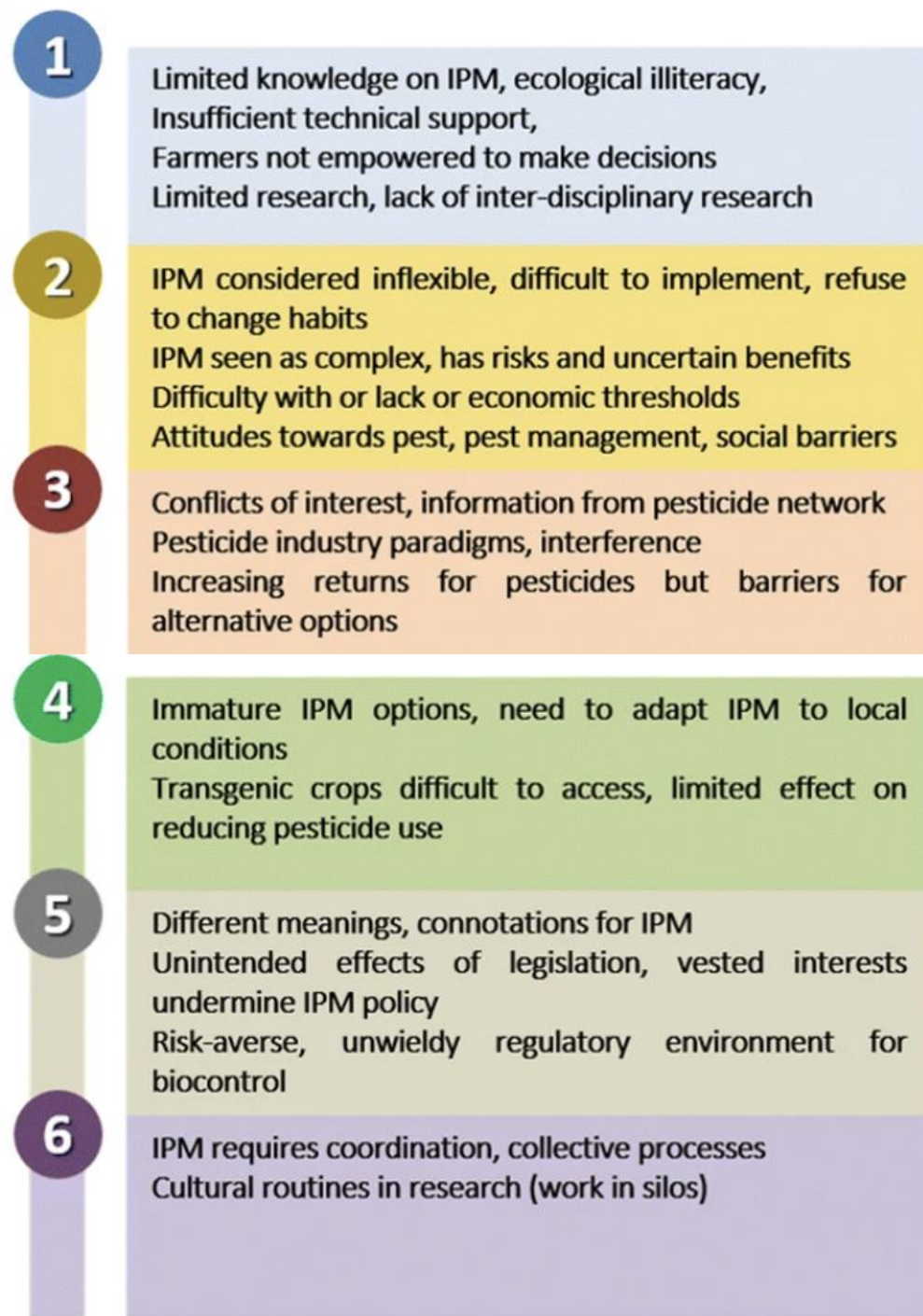
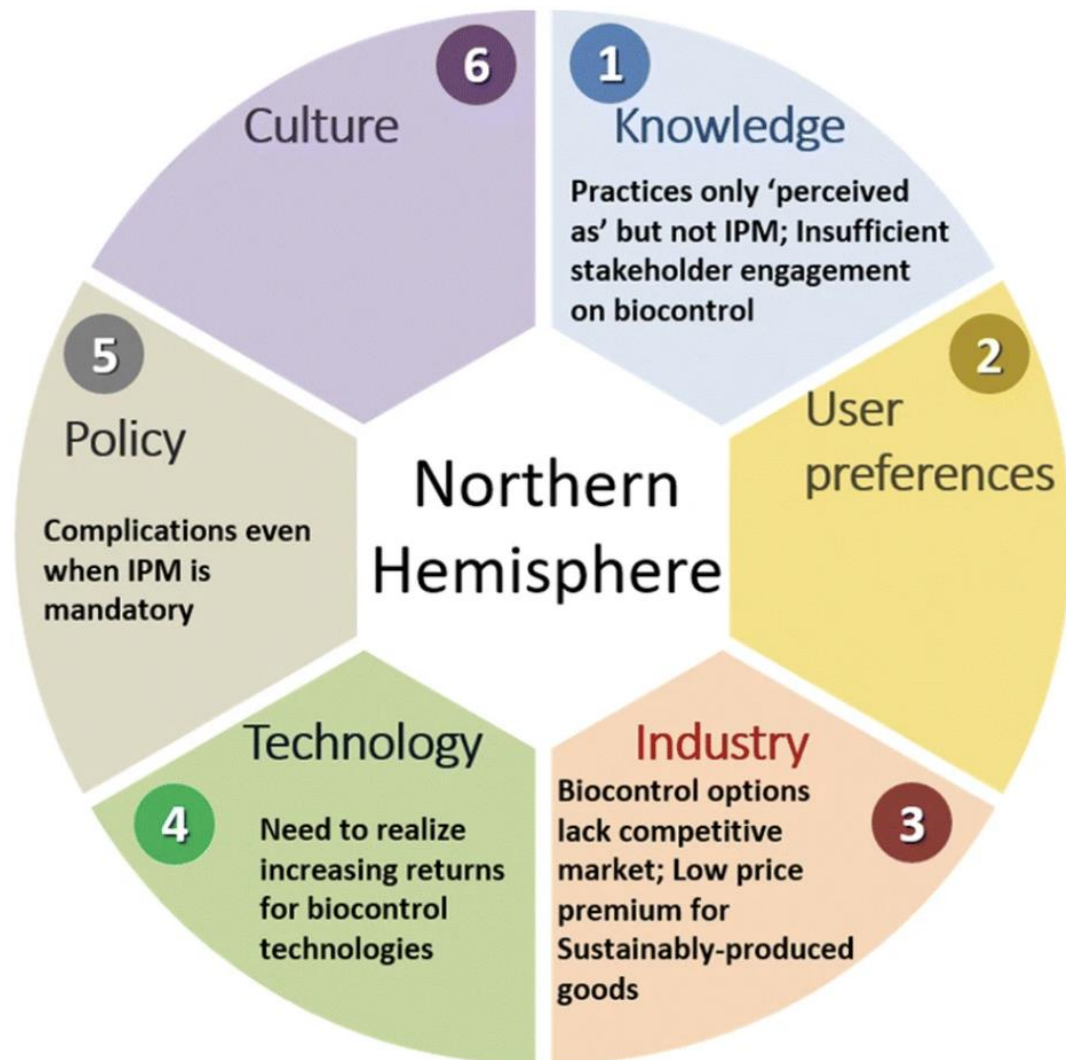
- Bensoylureas
- Piperonyl butoxide
- MGK-264
- Quinazolines

- Insecticides have impacts on target and non-target insects.
- An inexorable decline in the number of active substances has occurred since 2018, despite numerous biocontrol agents being approved
- Increase in observed resistant populations
- Efficacy and formulation approaches
- Plant protection mechanisms as breeding targets

## Crop Protection from Plant Pests - Gaps?

- Changing climate
- Loss of active ingredients and more regulation governing use of products
- Developing integrated systems
- Implementation of approaches that work with functional biodiversity to enhance ecological function and the ecosystem services in practice with appropriate agricultural practices and active design of agroecological farming systems; combining soil and ecosystem biodiversity, cropping system design, varietal resistance/tolerance, phytosanitary control, cultural control with curative measures as a last resort.

# Gaps for Integrated Systems



**Integrated pest management: good intentions, hard realities. A review;**  
 Deguine, JP., Aubertot, JN., Flor, R.J. *et al.* (2021).  
<https://doi.org/10.1007/s13593-021-00689-w>



# BCPC **Mind The Gap**

10.00: [Welcome](#) - Elizabeth Stockdale, Head of Farming Systems Research, NIAB

10.15: [Development of a UK Pesticide Load Indicator](#) – Dr Marc Kennedy, Fera Science

10.40: [EU and UK on pesticide availability](#) – Dr Jonathan Blackman, Hutchinsons

-----Coffee break-----

11.40: **Perspectives on managing pests with reduced synthetic chemical options**

- [Paul Cobb](#), Farm Environment Adviser, FWAG South East
- [Georgie Bray](#), Hope Farm, Cambridgeshire, RSPB
- John Cherry, Weston Park Farms, Hertfordshire
- [Marion Regan](#), Hugh Lowe Farms Ltd, Kent

12.35: **Poster Session and Short Talks** by early career researchers and PhD students

-----Lunch break-----

14.00: [Bring stakeholders together](#) – Dr Una Fitzpatrick, National Biodiversity Data Centre, Ireland.

14.25: [Ecological innovations](#) - Dr Felix Wackers, Biobest Group.

14.50: **Discussion & Review summary** – Chair. 15.20: Close



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## Poster Presentations

- [Paul Allison](#), *Newcastle University*
- [Sam Apori](#), *Newcastle University*
- [Laura Martinez-Chavez](#) – *Harper Adams University*
- [John Owen](#), *Harper Adams University*
- [Aimee Tonks](#), *Harper Adams University*
- [Nikoletta Foskolou](#), *Harper Adams University*



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## Thank you



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