

**Bacterial Disease Resistance in Plants: Molecular Biology and Biotechnological Applications.** P. Vidhyasekaran. Food Products Press, An Imprint of Haworth Press, Inc., 10, Alice Street, Binghamton, NY 13904-1580. USA. 2002. 452 pp. Price: US \$ 59.95

Bacterial plant diseases cause huge economic losses in several countries across the globe. Several bacterial diseases like citrus canker, moko wilt of banana, cotton black arm, apple fire blight, soft rot of potato and other vegetables affect the national economies of many countries. These diseases are widespread in North and South America, Europe and Asia. Bacterial blight of rice is one of the most important bacterial diseases in India, causing a yield loss of 2–81%. Chemical control of bacterial diseases is almost impossible, as antibiotics are not recommended due to development of antibiotic-resistant strains. Development of resistant varieties has resulted in limited progress because few resistant genes have been identified and the bacterial diseases are mostly race-specific. Several races of the pathogen exist and the resistance breaks down in the field. The interaction of plants and bacterial pathogens is a carefully regulated process at the level of transcription. Thus an understanding of the molecular basis of interaction between pathogenic bacteria and plants is important for designing new strategies for controlling bacterial plant diseases. During the past decade, molecular biology of bacterial pathogenesis has received a lot of attention, and several universities and organizations around the world have taken up intensive research programmes with the aim of developing new strategies for bacterial disease management.

There are few authentic compilations with systematic coverage of all the important areas of plant bacterial interaction at the molecular level. The book under review is a timely contribution in understanding molecular aspects of bacterial plant diseases. It also gives an excellent outline of research needed to exploit molecular biological tools for bacterial plant disease management.

The book has six chapters. Each chapter has a detailed overview of topics covered for easy understanding. Chapter one covers the molecular recognition process between the plant and the bacteria. The review also covers bacterial genes and their transcriptional up-regulation invol-

ved in the recognition process. Signal transduction involved in bacterial pathogenesis is also discussed. Bacterial elicitors and their role in host recognition and resistance development have also been discussed. Chapter two gives an in-depth review of host defence against bacterial plant pathogens, structural cell-wall modifications, cell-wall proteins and their genes and regulation. The role of bacterial extracellular enzymes in induction of defence responses and in virulence has been reviewed in detail. The section describing virulence genes and polygalacturonase-inhibiting proteins has been well presented.

The role of active oxygen species (AOS) in bacterial disease with an emphasis on mechanism of production, regulation and possible role in disease resistance has been reviewed in chapter three. Although AOS are toxic to bacteria, many bacteria have developed mechanisms to protect themselves from toxic AOS. The role of bacterial elicitor molecules in triggering host antioxidant enzymes which detoxify AOS has been reviewed.

Chapters four and five are devoted to the role, occurrence and mechanism of induction of plant proteins and secondary metabolites like PR proteins, HRGPs, lectins and phytoalexins in bacterial plant disease resistance. The sections covering PR proteins are especially well written, with the review including classification, occurrence, properties and the role of individual PR proteins in bacterial disease resistance.

The last chapter unravels several new biotechnological options to manage bacterial diseases in plants based on the knowledge of molecular basis of disease resistance. This chapter gives an excellent overview of manipulation of signal transduction and resistant genes for creating bacterial disease resistance through transgenic technology. Several transgenic crops expressing defence genes targeted against bacterial plant pathogens have been listed. An exhaustive list of introduced traits and the defence proteins induced through transgenic has been well reviewed. Newer and alternative approaches for disease control, like activation of disease resistance and development of immunity against bacteria, have also been covered. Several biotic and abiotic inducers of host defence response have been listed with their mode of action. Successful reports on the use of anti-bacterial proteins from bacteriophages, humans, insects and birds that have been transferred to

plants are discussed. The concluding chapter also focuses on the disadvantages of using transgenic plants to control bacterial diseases and the technologies needed to overcome these disadvantages.

This is an excellent book and contains a wealth of information in a consolidated form. The book covers a vast area ranging from basic research to molecular applications in disease control. The coverage of the text is exhaustive and is resourced from a vast array of related scientific literature, as evident from more than 100 pages of reference. The book gives a simple description of many complex processes in bacterial plant disease resistance. The description is simple enough for beginners as well as traditional plant pathologists. The book is well produced, with good quality figures and representations. It has a precisely documented subject index for easy browsing. It will be an invaluable resource for researchers, teachers and students involved in the field of plant pathology.

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**Wine: A Scientific Exploration.** M. Sandler and R. Pinder (eds). Taylor and Francis Books Ltd, P.O. Box 6329, Basingstoke, Hampshire RG 24 8 DR, UK. 2003. 320 pp. Price: US \$ 65.

‘A man wants a drink because it makes a new man out of him. The problem is that the new man wants a drink’. I remember those lines from an old Robert Redford movie, though not the name of the movie. Contrast that with the opening line of the book: ‘There are more old drunkards than old doctors’ . . . , said Benjamin Franklin.’ This multi-author book was a pleasure to read. It does not exactly replace the book of verse so well recommended in the *Rubayats* (which it quotes well enough), but it does eloquently argue for the cup of wine, regardless of who else is with you in the wilderness. There are so many things to talk about wine. The book indulges in many and well.