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Book reviews

William K. Smith, Thomas C. Vogelmann, Christa Critchley (Eds.), Ecological Studies 178: Photosynthetic adaptation, Chloroplast to Landscape, Springer, Heidelberg, 2005, ISBN 0-387-22079-8

The latest edition in the Ecological Studies series focuses on plant biology, specifically, the way in which plants adapt to maximise photosynthetic output. This is a commonly addressed topic but this volume takes a fresh approach. The volume begins with a view of the chloroplast, the machinery of photosynthesis, as its starting point but then with the feel of a cinematic tracking shot, the narrative moves back from the subject to reveal the context of the scene, taking in each possible level-of-scale in turn and considering the adaptations that maximise light and CO_2 harvesting at that level. The environment of each level is addressed, from the chloroplast to the cell, from the cell layer to the leaf, from the arrangement of the leaves on a stem to the canopy. Ultimately, the way in which such considerations affect the vegetative landscape around us is considered. With each level of increasing complexity, other considerations affecting optimal fitness of the plant are added to the equation. For example investment in supportive structures and bulk transport structures become part of the process of competition in addition to investment in the primary photosynthetic machinery. Both feedback and feed forward between organisational levels are considered and the relative importance of adaptation at each level to the eventual photosynthetic performance is discussed.

The volume contains eleven chapters each contributed by experts in their area. The chapters fall under the subheadings, "Sunlight Capture" and "Sunlight Processing"; then "CO_2 capture" and "CO_2 processing"; and finally "Environmental Constraints". Within each subheading, each chapter takes a step back from the chloroplast toward the landscape. Overall, this gives comprehensive and in-depth coverage. Nonetheless, the book is very accessible and all concepts are clearly introduced and explained from the mechanism of photosynthesis to the carbon cycle occurring within the vegetative landscape. The book is also reasonably priced considering that it is a relatively specialised volume.

Anyone with an interest in the improvement of agricultural species or in assessing the likely impact of global changes on plant productivity will particularly benefit from owning this book but this is an engaging read for all with an interest in plant physiology.

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P.C. Dutta, Phytosterols as Functional Food Components and Nutraceuticals, Marcel Dekker, Edinburgh, 2003, ISBN 0-8247-4750-X, p. 450

Foods enriched with phytosterols are commercially available to the consumer. The development of such functional foods or nutraceuticals containing phytosterols has arisen from the wealth of scientific evidence demonstrating that phytosterols/stanols are effective in lowering plasma and LDL cholesterol. Thus acting as a natural preventive dietary product with the potential to reduce the morbidity and mortality from cardiovascular disease.

The book entitled "Phytosterols as functional food components and nutraceuticals" edited by Paresh Dutta is a comprehensive volume comprised of twelve chapters written by experts in the field. Collectively the chapters cover a diverse range of topics associated with phytosterols as functional food components. Analytical separation and identification of phytosterols in crop plants, food, biological tissues and fluids as well as the effects of processing are covered. Some overlap occurrences between chapters but in general the advantages and disadvantages of the individual techniques are thoroughly explained. Clear examples are provided including reference chromatograms and the citations provided facilitate the experimentalist access to the methodologies necessity for reproducing the protocols. The types and levels of phytosterols and processed derivatives found in crop foods and food products are provided