

**Targeting pathogen symptomless growth
to understand quantitative resistance to
Leptosphaeria maculans in *Brassica napus*
(oilseed rape)**

Rothamsted:

**Yong-Ju Huang,
Bruce Fitt, Graham
King, Ian Crute**

DuPond (UK):

Mike Ashworth

INRA-Rennes:

Regine Delourme



Objectives

- To determine whether the main component of quantitative resistance operates during *L. maculans* symptomless growth down oilseed rape **leaf petiole**
- To determine whether the main component of quantitative resistance operates during *L. maculans* symptomless colonisation of **plant stem**
- To investigate the **genetic control** of quantitative resistance to symptomless growth of *L. maculans*
- To investigate **interactions** between effects of fungicides and effects of genetic resistance on symptomless growth of *L. maculans* in *B. napus* leaf petiole and plant stem

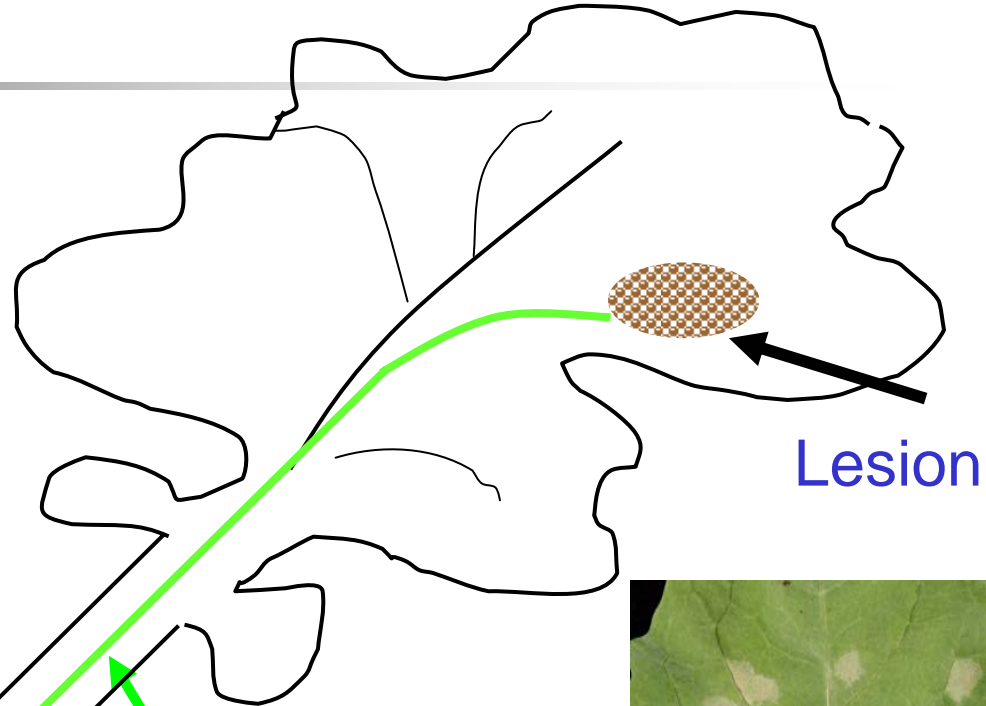


Materials and methods

- Materials:
 - Pathogen: GFP tagged isolates; naturally produced ascospores from Rothamsted.
 - Host: DY (Darmor × Yudal) DH population and near isogenic lines from INRA-Rennes
- Methods:
 - GFP and quantitative PCR
 - Experiments in controlled environment and field

Investigate the symptomless spread of *L. maculans* from leaf to stem

Canker development



- Green Fluorescent Protein (GFP)
- qPCR

Assessment of QTL-mediated symptomless growth in petiole (GFP)

Symptomless petiole
viewed using white light



GFP-expressing *L. maculans*
viewed using GFP filter

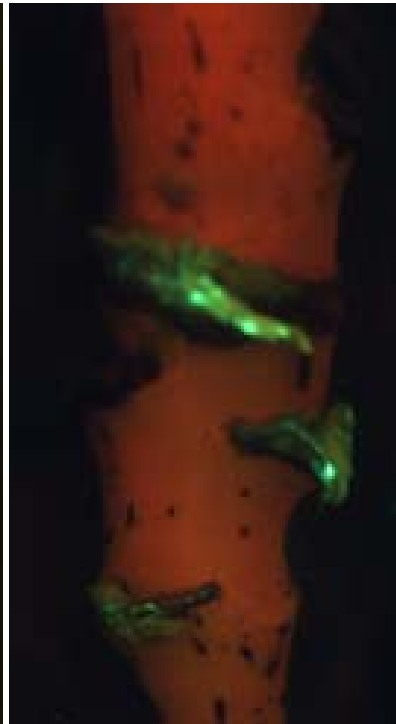


Assessment of QTL-mediated symptomless growth in stem (GFP)

Symptomless
petiole viewed
using white
light

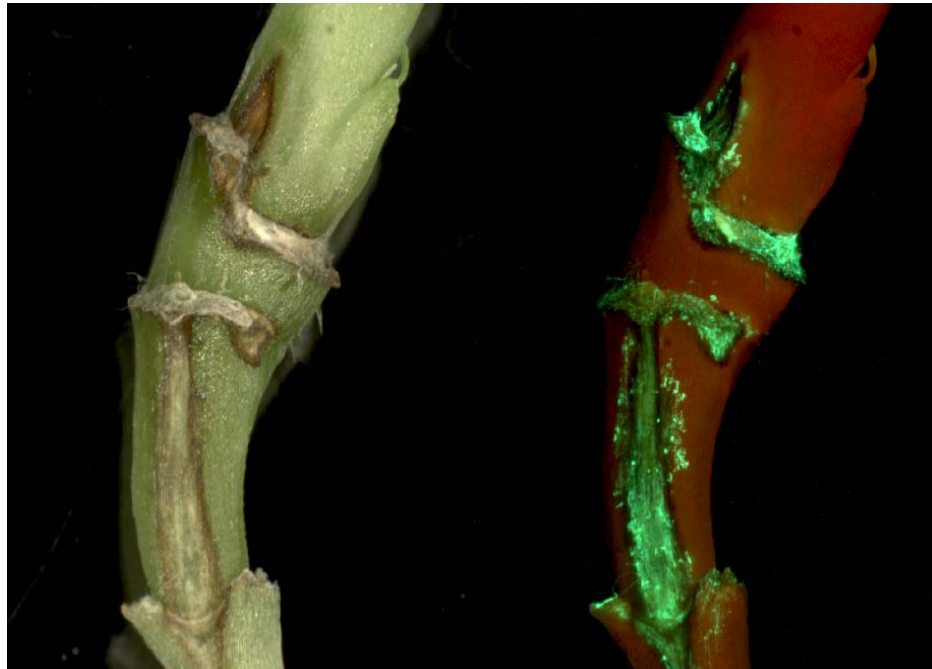


GFP-expressing
L. maculans
viewed using
GFP filter



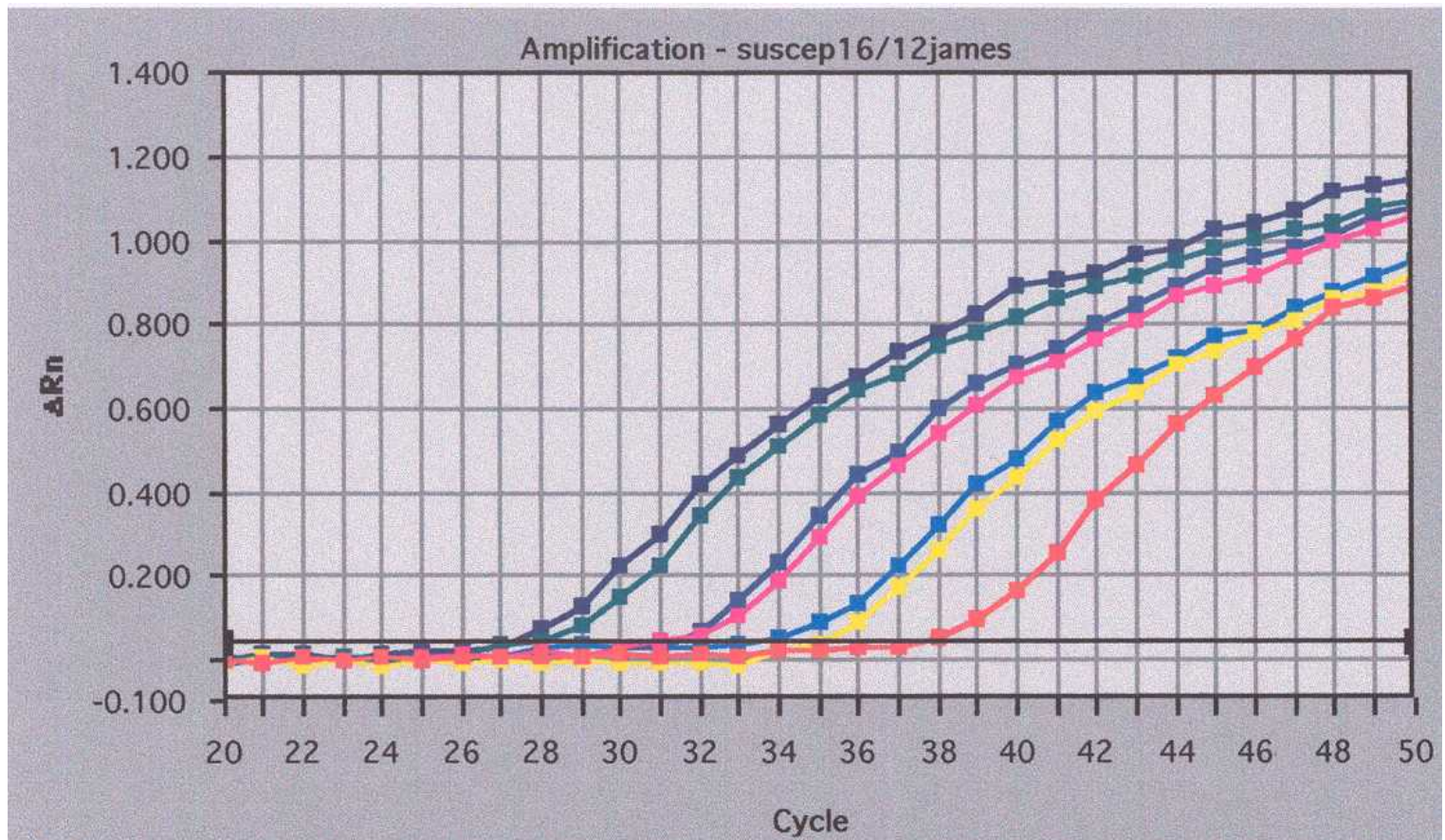
Assessment of the development of stem canker (GFP)

Symptomless
petiole viewed
using white
light



GFP-expressing
L. maculans
viewed using
GFP filter

Quantitative PCR to assess symptomless growth in petiole and stem



Horizontal line indicates threshold