



ISHS/ProMusa symposium

*Bananas and plantains:
Toward sustainable global production
and improved uses*

Bahia Othon Palace Hotel, Salvador, Bahia, Brazil
10-14 October 2011

Abstracts



Co-organized by:



Session 1 - Short oral presentations

Risk Assessment of Black Leaf Streak Based on Probability Models of Climatic Data Adjusted with Spline Functions

H. do N. Bendini¹, P.E. Cruvinel², W. da S. Moraes³ and S.H. Modenese-Gorla da Silva³

¹Federal University of São Carlos – UFSCar; ²Embrapa Agricultural Instrumentation; ³University of São Paulo – UNESP

Keywords: Banana, satellite image, *Mycosphaerella fijiensis*

Black leaf streak, caused by *Mycosphaerella fijiensis* Morelet, has been causing serious damage to banana crops in most banana-producing areas of the world and also losses in fruit yield and quality, resulting in significant financial losses. This disease affects the leaves, causing brown streaks and black, necrotic spots, which reduce green-leaf, photosynthetic area. Currently, the main methods of controlling the disease are fungicides and using more resistant varieties. As an alternative, an ex-ante risk-analysis can be considered, which may improve black leaf streak control. Thus, it is necessary to study the climatic conditions that favour the occurrence of the disease, with the aim of identifying regions and periods with conditions most favourable to its occurrence, increasing the chances of prediction and optimizing the frequency and also the range of fungicide applications. Moraes and collaborators (2005) have developed a deterministic model based on climatic conditions to predict the likelihood of a black leaf streak outbreak. This paper presents the development of a probabilistic model based on the use of cubic spline functions in order to estimate the risk of black leaf streak occurrence, based on plant and environmental intrinsic factors. A case study has been conducted by using the weekly disease and weather monitoring in a commercial banana crop located in Jacupiranga, Vale do Ribeira, Brazil. In the presented research, remote sensing has been used to generate maps that show the risk of black leaf streak occurrence. The methodology developed proved to be feasible and promising for detecting periods and places that favour the occurrence of black leaf streak. Results support the implementation of early-warning systems or disease management programs that minimize energy use, mainly due to reduced fungicide use, resulting in economic and environmental gains.