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Effects of nitrogen and water



on premature ripening caused by *Phoma macdonaldii*

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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

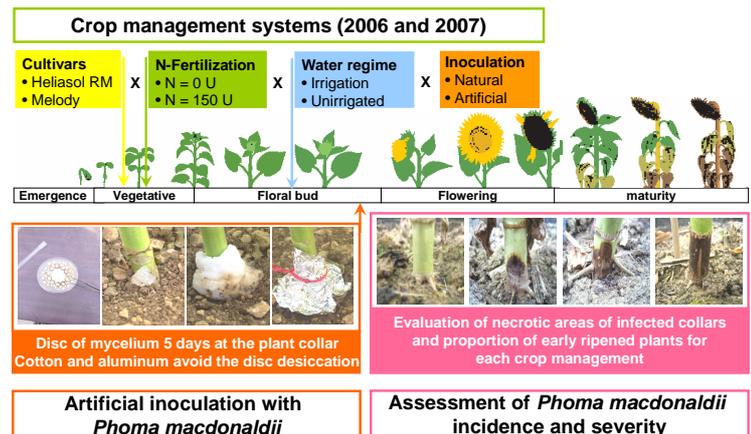
- Sunflower premature ripening syndrome (PR) is primarily caused by *P. macdonaldii* collar infection
- The disease severity is mainly influenced by crop management
- Cultivar susceptibility to the pathogen, high N-fertilization and rainfed management all favor *P. macdonaldii* infection and enhance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

