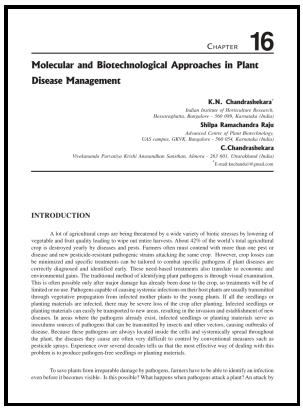
Handbook of molecular technologies in crop disease management

Food Products Press - Diseases of Field Crops and Their Management PDF Book



CHAPTER 16

Molecular and Biotechnological Approaches in Plant Disease Management

K.N. Chandrashekara*
Indian Institute of Horticulture Research, Hesseraghatta, Bangalore - 560 089, Karnataka (India)
Shilpa Ramachandra Raju
Advanced Centre of Plant Biotechnology, UAS campus, GKVK, Bangalore - 560 054, Karnataka (India)
C.Chandrashekara
Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora - 263 601, Uttarakhand (India)
*E-mail: kechandu@gmail.com

INTRODUCTION

A lot of agricultural crops are being threatened by a wide variety of biotic stresses by lowering of vegetable and fruit quality leading to wipe out entire harvests. About 42% of the world's total agricultural crop is destroyed yearly by diseases and pests. Farmers often must contend with more than one pest or disease and new pesticide-resistant pathogenic strains attacking the same crop. However, crop losses can be minimized and specific treatments can be tailored to combat specific pathogens if plant diseases are correctly diagnosed and identified early. These need-based treatments also translate to economic and environmental gains. The traditional method of identifying plant pathogens is through visual examination. This is often possible only after major damage has already been done to the crop, so treatments will be of limited or no use. Pathogens capable of causing systemic infections on their host plants are usually transmitted through vegetative propagation from infected mother plants to the young plants. If all the seedlings or planting materials are infected, there may be severe loss of the crop after planting. Infected seedlings or planting materials can easily be transported to new areas, resulting in the invasion and establishment of new diseases. In areas where the pathogens already exist, infected seedlings or planting materials serve as inoculums sources of pathogens that can be transmitted by insects and other vectors, causing outbreaks of disease. Because these pathogens are always located inside the cells and systemically spread throughout the plant, the diseases they cause are often very difficult to control by conventional measures such as pesticide sprays. Experience over several decades tells us that the most effective way of dealing with this problem is to produce pathogen-free seedlings or planting materials.

To save plants from irreparable damage by pathogens, farmers have to be able to identify an infection even before it becomes visible. Is this possible? What happens when pathogens attack a plant? An attack by

Description: -
-
Chemistry, Inorganic.
Water -- Analysis.
Islands -- Fiction.
Magic -- Fiction.
Labor laws and legislation -- Europe, Eastern.
Forced labor -- Europe, Eastern.
Plant-pathogen relationships -- Molecular aspects
Phytopathogenic microorganisms -- Control
Plant diseases -- Molecular aspectsHandbook of molecular technologies in crop disease management
-Handbook of molecular technologies in crop disease management
Notes: Includes bibliographical references and index.
This edition was published in 2006

Filesize: 25.68 MB

Tags: #Biotechnology #in #Plant #Disease #Control

Molecular Diagnostic Pcr Handbook PDF Book

They are used in a wide range of agricultural areas such as, improving soil and water management; producing better crop varieties; diagnosing plant and animal diseases; controlling insect pests and improving food quality and safety.

A review of advanced techniques for detecting plant diseases

This formed the basis for a search of the candidate gene from the pathogen itself.

Biotechnology in Plant Disease Control

Typical candidate genes are that encoding chitinases and ß-1,3 glucanases. Candidate genes against bacterial pathogens Xa21, a wide-spectrum bacterial blight resistance gene sourced from an African rice, Oryza longistaminata was backcrossed into a cultivated variety by scientists of the International Rice Research Institute, the Philippines IRRI. Due to the addition of PEG there is adhesion of protoplast to their neighbors which can be assessed by microscope.

A review of advanced techniques for detecting plant diseases

Early information on crop health and disease detection can facilitate the control of diseases through proper management strategies such as vector control through pesticide applications, fungicide applications, and disease-specific chemical applications; and can improve productivity. Molecular biology in plant pathogenesis and disease management disease management volume 3 vol 3 narayanasamy isbn 9781402082467 kostenloser versand fur alle bucher mit versand und verkauf duch amazon.

Read Download Molecular Methods In Plant Disease Diagnostics PDF

The technique used is called ELISA enzyme-linked immunosorbent assay.

A review of advanced techniques for detecting plant diseases

In the older tissues, the titre of the viruses increases with increasing distance from the meristem tips. Significant yield losses due to the attack of pathogen occur in most of the agricultural and horticultural crop species.

Biotechnology in Plant Disease Control

It has long been observed that the rapidly growing meristems of plants are usually free of viruses, or at least have much lower concentration of viruses than nonmeristem cells. These proteins may play a direct role in defense by attacking and degrading pathogen cell wall components. The crucial factor in the success of biological control by fluorescent pseudomonads is their ability to colonize the rhizosphere and their persistence throughout the growing season.

Related Books

- Experimental algorithmics - from algorithm design to robust and efficient software
- After lives - legacies of revolutionary writing
- Conflicts and new departures in world society
- 0330334158 D T Childs Week Joke Bk Dailt Telegraph
- Nawādir al-fuqahāʾ