

Contents

Part I Mutation Induction

1	Induced Mutagenesis and <i>In Vitro</i> Mutant Population Development in <i>Musa spp.</i>	3
	Joanna Jankowicz-Cieslak, Florian Goessnitzer, Bradley J. Till, and Ivan L. Ingelbrecht	
2	Gamma Irradiation of Embryogenic Cell Suspension Cultures from Cavendish Banana (<i>Musa spp.</i> AAA Group) and <i>In Vitro</i> Selection for Resistance to Fusarium Wilt	21
	Chunhua Hu, Yuanli Wu, and Ganjun Yi	

Part II Fusarium TR4 Screening Technologies

3	Pre-Screening of Banana Genotypes for Fusarium Wilt Resistance by Using an <i>In Vitro</i> Bioassay	33
	Yuanli Wu and Ganjun Yi	
4	<i>In Vitro</i> Based Mass-Screening Technique for Early Selection of Banana Mutants Resistant to Fusarium Wilt	47
	Behnam Naserian Khiabani	
5	An Optimised Greenhouse Protocol for Screening Banana Plants for Fusarium Wilt Resistance	65
	Privat Ndayihanzamaso, Sheryl Bothma, Diane Mostert, George Mahuku, and Altus Viljoen	
6	Lab-Based Screening Using Hydroponic System for the Rapid Detection of Fusarium Wilt TR4 Tolerance/Resistance of Banana	79
	Norazlina Noordin, Affrida Abu Hassan, Anis Nadia Mohd Faisol Mahadevan, Zaiton Ahmad, and Sakinah Ariffin	

7 Field Screening of Gamma-Irradiated Cavendish Bananas 97
Gaudencia A. Lantican

Part III Mutation Detection Using Genomics Tools

**8 Mutation Detection in Gamma-Irradiated Banana Using Low
Coverage Copy Number Variation 113**
Joanna Jankowicz-Cieslak, Ivan L. Ingelbrecht, and Bradley J. Till

**9 A Protocol for Detection of Large Chromosome Variations
in Banana Using Next Generation Sequencing 129**
Catherine Breton, Alberto Cenci, Julie Sardos, Rachel Chase,
Max Ruas, Mathieu Rouard, and Nicolas Roux

Part IV Low-cost *In Vitro* Methods for Banana Micropropagation

10 Low-Cost *In Vitro* Options for Banana Mutation Breeding 151
Babita Jhurree-Dussoruth

**11 Protocol for Mass Propagation of Plants Using a Low-Cost
Bioreactor 177**
Affrida Abu Hassan, Norazlina Noordin, Zaiton Ahmad,
Mustapha Akil, Faiz Ahmad, and Rusli Ibrahim