



## ADDITion

### Adaptation of the pathogen *Diplodia sapinea* to pine hosts with contrasting tolerance to drought

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#### Summary

*Context* — Drought events are increasing in Europe due to climate change. There are forest diseases that are triggered by drought episodes. One example is *Diplodia* tip blight of conifers. The causal agent, the ascomycete *Diplodia sapinea*, is one of the most important pathogens of pine species worldwide. It is present asymptotically in host tissues and disease symptoms are triggered by abiotic stress.

*Objectives* — We aim to studying the adaptation of the fungus *D. sapinea* to its host. We have chosen two pine hosts with different vulnerability to cavitation, *Pinus halepensis* and *Pinus sylvestris*, to test whether the strains obtained from the two hosts present a different growth pattern when submitted to different levels of hydric stress.

*Approaches* — Two approaches will be performed. On the one hand, under laboratory conditions, strains originating from *P. halepensis* and *P. sylvestris* will be grown at different water potentials in culture media to monitor potential different growth patterns. One strain from each host will be chosen for transcriptomic analyses at two time points to identify biological functions involved in drought response. On the other hand, in a greenhouse setup, we will perform cross inoculations with one *P. sylvestris*- and one *P. halepensis*-originated *D. sapinea* strain to be inoculated on both hosts at two contrasting water potentials, to test the potentially different growing patterns in planta.

*Expected results and impacts* — ADDITion will contribute to basic knowledge on the adaptation of forest pathogens to drought conditions and to host with different drought tolerance. The scientific progress will be output as a research paper. Presentations in international conferences are part of the expected impacts of the project, together with dissemination to the Forest Health Department in France.