

Development of diagnostic systems for plant diseases

The end users of our research

The end users are plant health inspectors in the UK and worldwide, as well as quarantine services. Potentially the diagnostic systems could become kits for farmers/growers.

Our research

Plant diseases cause significant annual crop losses worldwide, and, as with human and animal diseases, an important factor in their control is early and accurate diagnostics. We have been developing a range of molecular diagnostic techniques for laboratory and in-field use. The field-based methods combine rapid DNA extraction with detection of loop mediated isothermal amplification (LAMP) products in real-time using the Optigene Genie II machine, allowing detection and validation of product within 30 minutes with minimal manual handling steps. Test systems have been piloted in the field in Ghana for coconut lethal yellowing type diseases, and in the UK for diseases such as sudden oak death.

The benefits of our research

Plant pathogens are estimated to cause crop losses of around 10-15% per annum. Work at the University of Nottingham in collaboration with Fera, York, has resulted in real-time PCR diagnostic protocols now used routinely by Fera as part of their statutory testing, and the technology has been incorporated into the accredited phytoplasma testing diagnostic service offered by the Swiss-based Company, Bioreba. The 'in-field' LAMP-based diagnostics work is now being used routinely for field detection of phytoplasma diseases in coconut in Ghana and in the UK, Fera is piloting the use of these methods by their field inspectors. Continuing work is now aimed at commercialising diagnostic kits for worldwide use.

External links

[Field use of Optigene Genie in Ghana](#); [Tackling coconut disease](#)

