Introducing the Crop Health and Protection Centre

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AgriTech Centres Funded by Innovate UK

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Agrimetrics
First Centre set up with £11.8m and now has in excess of 200 companies engaged

Centre for Crop Health and Protection (CHAP)
£21.3 million government investment to revolutionise how farmers manage crop threats including pests and disease, both in the UK and overseas. The Centre will have its headquarters in York at the National Agri-food Innovation Campus in Sand Hutton.

Centre for Innovation Excellence in Livestock (CIEL)
£29.1 million government investment to create new livestock technology and products to boost the profitability and productivity of livestock farming. The Centre will have its headquarters in York at the National Agri-food Innovation Campus in Sand Hutton.

Agricultural Engineering Precision Innovation Centre (Agri-EPI)
£17.7 million government investment in the new, fast-moving market of precision agriculture to help the UK's agri-food sector develop advanced technologies that will increase productivity and sustainability in UK agriculture. The Centre will have hubs in Edinburgh, Harper Adams University and Cranfield University.

CHAP CROP HEALTH & PROTECTION

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Centre for Crop Health and Protection (CHAP)

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CHAP
CROP HEALTH & PROTECTION

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CHAP Vision

To drive innovation across the crop protection sector.

To provide transformative change to how the farming sector deals with crop threats both in UK and internationally.

To increase productivity, economic growth and resilience along the farm-to-fork value chain.

CHAP has 9 Specialist 'Units' Delivering Services

1. Surveillance, monitoring and real-time (SMART) decision support unit (Fera, Rothamsted, Agrimetrics, Met Office)
2. Resistance and virulence management unit (Rothamsted, Fera)
3. Lab-to-field demonstration units (Newcastle, Fera, AHDB, STC)
4. Soil health unit (Cranfield)
5. Edge-of-field waterbody safety (E-FLOWS) assessment facility (Fera)
6. Novel control discovery and implementation unit (CABI, Warwick, Rothamsted)
7. Precision application unit (AHDB, Warwick, ADAS, Stockbridge))
8. International supply-chain resilience unit (CABI, Fera)
9. National reference collection of biotic crop threats (CABI, Rothamsted, Fera)

Surveillance, Monitoring and Real-Time (SMART) Decision Support Unit

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Providing real-time data on pest and disease risks in season to help farmers make accurate crop-treatment decisions – reducing waste and costs while improving yields

- Capability in pest and disease risk surveillance and forecasting across 4 major arable crops
- New spore trapping technologies to support risk analyses and decision support for farmers and growers
- Testbed for new surveillance approaches and platform to support trials for efficacy of control strategies

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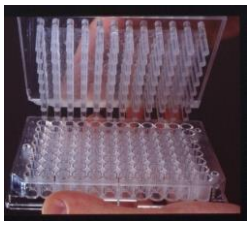
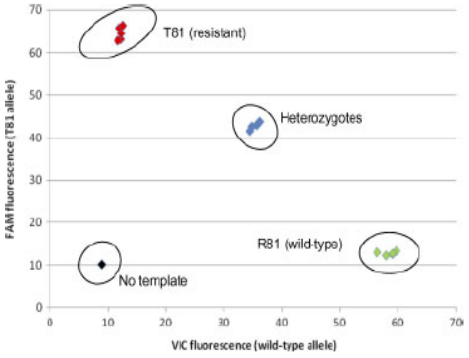
Resistance and Virulence Management Unit

Providing early warnings of emerging pesticide resistance to support the development of more effective pest and disease control measures for the future





- Analysis and exploitation of varietal tolerance/ resistance traits.
- Development of early warning decision support systems for crop diseases.
- Development of adaptable resistant crop varieties
- Weed control strategies with cover crops

Lab-to-field Demonstration Units

Taking mobile laboratories onto the farm to deliver the tools, technology and training that farmers need to combat pests and diseases using the latest techniques

- Mobile facility for research and demonstration activities 'on the farm'.
- Rapid measurement and diagnostics using a range of technology.

Soil Health Unit

Enhancing understanding of soil management to improve the effectiveness of control measures used to tackle pests, pathogens and weeds

- Recreate the dynamic interrelationships between soil health, water use and biotic stress
- Integrate the whole crop production cycle
- Undercover so experimental work is not weather-dependent

Edge-of-field Waterbody Safety (E-FLOWS) Assessment Facility

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Advanced testing facility to help commercial companies accelerate the process of bringing safer and more effective plant-protection products to market

- Europe's largest experimental mesocosm for testing next generation chemical and biological controls.
- Higher (Tier 3) hazard characterisations of aquatic community exposure.
- Series of streams with capacity for flow-though exposures of PPPs (not recirculating). Can also be ponds.

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Novel Control Discovery and Implementation Unit

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Unique biopesticide development facilities to extend the range of chemical-free pest and disease control options available to farmers

- ID microbe identification and testing service for new products
- Benchtop MALDI-TOF MS system (Bruker) for rapid ID of plant-pathogenic bacteria, fungi etc.

State-of-the-art facilities for high-through put screening of germplasm for resistance to biotic threats and automated pathogen/insect damage phenotyping.

- An imaging unit with backlight and camera mounted top light
- **Motor controlled, high-res, programmable cameras on an XY-movement system**
  - **VIS camera**
  - **Laser Scanner**
  - **Fluorescent camera**
  - **NIR camera**
- A barcode reader
- A control computer & server unit with RAID storage system for an extendible, redundant and large data storage capacity
- All cameras access all multiwell plates

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Precision application unit

Helping farmers to better tackle crop threats by optimising their use of resources and precisely applying pesticides and other crop treatments

- Targeting crop protection to achieve healthy soil, roots and crop canopies for resource efficient production
- Field trials and evidence gathering and reporting linking below-ground and above-ground, glasshouse to field.

International supply-chain resilience unit

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Improving the resilience of the food supply chain by providing on-the-ground training and support in pest and disease control direct to overseas farmers

- Trans-national capability to identify, monitor and predict pest threats to supply chains
- Collate, analyse and provide reports on plant clinic data.
- Provide mobile accessible real-time risk reports to government and industry.

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National reference collection of biotic crop threats

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A combined central reference collection of crop pests and diseases to advance scientific discovery and sustainable pesticide development

- Provide a (inter)national capability to supply biological samples with temporal and spatial relevance
- Create a 'shop window' for existing collections and hold capacity to systematically add specimens over time
- Largest collection of Plant Pathogenic Bacteria, Nematodes, fungi, insect cultures in UK.

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Why work with CHAP?

ROTHAMSTED RESEARCH

- Expert, independent voice and services for UK and International crop health protection
- World-class crop health protection expertise from over 500 scientists with impact and reach in almost every country worldwide.
- Bringing products to market quicker by utilising CHAP's extended network and state of the art facilities.
- Creating new markets and value networks through integrated solutions, 'disruptive innovation' using novel and next generation technologies.
- UK and International Government and industry working in partnership.

www.chap-solutions.co.uk

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