

N.R. Baker, M.P. Percival (ed.): **Herbicides**. - Elsevier, Amsterdam - London - New York - Tokyo 1991. 382 pp., NLG 370.00.

The well-known series of monographs devoted to individual "Topics in Photosynthesis" continues with a volume on the group of inhibitors of reactions and components involved in radiant energy transduction. Herbicides are an important group of substances used recently in masses in agriculture, and this is why their research has been heavily subvented by the herbicide producers. Therefore the amount of information on the mechanisms of their action in photosynthesis is fairly large, as shown also by the reviewed monograph.

18 authors from the U.K. (12) and the U.S.A. (6) prepared ten chapters that review all aspects of herbicide effects on photosynthetic activities. A summarizing information is contained already in the first chapter (written by the editors) that deals not only with the action of herbicides on carbon metabolism, photosynthetic electron transport, ATP synthesis and related phenomena like chlorophyll fluorescence, but also with the metabolism of lipids, amino acids and pigments and with non-photosynthetic plastid metabolism. Next chapter (J.R. Bowyer *et al.*) deals with photosystems 2 interaction with herbicides; identification of the  $Q_B$ /herbicide binding protein, topology of the D1 protein, expression of the *psbA* gene, herbicide binding interactions, effects of various inhibitors, reflections in the EPR properties, photoaffinity-labelling herbicide analogues, *etc.* are explained here. In chapter 3 (B. Halliwell) the problem of oxygen radicals and their role in herbicide damage is discussed. Chapter 4 (A.J. Young) deals with the role of herbicides in inhibition of carotenoid biosynthesis. The chapter includes also the functions of carotenoids in the photosynthetic apparatus (protective; the violaxanthin cycle; radiant energy harvesting) and changes in their contents during chloroplast development. In chapter 5, C.A. Rebeiz *et al.* describe tetrapyrrole dependent photodynamic herbicides and chlorophyll biosynthesis modulators. Chapter 6 (J.L. Harwood) is on the effects of herbicides on lipid synthesis in chloroplasts, chapter 7 (M.A. Stidham) on the effects on branched chain amino acids, and chapter 8 (P.J. Lea) on the effects on ammonia assimilation. Chapter 9 (D.K. Lawrence and R.G. Mayne) is more general, describing effects of various growth regulator groups on individual reactions of photosynthesis. The last chapter (K. Wright *et al.*) discusses the rationality in herbicide design (or how to find an ideal herbicide).

It is needless to say that only first-quality reviews are contained that are supplemented with voluminous lists of references (from 38 to 288 per chapter). The reader is helped by a detailed subject index. Similarly to the previous volumes, this one is a must for every library of plant physiology, biochemistry and agriculture.

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