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Book review

Photosynthesis: Regulation under Varying Light Regimes, by V.S. Rama Das. Science Publishers, Inc., Enfield, New Hampshire, USA and Plymouth, UK, published in 2004; printed in India; ISBN: 1-57-808-343-5; hardcover; viii + 175 p; dimensions: 0.5×6.2×9.8 inches; list price: US $ 65.00.

Professor V.S. Rama Das (to be called 'Rama Das', not 'Das') has presented an excellent overview of the research in the area of regulation of photosynthesis under varying light regimes. As stated in the *Preface*, he has provided a framework, rather than an exhaustive description, of the field. His goal was to produce an awareness of the 'latest trends' of research in the area of this book by providing extensive references to the current literature. This is evident from the text of 121 pages accompanied by 562 references (with full titles) printed on 45 pages.

The book is divided into seven chapters: (1) Light interception: Basics and structural aspects (25 pages); (2) Photoinhibition (21 pages); (3) Photoprotection (37 pages); (4) Leaf heliotropism, solar tracking and regulation of light interception (10 pages); (5) Acclimation of photosynthesis to light environment (11.5 pages); (6) Transgenic and biotechnological approaches (13 pages); (7) Concluding Remarks (2.5 pages). Although the relative distribution of space to different topics seems balanced, I would have preferred to see a longer description of the interesting topic of heliotropism (a subject of interest to Rama Das), and of the transgenic and biotechnological approaches (a subject of interest to the public at-large).

Rama Das deserves our appreciation for writing this book for the use of students and researchers alike. However, the lack of appropriate 'proof-reading' is a serious concern for the current version. To help him produce a revised version of this book, I enumerate below some of the types of problems that exist in the present version: (1) Inconsistent use of commas after the names cited in the text; (2) Inconsistent use of semicolons and commas separating references in a string of references; (3) Use of extra commas before a parenthesis, for example, Zouni et a1. (2001); (4) Use of verbs that are basically 'orphans' as they follow a comma without a clear indication of what the subject is; (5) Use of awkward expressions – see e.g., the first two sentences in 'Preface'; also see p. 4, para 2, lines 10–12; p. 8, para2, lines 11–15; p. 11, para 2, lines 6–8; p. 20, para 2, lines 1–3; page 23, para 2, lines 2–4; and many more.... (6) Typographical errors such as: 'Copy Right'; Kuhlbrandt; dimmer; QA and QB; plastocyain antenaa; perifery; confirmational; exitation; fluocerscence; Demming; de-expoxilation; researchas; withn; protonaction; indicence; P700+; Ao−; S^{-1} (instead of s^{-1}); Pfiindel; Minajawa; Goindjee; ΔPH; ateratin; and just within 2 pages (102 and 103), use of : μmo1, μmole, and μmols for the same unit; (7) The current version lacks a highly necessary 'abbreviations' list, and the abbreviations are not always defined the first time they appear; Cosi 'i' is mentioned many times before it is defined on p. 92; (8) Sometimes punctuations are missing such as in the legends of Figures 1.4 and 1.7; (9) Several statements need to be checked for correctness, e.g., on p. 22 (para 4, line 4): '415–570 nm range where chl a absorption is negligible' (chl a has a peak at 440 nm and chl b has a peak at 480 nm); on p. 74, 'reactive molecules suppress photoinhibition'; on p. 99, increases of LHC II of PS II as compared to Reaction Center (RC) was 'demonstrated' by increases in F690/F735 (when F690 is from PS II and F735 from PS I); (10) Use of passive voice over active voice: e.g., 'It can be remembered that'...(in my opinion it is better to use 'active voice' over 'passive voice' in a scientific writing; in addition, the text is sometimes repetitious and at places presented in a relatively unorganized manner; (11) although the cover of the book is attractive, only a legend would make the readers understand the beautiful photograph of the plants shown on the top and as an insert (what do the symbols W- → E stand for?).

In chapter 1, Rama Das has discussed nicely the basics and the structural aspects of light interception. In the revised version of the book, he ought to consider presenting briefly some of the recent X-ray structures of LHC II (Liu et al., Nature 428: 287–292, 2004), Photosystem I (Ben-Shem et al., Nature 426: 630-635, 2003) and Photosystem II (Ferreira et al., Science 303: 1831–1837, 2004).

As discussed in chapter 3, photoprotection involves quenching of quantum yield of chlorophyll a fluorescence and thus increased rate constant of heat loss. Most of the research papers, however, measure fluorescence intensity that can also decrease due to decreased concentration of chlorophylls in Photosystem II (PS II) initiated by the movement of mobile LHC IIb from the strongly fluorescent PS II to the weakly fluorescent PS I ('state changes'). The only practical method to measure quantum yield of fluorescence is to measure lifetime of fluorescence that is independent of chlorophyll concentration; it is directly proportional to the quantum yield of fluorescence. It would be important, in my opinion, to present this information in the revised book (for research on this topic, see e.g., Adam Gilmore et al. (Proc Natl Acad Sci USA 92: 2273–2277,1995; and Biochemistry 37:13582–13593, 1998).

I recommend that the readers of this book also read historical perspectives by Barbara Demmig-Adams (Photosynth Res 76: 73–80, 2003) on 'photoprotection'; by Noam Adir et al. (Photosynth Res 76: 343–370, 2003) on photoinhibition; by Harry Yamamoto (on xanthophyll cycle, pp. 1–10); Barry Osmond and Britta Förster (on Photoinhibition, pp. 11–22); and Marvin Edelman and Autar Mattoo (on the D1 protein, pp. 23– 38), the last three in Barbara Demmig-Adams et al. (2005, in press) book cited below.

When the author and the publisher would produce a version of this book that is free from format concerns, typographical and other errors, only then I would have no hesitation in recommending it to all the libraries and the students around the world. Further, it would then be a book that I would also recommend to the readers of the forthcoming (2005) book 'Photoprotection, Photoinhibition, Gene Regulation and Environment', edited by Barbara Demmig Adams, William Adams, and Autar Mattoo Springer, Dordrecht, The Netherlands (ISBN: 10-l-4020-3564-0 or 13-978-1-4020-3564-7).

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