

Preface

Fusarium Head Blight (FHB) is one of the most severe disease affecting wheat crops worldwide. The main pathogen associated to the disease, *Fusarium graminearum* sensu stricto (Schwabe), can survive on stubble, and under favorable environmental conditions can infect wheat spikes. Different strategies have been proposed for managing FHB in order to reduce the losses on yield and quality and food safety due to the accumulation of mycotoxins. Among these strategies we can mention cultural practices (type of tillage, crop rotation), fungicides application, use of less susceptible cultivar, identification of rotations least conducive to the built up of inoculum, and biocontrol. The possible control of the pathogen and reduction in toxin accumulation can be achieved through Integrated Pest Management (IPM).

Latin American countries mainly Brazil and Argentina are good wheat producers and exporters. FHB epidemics have occurred in different years, and reduction in yield and deoxynivalenol contamination were observed. These situations cause severe economic losses due to commercial restrictions in the domestic and international markets.

During the last decade, changes in the cultural practices have been done mainly in relation to tillage type. No tillage or reduced tillage are in use in many Latin American countries. This condition can modify the inoculum potential in areas of wheat cultivation.

This book reviews the recent progress in the research on Fusarium Head Blight (FHB) in Latin America, and the information was recompiled from a South America perspective. The book has been organized in six different parts. Part I is devoted to the *Fusarium* populations associated to FHB and includes four chapters which provide description on *Fusarium graminearum* population structure and genotypes and chemotypes in relation to trichothecenes production. Also a chapter about the advances on the knowledge on the eco-physiology of *Fusarium graminearum* isolated from Latin America is included.

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Part II includes two chapters and outlines the mycotoxins produced by *Fusarium* species associated with FHB in South America and the methodology for their detection.

Part III deals with the interaction plant pathogen aspects and includes two chapters. One of them describes the infection progress and the effect of the enzymes in the disease progression and the other chapter provides a general description of proteomic as a tool for studying the pathogen-host interaction.

Part IV provides the advances in the knowledge on the epidemiology of *Fusarium graminearum* and how we can control the disease with the control of the inoculum through the management of the residues.

Part V includes four chapters. The first chapter describes the integrated disease management as a tool to control Fusarium Head Blight. The second chapter deals with the use of fungicides and their application to control FHB. The third chapter presents the advances on biological control as part of an integrated disease management to control both the disease and deoxynivalenol accumulation. This part also includes a chapter dealing with modeling and forecasting systems as a tool to reduce the impact of FHB and DON accumulation from a South American experience.

Part VI summarizes the advances in South America on selection of cultivars less susceptible to Fusarium Head Blight and deoxynivalenol accumulation including field screening, marker assisted selection, and sources of resistance to FHB from alien species.

We hope that this book will provide useful information for researchers, graduate students and professionals that are dealing with the pathogen in the area of plant pathology, food industry and mycotoxicology.

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