

Comparison of Three Inoculation Techniques for Pathogenicity Tests on Fusarium Wilt of Banana

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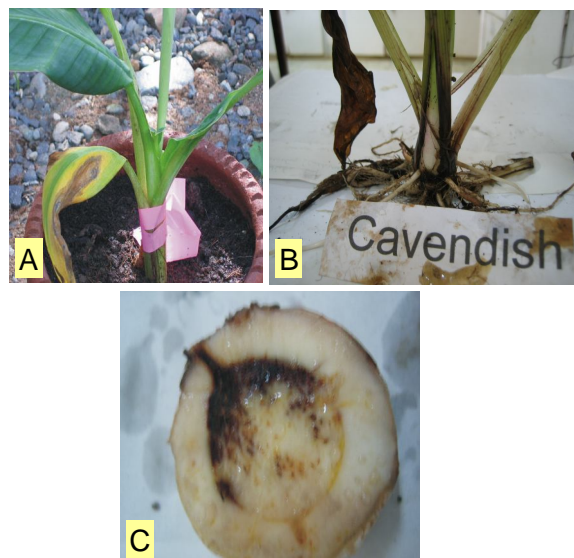
Introduction

Fusarium wilt of bananas, caused by *Fusarium oxysporum* f. sp. *cubense* (Foc), is one of the most devastating diseases of banana.

The recent confirmation of the occurrence of Tropical Race 4 of *Fusarium oxysporum* f. sp. *cubense* (Foc TR4) in the Philippines (Molina *et al.*, 2008) is of great concern to the banana industry. Understanding the virulence of the various Foc VCG's and/or relative susceptibility/resistance of various banana cultivars are important research areas. A reliable and accurate screenhouse inoculation and assessment protocol is needed. This study was conducted to compare three inoculation techniques, namely: (1) root-dipping technique as described by Mohammed *et.al*, 1999; (2) spore-pouring technique by Hwang and Chao, 1999; and (3) corn-meal sand inoculum technique by Magnaye *et.al*, 1969.

Results

Disease symptoms were expressed by the inoculated Cavendish banana plantlets. Yellowing of the older leaves was first observed on the inoculated plantlets one week after inoculation followed by petiole collapse and splitting of pseudostem. Disease severity varied on the three techniques used.



External (A and B) and internal (C) symptoms exhibited by the inoculated plantlets

Methodology



Isolation of Foc isolate from infected Cavendish plants



Preparation of two month old Cavendish (AAA) plantlets



Inoculation of test plants comparing the three known inoculation techniques



Root Dipping Method
Mohammed *et.al* 1999

Roots dipped in spore suspension (5×10^5 spores/ml) for 2 hours before planting



Spore Pouring
Hwang and Chao 1999

2 ml of spore suspension (5×10^5 spores/ml) was poured at the base of the test plants



Corn Meal Sand Inoculum
Magnaye *et.al* 1969

200 grams of corn meal sand medium evenly distributed into the roots of test plants

Disease Severity Index (DSI) of Cavendish using the three inoculation techniques

Technique	No. Plants inoculated	No. of Plants Infected	Disease Severity Index (DSI)	
			Leaf Symptom Index (LSI)	Rhizome Discoloration Index (RDI)
Root Dipping	20	18	2.6	4.8
Spore Pouring	20	16	1.7	1.9
Corn Meal Sand inoculum	20	18	3.1	6.2

Conclusion and Recommendation

Corn meal sand inoculum by Magnaye *et al.*, 1969 gave the highest Disease Severity Index (DSI) among the three techniques. This maybe recommended to be used for pathogenicity/ virulence studies of Fusarium wilt on banana.

Data from the infected plantlets were taken 1 to 5 weeks after inoculation. Total percentage infection and Disease Severity Index (DSI) were computed based on the Leaf Symptom Index (LSI) and Rhizome Discoloration Index (RDI) as described by Mohammed *et. al.*, 1999.

Literature Cited

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