

Handbook of Biosolar Resources

Vol. 1, parts 1 and 2, 'Basic Principles'

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These two large volumes aim to serve as a reference source of information about all biological systems that depend on solar energy. A large number of talented authors has contributed to the work although in a few places this has led to over-fragmentation, since some articles are only one or two pages long.

Section 1 deals with the light reactions of photosynthesis, quantum efficiency and the structure of photosynthetic pigments. It is a valuable compendium of information, especially of pigment structures. It is, however, assumed throughout that the Z-scheme is still valid and I would like to have seen some discussion on this point.

Section 2 covers the assimilation of carbon, sulphur and nitrogen by photosynthetic organisms and also hydrogen production. I found it to be the worst section of all in that the accounts of metabolic pathways are brief, superficial, and, even worse, uncritical. It seems pointless to me to list all the compounds that have been shown to affect the activity of ribulose *bis*phosphate carboxylase *in vitro* without pointing out that most of the effects have no physiological significance. Rarely is any attempt made to deal with regulatory mechanisms.

Section 3 outlines major biosynthetic pathways, such as those for polysaccharides, lipids, terpenoids and phenolic compounds. It is a valuable compendium of information. Sections 4 and 5, which deal with the classification and

general characteristics of photosynthetic organisms, are also useful reference sources although logically they should have come at the beginning of the book. The list of collections of photosynthetic organisms (with appropriate postal addresses) at the end of Section 4 is especially helpful.

Section 6 covers the response of photosynthetic organisms to environmental factors such as light intensity, light quality, pH and CO₂ concentration. The compilation of growth conditions for aquatic organisms should provide a valuable reference source. It is followed by a Section on the primary productivity of a huge range of photosynthetic organisms in a wide variety of environments. Again, there is much useful information.

Section 8 is devoted to a consideration of the geographical distribution of the 'raw materials' of photosynthesis, namely solar energy, CO₂, water and mineral nutrients. It is packed with helpful data.

Overall, then, a useful encyclopaedia of photosynthetic information that I am pleased to have on my shelves. It is spoiled by the poor Section 2 and also by the fact that several of the Chapters are now a bit out of date. The book appears to have had a long gestation period, but given the number of authors involved it is perhaps a tribute to the editors that it has appeared at all.

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