

**THE DATE PALM (*Phoenix dactylifera* L) INFLORESCENCE ROT FUNGUS
Mauginiella scaettae CAN INFECTS THE MODEL HOST *Arabidopsis thaliana***

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Abstract:

The date palm (*Phoenix dactylifera* L) inflorescence rot fungus *Mauginiella scaettae* can infects the model host *Arabidopsis thaliana*

Mauginiella scaettae is a fungal pathogen causing inflorescence rot of date palm (*Phoenix dactylifera* L): one of the most devastating diseases in date palm growing regions worldwide. This disease was first reported by Cavara (1925) in Libya but the infection mechanisms remain obscure. To characterise the infection mechanism it was attempted to develop the model plant species *Arabidopsis thaliana* as an alternative host. Ten strains of *Mauginiella scaettae* were isolated from different oases of East Algeria. Ouargla02 (OU2), Ouargla03 (OU3), Ouargla 04(OU4), Hadjira(Ha), Touggourt01 (TO1), Touggourt02(TO2), Oued01(OE1), Oued02(OE2), Ghardaïa (GH) , Biskra(BI). Sequencing the internal spacer (ITS) regions of indicated the phylogenetic position of *M. scaettae*. Upon drop-inoculation with conidia of *M. scaettae*, *Arabidopsis* exhibited white necrotic lesions with marginal yellowing appeared on leaves at 6 days post inoculation and subsequently expanded throughout the entire leaves. It was noted that strain GH was the most and TO2 is the least virulent. Microscopic investigations demonstrated that a preference for fungal penetration via stomata, accompanied by hyphal tip swelling which may represent a primitive haustorium. Both of these features were also observed on *M. scaettae* infected date palm spadices. . On *Arabidopsis* initial biotrophic growth was followed by a necrotrophic lifestyle, similar to what happens on date palms. To investigate how host resistance mechanisms could modify the interaction were examined *M. scaettae* interactions with *Arabidopsis* mutants *cpr1* and *sid2* respectively increased and compromised in biotrophic resistance mechanisms, and *eto2* which displays elevated resistance against necrotrophic pathogens. Interactions with *eto2* appeared to be particularly affected, suggesting that anti-necrotrophic mechanisms – here linked to ethylene – could be effective in conferring resistance to *M. scaettae*. This study demonstrated the value of using model species in providing novel insights into previously cryptic interactions.

Key words: Date palm, inflorescence rot, *Mauginiella scaettae*, *Arabidopsis thaliana*.
infection, interaction