

Agronomy and nutrition of maize

Mineral Nutrition of Maize. By I. Arnon. Pp. 452. (International Potash Institute: Bern-Worblaufen, Switzerland, 1976.)

THIS excellent volume is really two books in one, covering both agronomy of maize and general plant nutrition and fertiliser use with maize as an example. Following an introductory chapter on the origins, economic importance and botanical characteristics of this crop come several chapters discussing, in some detail, methods for maize production. These include sections on cropping systems, rotations, tillage practice, planting, control of weeds, pests and diseases, irrigation and harvesting.

The author reviews the most recent developments in these—for example, minimum tillage and use of herbicides—and draws together information from many parts of the world in discussing their impact on maize growing. A brief chapter on the general nutritional requirements of maize leads to a treatment of the nutrient supplying power of soil and the dynamics of nutrient uptake that would not be out of place in a soil science textbook.

The author is to be congratulated on the clear way in which relatively new concepts of the plant-root system are presented. As the author points out in the foreword, "more fertilisers are probably used for maize than for any other annual crop" and with "its high yield potential, the maize plant has been subjected to more research than most other crop plants". The results of this research have been excellently compiled in chapters dealing with the effects of fertilisers on yields and crop quality, on the important matter of interactions between nutrient elements and on practical aspects of fertiliser use such as soil testing, choice of fertilisers and methods and timing of applications.

Particular attention is paid to the relationship between fertiliser use and the local environment, management practices and maize varieties. Although concentrating on maize, these chapters deal with basic principles of fertiliser use which are relevant to many other crops and situations, making the book valuable even to those not directly interested in maize itself.

The entire book is a fine blend of scientific principles, research findings and practical aspects of crop production that should make it a welcome addition to the bookshelves of anyone

whose interest is in agricultural development. It is well produced, with many graphs, diagrams and tables, and several photographs including some in colour. The only criticism is the lack of an index, or even a list of illustrations, but the overall planning of the chapters makes it relatively easy to find the information required.

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Phosphorus chemistry

The Chemistry of Phosphorus: Environmental, Organic, Inorganic, Biochemical and Spectroscopic Aspects. By John Emsley and Dennis Hall. Pp. xi+563. (Harper and Row: London and New York, July 1976.) £22.50; \$39.50.

SINCE the appearance about fifteen years ago of the monumental two-volume treatise by Van Wazer on *Phosphorus and its Compounds*, there has been a veritable explosion of monographs and series devoted to various aspect of this important element. Sasse, Hudson, Mann, Corbridge, Allcock, Kosolapoff and Maier (seven edited volumes); *Topics in Phosphorus Chemistry*, and *Organophosphorus Chemistry* (Annual Specialists Reports by the Chemical Society) are just a few of these solely devoted to various aspects of this subject.

Phosphorus chemistry in all its branches—biochemical, organic, inorganic, pure and applied—has made very great strides. Even so, one must closely scrutinise the appearance of a new book, particularly in a field in which so many authors with an international reputation have already put pen to paper. This is particularly pertinent at a time, when one has annually the unpleasant task of deciding which journal subscription has to be cancelled and to choose the very few books (from a long list) the library can afford to purchase (most monographs have already priced themselves out of the market for the individual buyer). As a contributor to Kosolapoff and Maier, I am aware of the pitifully small number of volumes of the standard reference treatise in an important field, which have been sold.

Professor Denney, in the preface, mentions that this is the first book attempting to bring together the various aspects of phosphorus chemistry under one cover. This is indeed the case. But for whom is this book in-

tended? Even a devotee of the subject like myself would hesitate to recommend a book of over 500 pages to undergraduates; it is an important and fascinating facet of Chemistry, but so are many others! In any case they could not afford it. The specialist research workers would require considerably more detail than could possibly have been given in a book of this size. A multi-authored multi-volume treatise would be required for them, but at a price at which most libraries would balk.

I found the book easy to read, although traditionalists might object to colloquialisms, such as: "This suggests that what (POPh)₃ loses on the δ swings it gains on the π roundabouts". I have learned something from sections, where my knowledge is cursory; I was disappointed in those the contents of which I know well. Perhaps this is inevitable in a book of this size.

The authors do not state up to which date they have covered the literature; my own impression is up to 1972, with some references either to secondary sources or to some selected research teams beyond that (mainly 1973). This is probably not the authors' fault; there are inordinate delays in the publication processes for both books and journals.

Obviously in a book of this size one cannot please everybody. Westheimer's work on the hydrolysis of cyclic phosphorus esters is covered, but Wolf's work on spiroposphoranes is hardly touched. The section on nuclear magnetic resonance spectra is thin, and no mention is made of Harris' important work on second-order phenomena. The industrially vital phosphates are barely touched; and Corey's work on the Wittig reaction, and Niecke's and Scherer's work on the isolation (of the hitherto only postulated) three-coordinate five-valent phosphorus species receive no mention. Misinterpretations and misquotations of the literature will be found by the expert eye.

In spite of the above criticism, it would be churlish not to acknowledge the tremendous time and effort the authors have expended on their task, and when used with discretion this book will be useful to some readers.

Although I enjoyed reading the book, the lingering doubt remains: whether the treatment of a subject with this scope in mind, would not have been better served as a "Current Awareness" book at a quarter, or even less, of its length and price, which would then have suited undergraduates and the general scientific reader. **R. A. Shaw**

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