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Supporting crop health through sustainable vector and disease management

Dr Daniel Leybourne

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afbini.gov.uk



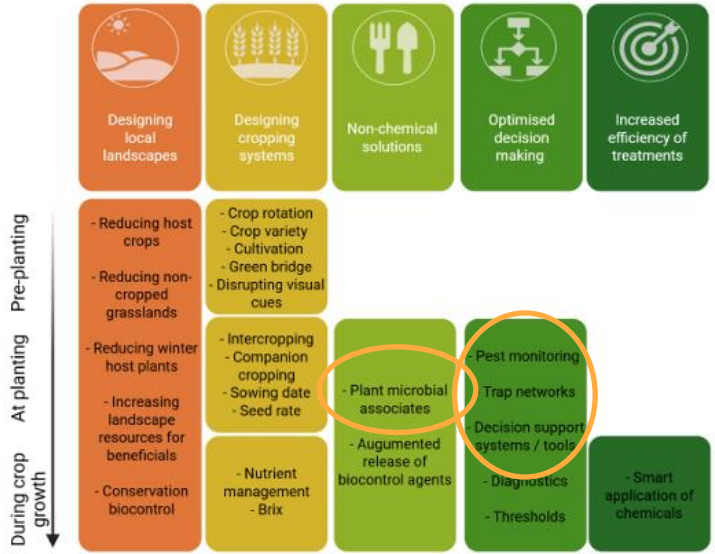






Crop health and sustainable vector management

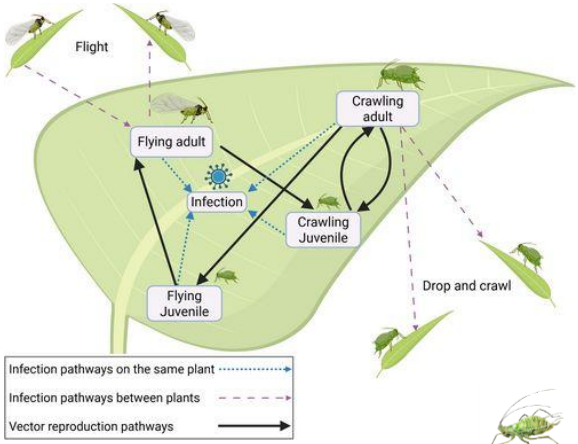
- Five pillars for holistic integrated pest management (IPM)
- Supports transition away from chemical insecticide
- Considered across growing period
- Case-study for cereal aphid and barley yellow dwarf virus management



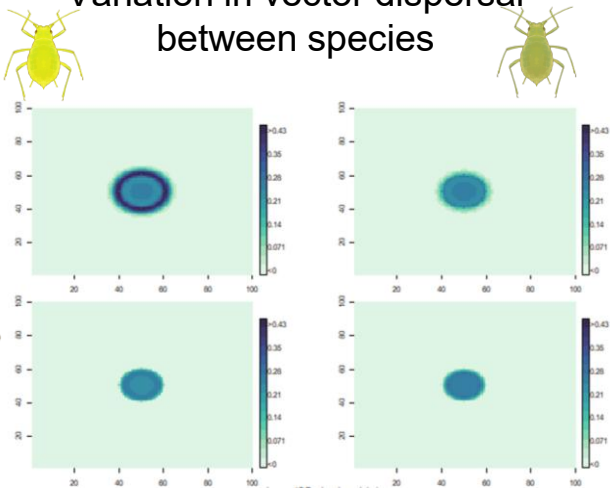


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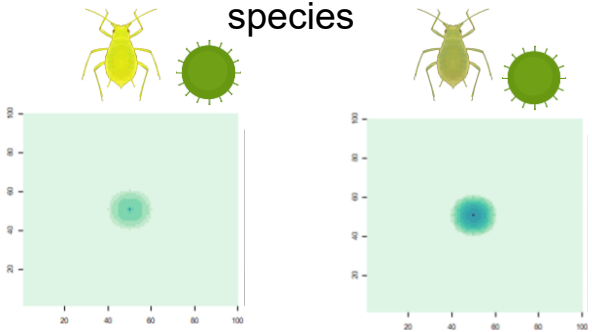
Modelling for better management



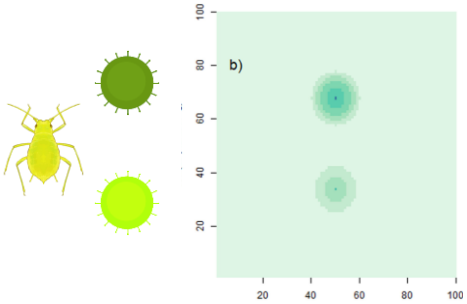
Variation in vector dispersal between species



Variation in disease spread between vector species

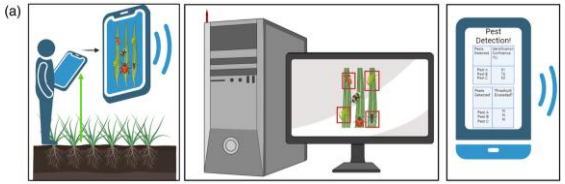


Variation in disease spread between vector-virus combination

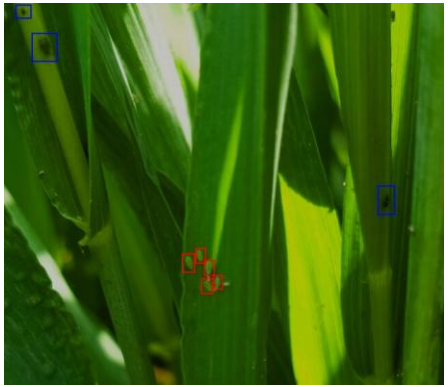


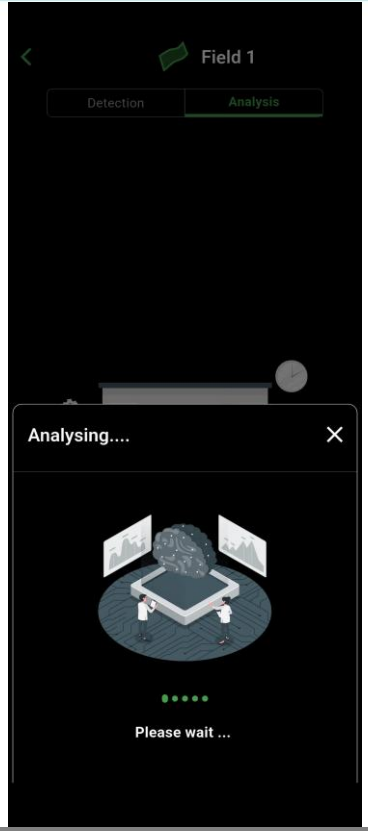
Preedy … Leybourne (2026). *Journal of Sustainable Agriculture and Environment.*

Smart tools for on-farm monitoring







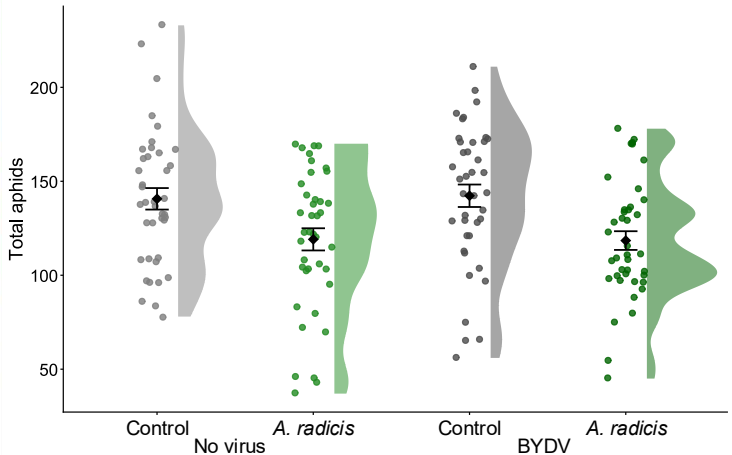


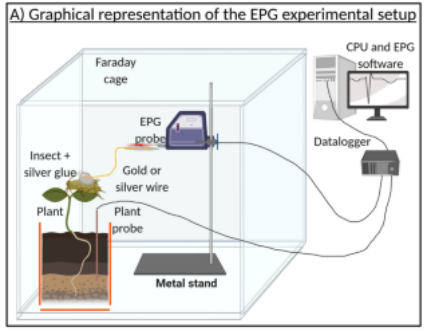
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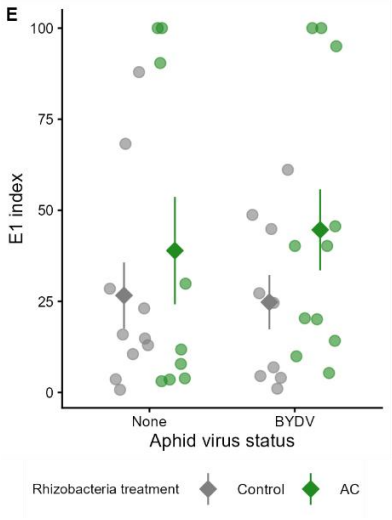
Sustainable strategies for vector control



S Zytynska, University of Manchester.







Parker, Zytynska, Arkwright, Warnecke, Leybourne. *In-Prep.*

Conclusion



- Biological modelling can estimate vector dispersal and disease spread, forming the basis for sustainable management systems
- Computer vision and large language models can support in-field on-the-go pest assessment
- Crop microbiome can suppress vector populations by ~20%

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- Dr Katharine Preedy (BIOSS, UK)
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- Dr Lawrence Bramham (Rothamsted Research, UK)
- Dr Po Yang (Sheffield University, UK)
- Dr Nasamu Musa, Dr Mark Ramsden (ADAS, UK)
- Dr Sharon Zytynska (Manchester University, UK)
- Dr Megan Parker (Chester University, UK)