

*Insights in the epidemiology and diversity of *Fusarium oxysporum* f. sp. cubense, the causal agent of Panama disease in banana*

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Panama disease or Fusarium wilt of banana draws global attention. The currently developing epidemic of the so-called Tropical Race 4 (TR4) is caused by a single clone represented by vegetative compatibility group 01213. It is reminiscent of the previous epidemic that wiped out 'Gros Michel' bananas in Central America, which pushed the banana industry into bankruptcy. The epidemic was eventually quenched by cultivating 'Cavendish' bananas, which are resistant to the so-called Race 1 strains that caused the epidemic in 'Gros Michel'. The industry revived and thrives by the success of 'Cavendish' that has developed into a global monoculture. The emergence of TR4 wipes out 'Cavendish' plantations in South East Asia, where the disease spreads along with banana plantations expansions and from where it has spread into the Near and Middle East and Africa. Banana production in many regions is at stake and

there are no sustainable solutions available. Our research focuses on the international complexity and addresses mostly genetic diversity in host and pathogen as well as epidemiological aspects embedded in multidisciplinary programs. We have used genotyping by sequencing technologies to describe global and regional diversity in the causal agent *Fusarium oxysporum* f.sp. *cubense* (Foc) and have phenotyped hundreds of banana accessions with various Foc genotypes. Methods to rapidly detect - particularly TR4 - and manage the disease have been developed to slow down the epidemic. This provides the necessary time for developing durable solutions that also contribute to break the hegemony of the global 'Cavendish' monoculture by introducing a diversified panel of banana cultivars. The latest developments will be presented and discussed.