

Book Reviews

Biomass Forestry in Europe: A Strategy for the Future. Edited by F. C. Hummel, W. Palz and G. Grassi, Elsevier Applied Science Publishers Limited, Essex, 1988. viii + 600 pp. ISBN 1 85166 255 3. Price: £65.00/\$117.00.

The growing of tree crops to produce biomass for energy and industry on short rotations of less than 15 years has been the subject of much research in Europe and in other parts of the world since the first oil crisis in the seventies, when the search for renewable sources for energy production was stimulated. More recently, biomass forestry has received intensive attention from the need to find alternative uses for unproductive lands. There is an estimated 15 million hectares in the European Community which is unproductive, although much of it is suitable for biomass forestry.

Biomass Forestry in Europe: A Strategy for the Future delivers the results of what has been achieved in the European Community, and makes some recommendations on future policy, practice and research. It is divided into two parts of which Part I is comprised of seven chapters. These discuss several aspects such as 'Policy and Economic Aspects' (Chapter 1), including technical feasibility, availability of suitable lands, economic viability, environmental impacts, etc. Recommendations for practice and further research are given as 'Scientific Background' (Chapter 2) to biomass production.

If the biomass is produced for purposes other than energy, properties such as fibre length and wood density play an important role. Selection is the first step in breeding and is described in 'Selection and Breeding' (Chapter 3). The choice and preparation of site, the selection of plant material, protection against diseases and insect attack are outlined in 'Site and Crop' (Chapter 4).

The selection of equipment and working methods for harvesting as well as suggestions for drying, storage and transport are included in Chapter 5. The two last chapters cover the world perspective and strategy for the future.

Part II gives the Western European country profiles on short rotation forest biomass plantations.

Biomass Forestry in Europe gives a very good scientific background and covers economic aspects about biomass forestry, including some

strategies for the future. It can be recommended to foresters, agriculturists and researchers directly concerned with growing crops for industry and energy. It would also give an overall insight into the field for readers without technical knowledge but who intend to use land and natural resources.

However, as a constructive criticism, a subject index would certainly have facilitated its handling by the reader. Also the expensive price for one volume will make a personal purchase difficult.

John F. Kennedy
Eduardo H. M. Melo

Carbohydrate Chemistry: Monosaccharides and their Oligomers. By Hassan S. El Khadem, Academic Press, Washington DC, 1989. 256 pp. ISBN 0 12 236870 3. Price £30.00.

This book is intended as a textbook for undergraduate and graduate students specialising in chemistry and biochemistry, but it could easily serve as a textbook for students reading for pharmacy and medicine courses. Moreover, it would also prove useful for students involved in research in the fields of natural product chemistry and carbohydrates. The author does not assume that the reader has mastered introductory carbohydrate chemistry and therefore any student who is not conversant with carbohydrates will be able to develop and substantiate his knowledge in carbohydrate chemistry.

The 'Introduction' (Chapter 1) gives an interesting historical background to the subject, the origin of carbohydrate chemistry having been traced back to the civilizations of antiquity. It also summarises the importance of carbohydrates and their classification. In the discussion on the determination of the structure, configuration and conformation of monosaccharides (Chapter 2), a greater emphasis is made on the modern methods used in the elucidation of structures of monosaccharides and their derivatives. This chapter also discusses the 'anomeric effect' which describes the singular behaviour of pyranose rings which deviate from that of cyclohexane derivatives. Chapter 3 illustrates the proper use of the nomenclature rules.

Surveys of the physical properties used in structure determination (Chapter 4) deals with the spectroscopic methods such as one-dimensional ^1H -, ^{13}C -, and ^{14}N -NMR spectroscopy as well as two-dimensional NMR techniques, molecular, electronic and mass spectroscopy. Optical rotation, optical rotatory dispersion and circular dichroism (extensively used in structure determination) are also discussed.