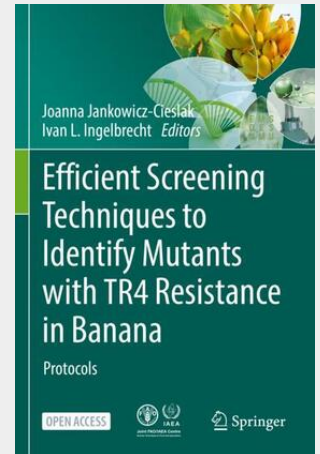


Efficient Screening Techniques to Identify Mutants with TR4 Resistance in Banana

Protocols

Bananas are a staple food for over 500 million people and are also an important cash crop. Fusarium wilt, caused by the fungus *Fusarium oxysporum* f.sp. *cubense*, is one of the most destructive diseases of banana globally. Since the 1990s, an aggressive variant of this fungus, called Tropical Race 4 (TR4), severely affected banana plantations in Southeast Asia from where it spread to other continents, including Latin America, where the global banana export market is primarily centred. TR4 is a soil borne pathogen making the disease difficult to contain. The Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture implemented a Coordinated Research Project (CRP) 'Efficient Screening Techniques to Identify Mutants with Disease Resistance for Coffee and Banana' (2015-2020). This CRP brought together experts from Asia, Europe and Africa in addition to experts of the Joint FAO/IAEA Centre to develop resistance against TR4 through mutation-assisted breeding. Induced mutagenesis is particularly attractive in case of banana since most cultivated bananas are seedless, thus hampering conventional cross breeding. This Open Access book is a compilation of the protocols developed under the CRP specifically for TR4. The first part covers methods for mutation induction, including the integrated use of innovative single-cell culture with mutagenesis techniques. The book also describes up-to-date phenotypic screening methods for TR4 resistance in banana under field-, greenhouse- and laboratory conditions. Finally, molecular and bioinformatics tools for genome-wide mutation discovery following Next Generation Sequencing are also described. Given the imminent threat of Fusarium Wilt TR4 on banana production globally, it is our hope and intention that the book will serve as a timely reference and guide for banana breeders and pathologists worldwide who are committed to the genetic improvement of banana for Fusarium wilt resistance.

Bananas are a staple food for over 500 million people and are also an important cash crop. Fusarium wilt, caused by the fungus *Fusarium oxysporum* f.sp. *cubense*, is one of the most destructive diseases of banana globally. Since the 1990s, an aggressive variant of this fungus, called Tropical Race 4 (TR4), severely affected banana plantations in Southeast Asia from where it spread to other continents, including Latin America, where the global banana export market is primarily centred. TR4 is a soil borne pathogen making the disease difficult to contain. The Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture implemented a Coordinated Research Project (CRP) 'Efficient Screening Techniques to Identify Mutants with Disease Resistance for Coffee and Banana' (2015-2020). This CRP brought together experts from Asia, Europe and Africa in addition to experts of the Joint FAO/IAEA Centre to develop resistance against TR4 through mutation-assisted breeding. Induced mutagenesis is particularly attractive in case of banana since most cultivated bananas are seedless, thus hampering conventional cross breeding. This Open Access book is a compilation of the protocols developed under the CRP specifically for TR4. The first part covers methods for mutation induction, including the integrated use of innovative single-cell culture with mutagenesis techniques. The book also describes up-to-date phenotypic screening methods for TR4 resistance in banana under field-, greenhouse- and laboratory conditions. Finally, molecular and bioinformatics tools for genome-wide mutation discovery following Next Generation Sequencing are also described. Given the imminent threat of Fusarium Wilt TR4 on banana production globally, it is our hope and intention that the book will serve as a timely reference and guide for banana breeders and pathologists worldwide who are committed to the genetic improvement of banana for Fusarium wilt resistance.



42,79 €

39,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783662649176

Medium: Buch

ISBN: 978-3-662-64917-6

Verlag: Springer

Erscheinungstermin: 01.06.2022

Sprache(n): Englisch

Auflage: 1. Auflage 2022

Produktform: Kartoniert

Gewicht: 318 g

Seiten: 187

Format (B x H): 155 x 235 mm

