



Effects of nitrogen and water on premature ripening caused by *Phoma macdonaldii*

Celia Seassau, Emmanuelle Mestries, Philippe Debaeke, Grégory
Dechamp-Guillaume

► To cite this version:

Celia Seassau, Emmanuelle Mestries, Philippe Debaeke, Grégory Dechamp-Guillaume. Effects of nitrogen and water on premature ripening caused by *Phoma macdonaldii*. 17th International Sunflower Conference, Jun 2008, Cordoue, Spain. hal-03538169

HAL Id: hal-03538169

<https://hal.science/hal-03538169>

Submitted on 20 Jan 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Effects of nitrogen and water



on premature ripening caused by *Phoma macdonaldii*

Célia Seassau¹, Emmanuelle Mestries², Philippe Debaeke¹, Grégory Dechamp-Guillaume¹

¹ UMR INRA-ENSAT AGIR ² Cetiom Toulouse - France

Goal: Understand how cropping management system influences sunflower premature ripening to better explain the erratic occurrence of the disease in S.W France

Main headways

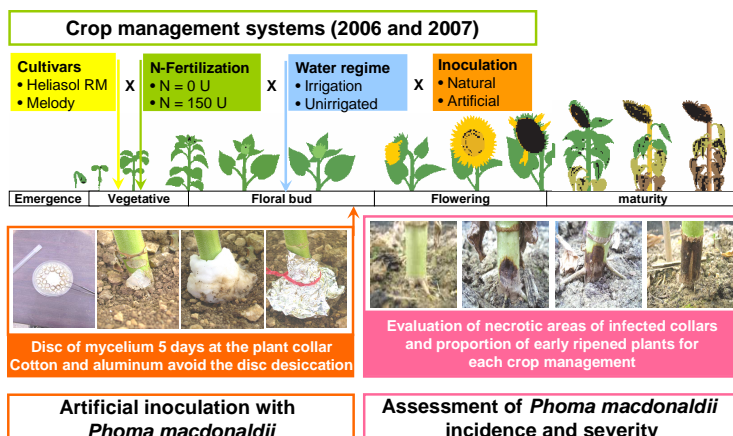
- Sunflower premature ripening syndrome (PR) is primarily caused by *P. macdonaldii* collar infection
- The disease severity is mainly influenced by crop management
- Cultivar susceptibility to the pathogen, high N-fertilization and rainfed management all favor *P. macdonaldii* infection and enhance PR



1 - Scientific context

- Collar girdling canker caused by *P. macdonaldii* is the primary cause of PR
- Sunflower premature death is characterized by sudden plant wilting during mid- to late summer followed by plant death a few weeks before normal maturity
- Collar infection at flower bud stage is the best way to reproduce PR plants in the field
- Recent investigations pointed out an impact of N-fertilization and water shortage on the disease severity.

2 - Methods



3 - Results

❑ What is the effect of sunflower crop management on the severity of attacks and PR induced by *P. macdonaldii* ?

- Cultivar susceptibility was the main factor influencing PR plants, cv. Heliasol RM being more sensitive than cv. Melody
- High N-fertilization seriously affected disease progress on both cultivars
- Water stress amplified nitrogen effect and stimulated disease progress

❑ Does *P. macdonaldii* artificial contamination lead to sunflower PR ?

- Artificial inoculation reproduced disease severity observed under natural conditions
- The role of *P. macdonaldii* in premature ripening was confirmed

