Grower Summary

CP119

Sensor based pre-symptomatic detection of pests and pathogens for precision scheduling of crop protection products

Annual Report 2016

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The results and conclusions in this report may be based on an investigation conducted over one year. Therefore, care must be taken with the interpretation of the results.

Use of pesticides

Only officially approved pesticides may be used in the UK. Approvals are normally granted only in relation to individual products and for specified uses. It is an offence to use non-approved products or to use approved products in a manner that does not comply with the statutory conditions of use, except where the crop or situation is the subject of an off-label extension of use.
Before using all pesticides check the approval status and conditions of use.
Read the label before use: use pesticides safely.

Further information

If you would like a copy of the full report, please email the AHDB Horticulture office (hort.info.@ahdb.org.uk), quoting your AHDB Horticulture number, alternatively contact AHDB Horticulture at the address below.

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Project title:	Sensor based pre-symptomatic detection of pests and pathogens for precision scheduling of crop protection products
Project number:	CP119
Project leader:	Dr Martin McAinsh, Lancaster Environment Centre Professor Frank Martin, University of Central Lancashire
Report:	Annual report November, 2016
Previous report:	NA
Key staff:	NA NA
Location of project:	Lancaster University
Industry Representative:	Mr Keston Williams, Barfoots, Sefter Farm, West Sussex P213PX
Date project commenced:	01.11.2015
Date project completed (or expected completion date):	01.11.2018

GROWER SUMMARY

The research is at a very early stage, but initial findings using fresh or completely unprepared samples indicate that a range of benefits may arise to growers from this work - :

- Experiments have shown that vibrational spectroscopy (ATR-FTIR and Raman spectroscopy) techniques are capable of generating high quality spectra of intact plant leaves as well as intact fruit skin and flesh.
- Effects of ATR measurement can be observed visually as well as in spectral data. Fruit skin, at least for apple and tomato, can be measured without any tissue destruction.
- Observed spectral alterations likely reflect processes such as fruit ripening/spoilage, live plant development, plant stress, as well as disease progression occurring within measured tissues. Exact mechanistic changes being measured within the sensor area is still unclear.
- Most experiments will undergo further data analysis to address specific questions that arise as the research progresses. Wavenumbers associated with significant spectral changes are catalogued for use in further studies such as field measurements or the development of diagnostic / predictive models.
- However, more work needs to be conducted specifically in the pre-symptomatic disease phase, in order to evaluate the potential for timely and successful pesticide application.
- Biospectroscopy sensors will be part of a multi-sensor array in agriculture