

421- Dispersal processes underlying the recent pandemic caused by the plant pathogenic fungus  
*Mycosphaerella fijiensis*

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How plant pathogenic fungi spread is the first question to consider for understanding the emergence of diseases caused by such organisms. *Mycosphaerella fijiensis* causing the black leaf streak disease of banana is an example of a recent pandemic in agriculture and a good model to address this question in the case of an aerial plant pathogen. The pandemic started around 1960 from the South-East Asia. Samples from various populations around the world at different geographical scales were analyzed using nuclear sequence-based and microsatellite markers. Demographic events (founder effects or admixture) were detected at global and continental scales following introductions of the disease. These introductions were more likely due to movement of infected plant materials. At lower scale, the structure of the *M. fijiensis* populations in two recently (~1979-1980) colonised areas in Costa Rica and Cameroon was analysed. Genetic differentiation and isolation by distance (IBD) were detected in both countries along a ~250-300km-long transect, suggesting continuous range expansion through gradual dispersal of spores over a few hundred kilometres. Furthermore, a discontinuity in gene frequencies was observed along the Cameroon transect. A landscape genetic study was recently conducted around this discontinuity. No landscape features matched the genetic discontinuity supporting it could result from a demographic event during the spread of *M.fijiensis* in the country rather than a physical barrier impeding contemporary gene flow. The genetic structure observed in *M. fijiensis* populations at different geographical scales has allowed a better understanding of dispersal processes in such an organism