

## BOOK REVIEWS

**Creating More Effective Graphs.**  
Naomi B. Robbins. John Wiley & Sons,  
111 River Street, Hoboken, NJ 07030,  
USA. 2005. 402 pp. Price: US\$ 64.95.

Science is about measuring and counting, and when it comes to publishing the results of their research, scientists often turn to charts and graphs. One of the reasons for so many poor-quality graphs we see around us, according to Naomi Robbins, the author of the book under review, is that 'we receive much more training in communicating with words than in communicating with numbers'.

Robbins sets out to write a quick and easy-to-read book with four clear objectives and succeeds in achieving all of them. (i) How to make clear and accurate graphs that improve understanding of data. (ii) How to avoid common problems that cause graphs to be ineffective, confusing, or even misleading. (iii) When to use new graphing techniques to simplify complex data presentation. (iv) How to be more critical and analytical when viewing graphs.

The book is an admirable mix of theory and practice. Understanding statistical graphs and drawing valid conclusions from them demand visual judgements. Citing research that evaluated relative accuracies of such judgements, Robbins tells us that, for instance, we judge lengths more accurately than areas, and areas more accurately than volumes. We also tend to underestimate acute angles and overestimate obtuse angles. Such research on cognition provides the underpinning of the author's recommendations about how to make statistical charts more effective.

Given that most scientists prepare their own charts using commonly available software packages, a scrutiny of how each interprets numerical data to convert them into a visual form is another welcome feature of the book. Three-dimensional bar charts, for example, provide two different markers for estimating the value of a variable they represent along the vertical axis. As readers can visualize, the top of a three-dimensional bar is a diamond. Now, is it the top edge of the diamond that represents the value or is it the bottom edge? The author tells us that even 'PowerPoint and Excel, two programs that come packaged together in the same suite, use different algorithms to plot their graphs'.

Although not a straightforward book to design, not allowing text and illustrations to share pages has proved awkward: p. 39, for instance, carries fewer than twenty-five words. Perhaps for commercial reasons the publisher chose a spacious design, which devotes more than a fifth of the page-depth to the header and footer to make a respectable-looking volume of more than 400 pages. The length may have played no role in the price (US \$65), but it puts the book, which deserves to be on the desk of every researcher and postgraduate student, beyond the reach of most libraries in India—a pity, unless the publisher thinks of a special Indian edition.

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### **Crop Diseases and their Management.**

H. S. Chaube and V. S. Pundhir. Prentice Hall of India, M-97 Connaught Circus, New Delhi 110 001. 724 pp. Price: Rs 395.

Major world crops are functioning at only 15–20% of their potential. Therefore, we must judge world agriculture sick. Its sickness is not caused by lack of genetic yield potential, but by biotic and abiotic sources of stress that limit the crop production.

– J. A. Browning, 1998

The purpose of the authors Chaube and Pundhir to write this book is to provide basic and emerging facts whereby undergraduate and postgraduate students may be introduced to the scientific foundation of plant pathology. This subject has expanded tremendously. Pathogenesis and ways by which plants defend themselves are now relatively better understood. Advances in molecular plant pathology are providing appropriate diagnostic techniques for identification of causal agents and diseases. Our knowledge of understanding the genetics of host–parasite interaction has helped in evolving effective tactics of strengthening resistance of host plants. New tools and techniques of molecular biology are being appropriately used and appropriate genes could be successfully introduced in plants and microorganisms.

Keeping in view the developments in this discipline, the authors undertook the task of writing an updated textbook. This textbook comprises three parts covering principles of plant pathology, principles of plant disease management, and comprehensive treatments of better known representative plant disease.

This book deals with information on etiology, symptoms, pathogenesis and scientifically justified, but most important of all is, they are useful as they help in formulation of methods developed for successful management of disease and thereby increasing the quantity and improving the quality of plant and plant products. Practices of disease management vary considerably from one disease to another depending upon the type of pathogen, host and biotic and abiotic factors involved. Contrary to management of human and animal diseases, where every individual is attended to, plants are generally treated as populations and measures used are preventive rather than curative.

The first part of the book comprises principles of plant pathology, like landmarks in development of plant pathology, disease development, mechanism of host defence, genetics of host–pathogen interaction and disease forecasting. Pathogens are the biotic agents that usually cause diseases in plants by disturbing the metabolism of plant cells through enzymes, toxins, growth regulators and other substances that they secrete and by absorbing foodstuff from the host cell for their own use.

The second part consists of principles of plant disease management. Effective and economical management is the ultimate goal of the science of plant pathology. Precise and correct diagnosis of the disease and its causes are a must for effective management. It is simply because of the fact that the line of treatments could be precisely decided only after correct diagnosis. For example, if smuts, bunts and rusts are the diseases, the user can and should opt for Oxathiin compounds. Similarly, if Downey mildew is damaging the crop, Metalaxyl can be recommended directly. Many a time pollutants and phytotoxicity of pesticides create symptoms that resemble diseases caused by phytopathogenic bacteria.

Similarly, these are situations with complex diseases having association of more than one causal agent. What is needed today for effective, sustainable and eco-