Reconstructing invasion routes is a key step towards understanding the ecological and evolutionary factors underlying the worldwide invasion success of *Mycosphaerella fijiensis*, responsible of Black leaf streak disease of bananas. Genetic studies based on molecular analyses with neutral markers (microsatellites and sequence-based markers) were set up on a worldwide collection constituted by 735 individuals from 37 countries and on a Caribbean collection of 1800 individuals from 30 countries. Analyses designated South-East Asia as the source of the global invasion and supported the location of the center of origin of *M. fijiensis*. It suggested human-mediated introductions into continents with a successful single introduction in Africa and multiple introductions followed by admixture in Latin-America. In the Caribbean, two invasion pathways were first suggested and probable introduction pathways were proposed.