

## ***Sarocladium oryzae* and *Pseudomonas fuscovaginae*, two very different pathogens causing rice sheath rot in a surprisingly similar way**

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Sheath rot is an emerging rice disease that can destroy the yield of a growing season. Diseased plants show necrotic lesions on the leaf sheath and produce empty seeds or no seeds at all. The main sheath rot pathogens are the fungus *Sarocladium oryzae* and the bacterium *Pseudomonas fuscovaginae*. They produce respectively the toxins helvolic acid and cerulenin and cyclic lipopeptides. As these pathogens cause similar symptoms, we compared their interaction with the host. Phytohormones were measured at different time points during infection using HPLC-ESI-MS/HRMS. Both pathogens triggered abscisic acid (ABA), jasmonic acid (JA) and 12-oxo-phytodienoic acid (OPDA). For *S. oryzae*, these levels correlated with *in planta* helvolic acid production, severity of sheath rot symptoms and loss in grain production. Although ABA, JA and OPDA are known for their defense-regulatory role, they do not act as resistance factors during *S. oryzae* infection. Both the ABA and JA pathway, however, are known to interfere with seed setting and filling by interrupting source-sink relationships. We hypothesise that the toxins produced by *S. oryzae* and *P. fuscovaginae* increase ABA, JA and OPDA levels, resulting in lower grain yields. We are currently investigating the correlation of these phytohormones with symptoms caused by *P. fuscovaginae*. Moreover, we study the role of the microbial toxins in these host manipulations by using knock-out mutants in both pathogens.