

**World Review of the State of Food and Agriculture.** Food and Agriculture Organization of the United Nations, Rome, Italy. 2001, 295 pp.

This annual publication is a valuable source of data and analysis in the area of agricultural progress and elimination of chronic and hidden (i.e. caused by micronutrient deficiencies) hunger. The 2001 report assesses the progress made in reducing hunger since the World Food Summit held in Rome in 1996. In his Foreword, the Director-General of FAO has pointed out that the declining trend in the prevalence of hunger has now come to a near standstill. To achieve the Food Summit target of reducing the number of persons going to bed hungry to half by 2015, at least 20 million should come out of the hunger trap each year. Unfortunately, the actual rate of decline is hardly 8 million per year since the early 1990s. It is now clear that the availability of food in abundance in the market alone cannot solve the problem of poverty-induced hunger. In India for example, the Government had a stock of about 60 million tonnes of wheat and rice in December 2001, while 25% of the world's hungry are also in India. A famine of jobs or livelihood opportunities is now becoming the principal cause of the famine of food at the household level.

The report, in addition to giving statistics on food production in different parts of the world, deals in detail with the following three issues of contemporary importance.

- The threat to food security arising from the spread of the HIV/AIDS epidemic.
- The impact of the World Trade Agreement in agriculture on poverty and food security.
- The threat posed to agriculture production (including livestock products) by invasive alien species, introduced through bulk imports of grains, meat and poultry products and vegetables and fruits.

Dealing with the last issue first, with the removal of quantitative restrictions and increase in the imports of pulses and oilseeds, many new pests, pathogens and weeds are being introduced. Even the limited surveys done by the

National Bureau of Plant Genetic Resources, ICAR sound an alarm bell. Unfortunately, the steps taken since the World Trade Agreement in Agriculture was signed in 1994 for strengthening quarantine, sanitary and phytosanitary measures are woefully inadequate in relation to the volume of imports being made, often by commercial interests, blissfully ignorant of the harm that can be done to our already poor farming families, through the introduction of invasive alien species. We should contrast this situation with the attention paid in the UK and Europe to the spread of bovine spongiform encephalopathy (BSE or 'mad cow' disease) and foot-and-mouth-disease in animals. In this era of globalization and liberalization of trade, FAO had done a signal service in drawing attention to the seriousness of the economic losses caused by trans-boundary pests and diseases (see Table 45 of the report). MSSRF and CAB International reviewed the situation in early 2001 and have proposed to the Government of India a 7-point Action Plan to avert the impending disaster. It is to be hoped that the concerned Central and State Government authorities will give this matter the urgent attention it needs.

The relationship between human health and agricultural progress comes out clearly from the analysis of the impact of HIV/AIDS on agricultural performance and food security. In 2000, of the total 36.1 million persons estimated to have HIV/AIDS worldwide, 25.3 million or 70% live in the Sub-Saharan Africa. The next highest incidence is in India. The widespread nutritional and health divides occurring in India are partly responsible for the low work output and productivity in every sector of our economy, and particularly the farm sector. ICAR and ICMR should jointly undertake a study of the impact of disease and malnutrition on agricultural performance.

Finally, the report contains a good analysis of the World Trade Agreement in Agriculture. The major point discussed in the report relates to the multi-functional role of agriculture, which covers environmental concerns from the viewpoint of industrialized nations, and food and livelihood security concerns, from the viewpoint of developing countries. Agriculture in the world is evolving in two major directions. In wealthy

industrialized nations where hardly 3 to 5% of the population is involved in the production phase of agriculture, *factory farming* or mass production techniques are predominant. Factory farming is supported by the governments of developed nations by heavy inputs of technology, techno-infrastructure, subsidies and capital. In contrast, the *farmers' farming* or *production by masses* situation prevailing in India and other population-rich but land-hungry countries, is characterized by poor technological and infrastructure support, and low capital and subsidies. Post-harvest technologies and opportunities for assured and remunerative marketing are inadequate. Sanitary and phytosanitary measures are poor, with the result that the quality of the produce is substandard. There is at present no level playing field in terms of cost and quality between the products emerging from factory and farmers' farming.

An aspect which is often forgotten while developing policies based on Ricardo's principle of comparative advantage is that while in industrialized countries farming is just a food-producing machine, in countries like India, farming constitutes the backbone of the livelihood security system. In India, the number of women and men depending on crop and animal husbandry, forestry, fisheries (inland and marine) and agro-processing is increasing in absolute terms, although there is a drop in percentage terms. Importing food and other farm commodities under such circumstances will have the same impact as importing unemployment. FAO hopes that 'scientific studies and substantive discussions will enable acceptable solutions to be found to the major issues'. I hope our science academies will contribute to such substantive discussions.

In the discussion on agricultural progress in different regions of the world, the report makes a particular mention of the growing concern among consumers about the safety of foods emerging from genetically modified crops (GMOs). Consequently, the European Commission (EC) has established a *European Food Authority* to oversee the food safety issue. The EC, Japan and Switzerland have also introduced labelling requirements for products derived from GMOs.

The lessons for India and other developing countries from this report are

## BOOK REVIEWS

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that the following areas need revolutionary progress, if globalization of trade is to confer substantial economic and human benefits.

- Productivity per units of land, water and time;
- Quality in terms of nutritive, culinary, organoleptic, processing, storage and transportation;
- Net income and *new* on-farm and non-farm employment;
- Innovations in management and institutional structures, which can confer on small producers the advantages of scale, both in the production and post-harvest phases of agriculture.

Our achieving the first position in the world in milk production is clear evidence of the power of scale which co-operatives and other institutional structures have given to the over 50 million women and men who produce over 80 million tonnes of milk. Without a small producer management revolution, it will be difficult to keep our agriculture economically and socially alive.

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**Essentials of Biophysics.** P. Narayanan. New Age International (P) Limited, 4835/24, Ansari Road, Daryaganj, New Delhi 110 002. 2000. 510 pp. Price: Rs 250.

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*'We have boiled everything down to signs,  
And Reasoning's done on strict mathematical lines.  
If God's a point, as cylinder he just won't pass,  
You can't stand on your head while sitting on your...'*

Karl Marx in his poem *Mathematical Wisdom (Collected Works, Progress Publishers, 1975, vol. 1)*.

The book under review has four sections: Biomolecular structures, Physical

techniques in structure determination, Bioenergetics, and Biological systems along with four appendices and a glossary. The section on biomolecular structures has five chapters dealing with small molecules and macromolecules. The physical techniques section goes chapter-wise through spectroscopies, NMR, microscopies (sic), X-ray diffraction, lasers and holography. The bioenergetics part is made of two chapters on thermodynamics, photo and chemobioenergetics. Biological systems cover neurobiophysics, biomechanics and radiation biophysics. Each chapter has a synopsis. Acknowledgements are given for figures. Suggestions for further reading and references are given at the end of each chapter. The organization is exhaustive and the book, at a first glance, seems to be good.

In the author's words, 'For the understanding and progress of any subject, especially for students and researchers in that field, good books dealing with most of the aspects of the subject (preferably in one volume) are essential. The need is more acute for a multidisciplinary subject like biophysics. Where as (sic) a large number of standard and good books are available in biochemistry, microbiology, genetics and molecular biology, there is a dearth in the case of biophysics. The lacuna is acutely felt by all the students, researchers and others who deal in this subject. The present book is an attempt to fill this lacuna... This book is intended for all students and researchers with Physics, Chemistry, Biology and Medicine background. It is to serve people with biological and medical background, to make them knowledgeable about physical principles and techniques which have become integral part of biological and medical sciences. It is also intended to serve as an introductory source to make the physicists and chemists and other physical scientists aware of the essential aspects of biological sciences and the trends and progresses in the *natural sciences*'. The aim and intentions are laudable, and definitely a book that fulfils it will be required and useful.

I tried using this book for teaching my course. Students and teacher alike did not find the book comparable to other standard books like the ones by Cantor and Schimmel or Hoppe or Campbell and Dwek. Like a parcel that

is covered with whatever is available, the book covers too much and reveals little. The details are uneven and many numbers and figures are given that help to hide understanding. There are errors (serious and trivial) evenly distributed all over the book, a listing of which would take up the whole review.

Unfortunately, the focus of the book is on introducing terms and names (names of persons are given in bold to make them stand out, and in some cases even the designation like professor being given in bold). Concepts and understanding are the sufferers. The linkage of chapters and ideas are absent. Each chapter is almost compartmentalized and separate. The nomenclature for equivalent entities is not maintained through the book. Equations and terms are introduced in many places without explanation and in a cryptic fashion. The book is packed with details, much of which is not required. The small print size allows all this to be packed in one volume of 500-odd pages. The author has put in a lot of effort, much of which gets wasted because of lack of care in presentation.

A book that definitely does not do justice to biophysical wisdom, but must be bought and checked as a typical example of what a good book in biophysics should not be. The lacuna remains.

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**Nitric Oxide and Inflammation.** D. Salvemini, T. R. Billiar and Y. Vodovotz (eds). Birkhauser Verlag AG, P.O. Box 133, CH-4010 Basel, Switzerland. 2001. 304 pp. (hard bound).

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The ubiquitous role that the simple gas nitric oxide (NO) plays in the body, from maintaining vascular homeostasis and fighting infections to acting as a neurotransmitter and its role in cancer, has spurred a lot of interest among researchers all over the world. One prominent researcher, Jonathan Stamler of Duke University and the Howard Hughes Medical Institute, has received