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**BOOK REVIEWS**


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**Principles and Practices of Rice Production**—Edited by Surajit K. De Datta, published by John Wiley & Sons Inc., New York 10158. Pages 592. Price not given.

Sri Surajit K. De Datta, an outstanding Rice Agronomist has done a great services to the rice scientists by bringing out a comprehensive publication on the principles and practices of rice production.

Statistical data on production of rice in the world are presented through tables and informative diagrams. The important role of climate on rice production is well brought out through a critical examination of the effect of relevant climatological parameters on the physiology of production. A detailed account is given about the chemistry and nutritional transformation in sub-merged soils, an appreciation of which is essential for fertiliser use and efficiency.

Morphology, growth and varietal improvements of rice are discussed in chapters 5 and 6. Improved practices of rice cultivation are exhaustively reviewed in eight chapters from the 7th to 14th. Special attention has been appropriately drawn to integrated control of rice pests and diseases. The book closes with discussions on constraints on the transfer of technology and possibilities of overcoming the same.

The author's attention is drawn to the following points:

The statement made in page 9 and repeated in 31 regarding latitudes in which rice is grown may need modification in view of the attempt made by Russia in extending rice cultivation upto 55° NL in Vladivostoc region. In page 64 it would be better to substitute *submontane* for *sub-mountain* areas; in page 77 the table 3.11 cited does not record the occurrence of peaty soils in Hokkaido in Japan, or in India in Kerala and in Kashmir.

In page 79, the italicised word "HOARE" may be substituted by "HAGORE (= Sagar = Sea", substituting "S" in local dialect). In page 81 to 84 and perhaps also in another place the moisture stress situation developing in West African rice areas are repeated. The statement of objectives of Indian breeding programme in page 91 lacks authority.

In page 549 it is stated that "in rain fed areas hardly any modern technology is available..." Such a technology is indeed available. Results obtained during the last ten years in dry farming scheme of ICAR at Banaras, Dehradun, Bhubaneswar and Ranchi and the data generated at CRRRI (varieties, fertiliser technology, weed control) do constitute a base for extension work which has to be taken up. This leads to a general criticism that original publications from Indian scientists are hardly cited, with some notable

exceptions, references to Indian work being mostly confined to critical reviews presented at IRR1/CRR1 symposia.

These criticisms do not in any way lessen the significance of the contribution made by the author in throwing light on all aspects of rice production principles and practices. This book should be available in the hands of all rice scientists and libraries in Agricultural Colleges and Research Institutes.

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**Bioresources Ecology**—By T. N. Ananthakrishnan, Oxford & IBH Publishing Co., New Delhi. Pages: 159, Price: Rs. 60/-.

Development without destruction is an objective promoted by ecologists and environmentalists but the complex and multi-dimensional relationships of the diverse components that make up the environment are not easy to comprehend until one goes deep into various aspects of a development programme. What should be developed and what are the likely targets of immediate or eventual destruction or deterioration can only be assessed from a proper knowledge of the earth's biological and other resources. In some countries, an environmental impact statement has to be carefully prepared and submitted to designated authorities for obtaining clearance of new development schemes. A study of the book under review will help the reader to appreciate the need for such foresight and to understand the ramifications of the subject.

The first of the eight chapters of the book analyses the energy transfer and life-support systems that originate from the sun and operate through the biosphere. Factors governing the growth and regulation of populations are dealt with in the second chapter but here the author has chosen examples almost entirely from animal subjects. The next four chapters are devoted to soil, water and forest resources; terrestrial resources such as agricultural crops and insects of commerce; wildlife resources; and marine and freshwater resources. Mangroves, which constitute an important but inadequately known group of plants, are treated in a

separate chapter. The final chapter outlines the principle and design of a biogas plant and summarises other technological methods of obtaining energy from animal wastes and plant material. It also includes a list of plants considered suitable for use in energy production. A select bibliography and a subject index are provided.

It is hoped that, as highlighted in Dr. M. S. Swaminathan's foreword Prof. Ananthakrishnan's concise but thought-provoking book will prove to be a source of very useful information for students, teachers and for all those responsible for preventing further damage to natural ecosystems.

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**Chemical Applications of Nonlinear Raman Spectroscopy**—Edited by Albert B. Harvey, Naval Research Laboratory, Washington D.C., Academic Press, 1981, Pages: xi + 383.

The use of the laser has brought about a resurgence of interest in Raman Spectroscopy and many new Raman phenomena, particularly the Coherent anti-stokes Raman Spectroscopy, have resulted. Considerable excitement has been generated with regard to these new Raman Spectroscopies because, collectively they offer many advantages over normal spectroscopy, since in most cases the signal strengths are orders of magnitude greater and the output is usually coherent. Therefore it has become possible to observe spectra in hostile environments including luminescent, fluorescent or particle laden media as in combustion engines. Nonlinear Raman phenomena are finding wider applications because the level of resolution can be improved by orders of magnitude due to the high spectral purity of the laser sources and is not limited by the band pass of a spectrograph.

This book on chemical applications of Nonlinear Raman Spectroscopy, edited by one of the pioneers in this field, Albert Harvey is a collection of articles by scientists who have been contributing to this rapidly growing field. Nevertheless one finds that the editor has, by writing his Introduction to Nonlinear pheno-

mena in collaboration with Tolles, covers the basic theory in a useful form. In the next chapter, the application of CARS to combustion and gas-phase diagnostics has been dealt with, in great detail and combustion science is one area where CARS is definitely going to play an important role in the coming years. In chapters 5 and 8, more advanced techniques of CARS and the application of CARS to condensed phase systems have been covered. A brief summary of the applications to chemical and biochemical analysis has been given from which one can gather knowledge of the present status of coupling of liquid chromatographic and CARS techniques. Photoacoustic Raman Spectroscopy of gases, applications of inverse Raman Spectroscopy, Hyper Rayleigh and Hyper Raman Spectroscopy and CW stimulated Raman Spectroscopy have been dealt within the other chapters. PARS, which differs from all other Nonlinear Raman techniques in the way the desired signal is detected, has been demonstrated to be capable of extremely high sensitivity and promises to be useful for analytical identification and trace analysis and has the potential of being an ultra high-resolution technique. An exciting feature of stimulated inverse Raman Spectroscopy (SIRS) is that the spectrum can be obtained in a short time scale and so one by time resolved Raman study follow a chemical reaction. However, the other advantages and disadvantages of SIRS have been discussed.

Stimulated Hyper Raman scattering from atomic vapours is of interest from the laser technology point of view and as such a brief account has been given of the experiments upto 1979.

In the chapter on CW stimulated Raman Spectroscopy, OWyong has discussed the application of the various SRS techniques to both liquid and gas phase media. It has been shown that OHD-RIKES and SRGS techniques are destined to find a wide variety of applications on account of their high resolution and ability to discriminate against a background luminescence.

As the editor himself has accepted, the book is not a complete review of the subject matter. Nor is it an introductory text book type. It is a pleasant combination of a review and necessary basic theory and will be found useful by the spectroscopists.

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