

Project title: Improved management of light leaf spot in brassicas by exploiting resistance and understanding pathogen variation

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Previous report: none

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(or expected completion date):

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The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations.

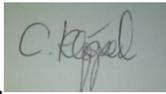
2 AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

[Coretta Kloeppe]

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Signature .  Date22/10/2014.....

3 Grower summary

3.1 Headline

This project focuses on the determination of the population structure of the causal agent of light leaf spot, *Pyrenopeziza brassicae*. It will be determined whether the same *P. brassicae* strains can infect both, oilseed rape and vegetables. Gene-for gene interactions between pathogen strains and plant cultivars will be studied.

3.2 Background

Light leaf spot is a very important disease in vegetables and oilseed rape. Over the last decade the importance of the disease in oilseed rape has increased dramatically in the UK (Figure 1).

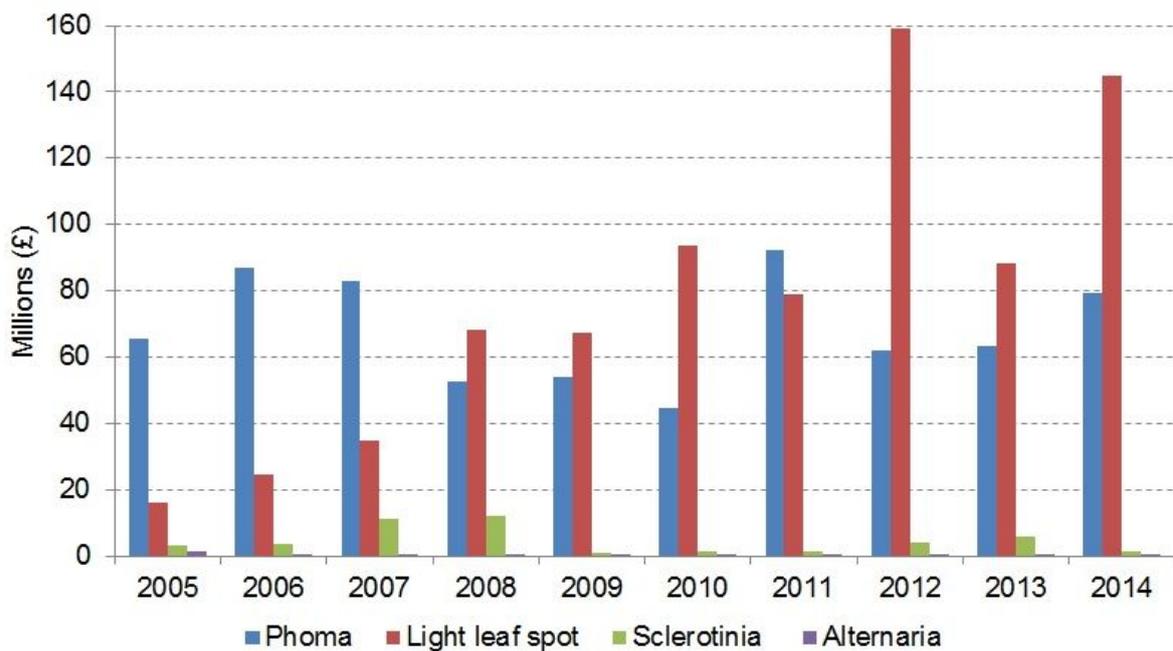


Figure 1: Estimated yield losses due to diseases in oilseed rape in England from 2005 until 2014 (CropMonitor, 2014)

Effective control of light leaf spot is difficult to achieve. Chemical control is challenging as fungicides must be applied during the period when the pathogen grows asymptotically in plant tissue (Figueroa et al. 1994). The efficacy of fungicides may also be reduced as methyl benzimidazole carbamate (MBC's) andazole resistant *P. brassicae* strains have been identified (Carter et al. 2013, 2014). A forecasting system is available that assists farmers with their decisions on spray timings for light leaf spot on oilseed rape (<http://www.rothamsted.ac.uk/light-leaf-spot-forecast/regional-light-leaf-spot-risk-forecast>). This forecasting model is currently being updated. Furthermore, the exploitation of plant resistance against the pathogen could help control the disease but current commercial oilseed rape cultivars show poor light leaf spot resistance.

The disease is damaging in vegetables as well, Brussels sprouts in particular. It has been assumed that there is a potential spread between oilseed rape and vegetable brassicas but this has not been confirmed yet.

3.3 Summary

The aim of the project is to identify the pathogen population structure, to determine if the same strains are able to infect oilseed rape and other brassicas, and to gain a better understanding of the plant-pathogen interactions. This project will support breeders with regard to breeding better light leaf spot resistance into cultivars and therefore, give farmers and growers better material to choose from in the long term. Furthermore, there could also be better advice on cultivar choice on a regional scale according to the population in a certain area (e.g. Recommended List for oilseed rape).

Therefore, isolates of *P. brassicae* are being collected from infected leaf (oilseed rape, vegetables) and bud tissue (Brussels sprouts). The isolates will be studied morphologically and molecularly using a combination of neutral markers to determine differences between the isolates. Certain isolates will be used for *in planta* screenings to discover differential interactions between isolates and potential host cultivars.