Mycosphaerella fijiensis, the devastating Black Sigatoka pathogen of bananas

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Mycosphaerella fijiensis is the causal agent of black leaf streak disease, commonly known as black Sigatoka, the most devastating foliar disease in bananas. Together with *M. musicola* and *M. eumusae, M. fijiensis* forms the Sigatoka disease complex. *M. fijiensis* is present in almost all banana plantations around the world, is highly diverse and has outcompeted *M. musicola,* which now only appears in cooler highlands. *M. eumusae,* on the other hand, has been recorded only in Asia and Africa, where bananas are a major staple food. *M. fijiensis* reduces the photo synthetic capacity of plants easily reducing yields by 50%. Moreover, it induces premature ripening that results in substantial post harvest damage as such fruits are unfit for export. Due to the high disease susceptibility of Cavendish banana cultivars the mere disease control option is the use of fungicides. The frequency of fungicide applications on banana crops has reached extraordinary levels with frequently over 50 applications per year. Apart from clear environmental and worker safety disadvantages, this also boosts fungicide resistance development. In order to reduce pesticide inputs we have initiated the Pesticide Reduction Program for Banana (PRPB) that is a multidisciplinary research program aiming at 50% reduction in 10 years. PRPB also invests in genotyping and phenotyping tools for *M. fijiensis,* including *Agrobacterium tumefaciens-mediated* transformation (ATMT). We initially focused on the generation of GFP/RFP mutants that were validated by (quantitative) viability analyses under *in vitro* and *in vivo* conditions using Fluorescence Protein Imaging® software. We conclude that the developed ATMT protocol is robust and indispensable for functional genomic analyses in *M. fijiensis.*