



The global Threat of Tropical race 4: Research Advances and Further Developments”

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Panama disease hits global banana production again. A new highly pathogenic strain of the devastating causal agent *Fusarium oxysporum* f.sp. *cubense* (Foc), commonly called Tropical Race 4 (TR4), infects Cavendish bananas as well as many local varieties, thereby threatening global banana production. We have genotyped all Foc vegetative compatibility groups (VCGs) using high-resolution genome wide techniques. This has resulted in unique fragments enabling the development of precise molecular diagnostics that return results in minutes compared to VCG analyses that can take months. Moreover, these diagnostics can be used in quantitative assays that enable the evaluation of resistance in plants as well as the efficacy of control measures of TR4 in complex substrates such as water and soil. Using these technologies we have analyzed recent incursions into Jordan, Lebanon and Pakistan and compared TR4 strains from these countries with strains from other geographical areas, and complemented the genotyping data by re-sequencing. The generated data show that TR4 - likely - represent a single clonal lineage that disseminates globally. This underscores the importance of awareness campaigns and through quarantine practices to avoid new continental leaps, which will have dramatic effects on producers and linked industries, similar to the previous Panama disease epidemic in Latin America in the previous century. The latest data will be presented and discussed.

Keywords: *Musa* spp., *Panama disease*, *Fusarium oxysporum* f.sp. *cubense*