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Book review

**Handbook of Citrus By-products and Processing Technology**

Robert J. Braddock, 1999, John Wiley & Sons, Chichester, UK, ISBN 0471190241, Price: £58.50

The State of Florida has long been associated with the production of citrus fruits, and hence it is no suprise that the author of this book is based at the University of Florida. What is unexpected though is the extent of the coverage, for within some 230 pages, the author has dealt with every conceivable aspect of citrus processing.

The initial chapters deal with the growing of citrus fruit as well as the chemical composition of selected types, eg. Valencia oranges, grapefruits and tangerines. The extraction, handling and properties of fresh, pasteurised and frozen juices are discussed at some length, and mention is made also of the potential of some novel technologies for the non-thermal inactivation of microorganisms in juices. Some data on the use of high pressure and pulsed electric fields are given, but it was disappointing that the current interest in short-wave ultraviolet light was not assessed.

The second half of the book is devoted to the extraction and utilisation of the byproducts of fruit processing. The recovery of obvious materials like essential oils and pectin is covered, as is the derivation of conversion products like wine and protein-enriched biomass, but one of the problems with this otherwise excellent section is that it is difficult for the reader to determine which processes are commercially important and which are merely research interests. For example, the extraction and composition of citrus pectin is described, but the importance of this by-product to the economics of the citrus industry is far from clear. A similar anomaly occurs later in the book, for having raised the reader's interest with an account of the properties of grapefruit seed extracts, the author points out that the last plant in Florida for recovering grapefruit seeds closed down in 1970!

These same sections on the utilisation of by-products are also blighted by one of the weaknesses of the book overall, in that the lists of references at the end of each chapter are not always helpful. For example, there are only 13 references to the chapter on pectin, and 11 of these were published prior to 1990; indeed, one entitled 'Newer applications for pectin' is no less than 20 years old. It may be, of course, that more recent work on pectin of citrus origin has been completed by commercial companies and not been made available, but this paucity of suggestions for further reading is noticeable in other chapters as well — aside from the section on the chemistry of citrus juice which has over 100 references.

Nevertheless, this book does provide an 'easy to read' account of citrus processing for those not familiar with the industry, and the same readership may well be fascinated by some of the alleged properties of citrus fruits and/or by-products; there is even a section on 'mystical substances from citrus'. In short, this book will make an excellent starting point for anyone wishing to know about the handling of oranges and related fruits, and the publishers are to be congratulated on ensuring that the book is priced so as to encourage individual purchases.

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