Book review

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Fusarium Mycotoxins: Chemistry, Genetics and Biology, by A. E. Desjardins. 260 pp. St Paul, MN, USA: American Phytopathology Society (2006). US$89 (hardback). ISBN 0-89054-335-6.

Fusarium species are economically important plant pathogens that have attracted significant interest because of the battery of toxic secondary metabolites that they can produce. This is because for many decades they have been implicated in outbreaks of so called Alimentary Toxic Aleukia in Russia and Central Asia (1930s), human toxicosis in Japan due to consumption of discoloured cereals (Akakakabibyo, also 1930s) to the Yellow rain controversy in Southeast Asia where it was claimed that toxic chemicals were being used, although it was later suggested that this could have been mainly due to pollen deposition by honeybees. The discovery and analyses of the fumonisin group of mycotoxins in the early 1990s from *Fusarium* section *Liseola* species contaminating maize provided further impetus to research on *Fusarium* species and their toxic secondary metabolites. The potential impact on humans and animals has also been a driver for legislative limits being imposed on a number of food raw materials worldwide. Indeed, the EU has only last year introduced legislative limits on deoxynivalenol (a trichothecene mycotoxin) in a range of cereals.

This comprehensive volume is an attempt to bring together much of the relevant information on *Fusarium* species by considering groups of mycotoxins in concise chapters. For example, the trichothecene group of toxins are dealt with firstly in terms of some case histories, followed by their importance in different continents, then by the chemistry, genetics and biology. Similar chapters follow on the zearalenones and fumonisins. The subsequent two chapters deal with other groups of secondary metabolites produced by some *Fusarium* species. The final chapter summarizes each of the different species from a more morphological and taxonomic view.

The sections on chemistry and on the biosynthetic pathways and gene clusters involved in tricothecene, zearalenone and fumonisin production are particularly interesting. The author has, herself, been a key scientist responsible for some of the advances made in understanding the gene clusters (e.g. tri genes; fum genes) involved in mycotoxin production and these aspects are comprehensive and very clearly presented. The biology aspects are well covered, especially where knock out mutants have been used to determine the potential role of the relevant mycotoxin in actual infection of plants and pathogenicity in different cereal systems. This is a fast moving research field with the availability of the whole genomic sequences for *Fusarium graminearum* and *Fusarium verticillioides* now available. As the author quite rightly points out, this will enable more focused approaches to understanding the physiology of host–pathogen infection by identifying the up and down regulated genes and perhaps help in the more rapid development of resistant varieties.

Overall, this is a very timely volume which brings together most of the relevant available information to help understand this important group of mycotoxigenic moulds. It is almost free of errors and is relatively accessible to the reader. I believe it will be particularly useful to undergraduate and postgraduate students to obtain the necessary knowledge on this group of plant pathogens and spoilage moulds.

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