

BIBLIOGRAPHY

Bibliography of reviews and methods of photosynthesis - 79

Z. ŠESTÁK and J. ČATSKÝ

*Institute of Experimental Botany, Academy of Sciences of the Czech Republic,
Na Karlovce 1a, CZ - 160 00 Praha 6, Czech Republic*

REVIEW PAPERS

- Aartsma, T.J., Louwe, R.J.W., Schellenberg, P.: Accumulated photon echo measurements of excited state dynamics in pigment-protein complexes. - In: Amesz, J., Hoff, A.J. (ed.): *Biophysical Techniques in Photosynthesis*. Pp. 109-122. Kluwer Academic Publishers, Dordrecht - Boston - London 1996. [58 ref.]
- Akyama, T.: [Spectroradiometric crop growth diagnosis.] - *Jap. J. Crop Sci.* **65**: 379-389, 1996. [In Jap., 63 ref.]
- Allnutt, F.C.T.: Cyanobacterial (bluegreen algal) biotechnology: past, present and future. - *J. sci. ind. Res.* **55**: 693-714, 1996. [149 ref.]
- Amesz, J.: Developments in classical optical spectroscopy. - In: Amesz, J., Hoff, A.J. (ed.): *Biophysical Techniques in Photosynthesis*. Pp. 3-10. Kluwer Academic Publishers, Dordrecht - Boston - London 1996. [54 ref.]
- Blatt, M.R., Grabov, A.: Signal redundancy, gates and integration in the control of ion channels for stomatal movement. - *J. exp. Bot.* **48**: 529-537, 1997. [68 ref.]
- Brettel, K.: Electron transfer and arrangement of the redox cofactors in photosystem I. - *Biochim. biophys. Acta* **1318**: 322-373, 1997. [282 ref.]
- Buchanan-Wollaston, V.: The molecular biology of leaf senescence. - *J. exp. Bot.* **48**: 181-199, 1997. [Chl; 98 ref.]
- Buchanan-Wollaston, V., Ainsworth, C.: Leaf senescence in *Brassica napus*: cloning of senescence related genes by subtractive hybridisation. - *Plant mol. Biol.* **33**: 821-834, 1997. [Chl; 54 ref.]
- Clijsters, H., van Aasche, F.: Inhibition of photosynthesis by heavy metals. - *Photosynth. Res.* **7**: 31-40, 1985. [58 ref.]
- Cushman, J.C., Bohnert, H.J.: Molecular genetics of crassulacean acid metabolism. - *Plant Physiol.* **113**: 667-676, 1997. [55 ref.]
- Gan, S., Amasino, R.M.: Making sense of senescence. Molecular genetic regulation and manipulation of leaf senescence. - *Plant Physiol.* **113**: 313-319, 1997. [Ps; 43 ref.]
- John, I., Hackett, R., Cooper, W., Drake, R., Farrell, A., Grierson, D.: Cloning and characterization of tomato leaf senescence-related cDNAs. - *Plant mol. Biol.* **33**: 641-651, 1997. [Ps; 51 ref.]

Abbreviations in the notes: Bil = phycobilins; Car = carotenoids; CC = column chromatography; Chl = chlorophyll; Cyt = cytochrome; GC = gas chromatography; HPLC = high performance liquid chromatography; IRGA = infra-red gas analyser; PC = paper chromatography; PEPC = phosphoenolpyruvate carboxylase; PAR = photosynthetically active radiation; Ps = photosynthesis; RuBPC/O = ribulose-1,5-bisphosphate carboxylase/oxygenase; TLC = thin-layer chromatography; Tr = transpiration; ab = abstract; E = English; F = French; G = German; R = Russian; ref. = references.

- Kubota, C., Fujiwara, K., Kitaya, Y., Kozai, T.: Recent advances in environment control in micropropagation. - In: Goto, E., Kurata, K., Hayashi, M., Sase, S. (ed.): *Plant Production in Closed Ecosystems*. Pp. 153-169. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Ps; 59 ref.]
- MacRobbie, E.A.C.: Signalling in guard cells and regulation of ion channel activity. - *J. exp. Bot.* **48**: 515-528, 1997. [68 ref.]
- Madore, M.A.: Photosynthesis and carbohydrate formation. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 837-843. Marcel Dekker, New York - Basel - Hong Kong 1997. [19 ref.]
- Maslova, T.G., Popova, I.A., Kornushenko, G.A., Koroleva, O.Ya.: Razvitie predstavlenii o funktsiyakh violaksantinovogo tsikla v fotosinteze. [Violaxanthin cycle in photosynthesis: History and current concept.] - *Fiziol. Rast.* **43**: 437-449, 1996. [67 ref.; in R.]
- Mauzerall, D.: Bill Arnold's concept of solid state photosynthesis and his discoveries. - *Photosynth. Res.* **48**: 19-23, 1996. [42 ref.]
- McDonald, A.J.S., Erickson, I., Larsson, C.-M.: Plant nutrition, dry matter gain and partitioning at the whole-plant level. - *J. exp. Bot.* **47**(Special Issue) [Hall, J.L., Baker, D.A., Oparka, K.L. (ed.): *Transport of Assimilates*]: 1245-1253, 1996. [39 ref.]
- Miao, G.-H.: Metabolite sensing and regulatory points of carbon and nitrogen metabolic pathways and partitioning in plants. - In: Verma, D.P.S. (ed.): *Signal Transduction in Plant Growth and Development*. Pp. 63-86. Springer-Verlag, Wien - New York 1996. [Ps; 135 ref.]
- Minchin, P.E.H., Thorpe, M.R.: What determines carbon partitioning between competing sinks? - *J. exp. Bot.* **47**(Special Issue) [Hall, J.L., Baker, D.A., Oparka, K.L. (ed.): *Transport of Assimilates*]: 1293-1296, 1996. [15 ref.]
- Minkov, I.N.: Chloroplast development in higher plants. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 553-573. Marcel Dekker, New York - Basel - Hong Kong 1997. [265 ref.]
- Monshouer, R., van Grondelle, R.: Excitations and excitons in bacterial light-harvesting complexes. - *Biochim. biophys. Acta* **1275**: 70-75, 1996. [51 ref.]
- Mostowska, A.: Environmental factors affecting chloroplasts. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 407-426. Marcel Dekker, New York - Basel - Hong Kong 1997. [140 ref.]
- Mulkidjanian, A.Y., Junge, W.: On the origin of photosynthesis as inferred from sequence analysis. A primordial UV-protector as common ancestor of reaction centers and antenna proteins. - *Photosynth. Res.* **51**: 27-42, 1997. [83 ref.]
- Murata, N., Wada, H., Sakamoto, T., Tasaka, Y., Gombos, Z., Moon, B.Y., Deshniun, P., Los, D.A., Hayashi, H.: Genes for fatty acid desaturases and cholin oxidase are responsible for tolerance to low-temperature and salinity stresses in cyanobacteria plants. - In: Grillo, S., Leone, A. (ed.): *Physical Stresses in Plants. Genes and their Products for Tolerance*. Pp. 55-63. Springer-Verlag, Berlin - Heidelberg - New York - Barcelona - Budapest - Hong Kong - London - Milan - Paris - Santa Clara - Singapore - Tokyo 1996. [26 ref.]
- Nash, T.H., III: Photosynthesis, respiration, productivity and growth. - In: Nash, T.H., III (ed.): *Lichen Biology*. Pp. 88-120. Cambridge Univ. Press, Cambridge - New York - Oakleigh 1996. [Many ref.]
- Nash, T.H., III: Nutrients, elemental accumulation and mineral cycling. - In: Nash, T.H., III (ed.): *Lichen Biology*. Pp. 136-153. Cambridge Univ. Press, Cambridge - New York - Oakleigh 1996. [Ps; many ref.]
- Norby, R.J.: Oaks in a high-CO₂ world. - *Ann. Sci. forest.* **53**: 413-429, 1996. [Ps; 59 ref.]
- Nyitrai, P.: Development of functional thylakoid membranes: Regulation by light and hormones. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 391-406. Marcel Dekker, New York - Basel - Hong Kong 1997. [152 ref.]
- Olson, J.M.: Iron-sulfur-type reaction centers. Introduction. - *Photochem. Photobiol.* **64**: 1-4, 1996. [33 ref.]
- Osenigo, M., Patrignani, G., Rascio, N.: Ecophysiology of C₃, C₄ and CAM plants. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 1-25. Marcel Dekker, New York - Basel - Hong Kong 1997. [210 ref.]

- Osmond, B., Badger, M., Maxwell, K., Björkman, O., Leegood, R.: Too many photons: photorespiration, photoinhibition and photooxidation. - *Trends Plant Sci.* **2**: 119-121, 1997. [16 ref.]
- Outlow, W.H., Jr., Zhang, S., Hite, D.R.C., Thistle, A.B.: Stomata: biophysical and biochemical aspects. - In: Baker, N.R. (ed.): *Photosynthesis and the Environment*. Pp. 241-259. Kluwer Academic Publishers, Dordrecht - Boston - London 1996. [213 ref.]
- Owens, T.G.: Processing of excitation energy by antenna pigments. - In: Baker, N.R. (ed.): *Photosynthesis and the Environment*. Pp. 1-23. Kluwer Academic Publishers, Dordrecht - Boston - London 1996. [73 ref.]
- Patrick, J.W., Offler, C.F.: Post-sieve element transport of photoassimilates in sink regions. - *J. exp. Bot.* **47**(Special Issue) [Hall, J.L., Baker, D.A., Oparka, K.L. (ed.): *Transport of Assimilates*]: 1165-1177, 1996. [80 ref.]
- Pearcy, R.W., Krall, J.P., Sassenrath-Cole, G.F.: Photosynthesis in fluctuating light environments. - In: Baker, N.R. (ed.): *Photosynthesis and the Environment*. Pp. 321-346. Kluwer Academic Publishers, Dordrecht - Boston - London 1996. [112 ref.]
- Pearlstein, R.M.: Coupling of exciton motion in the core antenna and primary charge separation in the reaction center. - *Photosynth. Res.* **48**: 75-87, 1996. [36 ref.]
- Peschek, G.A.: Cytochrome oxidase and the *cta* operon of cyanobacteria. - *Biochim. biophys. Acta* **1275**: 27-32, 1996. [83 ref.]
- Pollock, C.J., Farrar, J.F.: Source-sink relations: the role of sucrose. - In: Baker, N.R. (ed.): *Photosynthesis and the Environment*. Pp. 261-279. Kluwer Academic Publishers, Dordrecht - Boston - London 1996. [118 ref.]
- Porra, R.J.: Recent progress in porphyrin and chlorophyll biosynthesis. - *Photochem. Photobiol.* **65**: 492-516, 1997. [302 ref.]
- Pospíšilová, J., Čatský, J., Šesták, Z.: Photosynthesis in plants cultivated *in vitro*. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 525-540. Marcel Dekker, New York - Basel - Hong Kong 1997. [147 ref.]
- Pospíšilová, J., Šantrůček, J.: Stomatal patchiness: effects on photosynthesis. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 427-441. Marcel Dekker, New York - Basel - Hong Kong 1997. [84 ref.]
- Raines, C.A., Lloyd, J.C.: Molecular biological approaches to environmental effects on photosynthesis. - In: Baker, N.R. (ed.): *Photosynthesis and the Environment*. Pp. 305-319. Kluwer Academic Publishers, Dordrecht - Boston - London 1996. [88 ref.]
- Raman, R., Oliver, D.J.: Light-dependent control of photorespiratory gene expression. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 381-389. Marcel Dekker, New York - Basel - Hong Kong 1997. [87 ref.]
- Ramsperger, V.C., Summers, R.G., Berry, J.O.: Photosynthetic gene expression in meristems and during initial leaf development in a C₄ dicotyledonous plant. - *Plant Physiol.* **111**: 999-1010, 1996.
- Rao, I.M.: The role of phosphorus in photosynthesis. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 173-194. Marcel Dekker, New York - Basel - Hong Kong 1997. [210 ref.]
- Raven, J.A.: CO₂-concentrating mechanisms: a direct role for thylakoid lumen acidification? - *Plant Cell Environ.* **20**: 147-154, 1997. [70 ref.]
- Reinbothe, S., Reinbothe, C.: Regulation of chlorophyll biosynthesis in angiosperms. - *Plant Physiol.* **111**: 1-7, 1996. [35 ref.]
- Reinbothe, S., Reinbothe, C., Lebedev, N., Apel, K.: PORA and PORB, two light-dependent protochlorophyllide-reducing enzymes of angiosperm chlorophyll biosynthesis. - *Plant Cell* **8**: 763-769, 1996. [63 ref.]
- Rentsch, D., Frommer, W.B.: Molecular approaches towards an understanding of loading of assimilates in higher plants. - *J. exp. Bot.* **47**(Special Issue) [Hall, J.L., Baker, D.A., Oparka, K.L. (ed.): *Transport of Assimilates*]: 1199-1204, 1996. [41 ref.]

- Robinson, C.: Translocation of proteins across chloroplast membranes. - In: Smallwood, M., Knox, J.P., Bowles, D.J. (ed.): *Membranes: Specialized Functions in Plants*. Pp. 459-469. Bios Scientific Publ., Oxford 1996. [67 ref.]
- Rodermel, S.: Use of antisense RNA technology to dissect photosynthesis. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 357-366. Marcel Dekker, New York - Basel - Hong Kong 1997. [84 ref.]
- Roy, H., Gilson, M.: Rubisco and the chaperonins. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 295-304. Marcel Dekker, New York - Basel - Hong Kong 1997. [112 ref.]
- Ryan, M.G., Binkley, D., Fownes, J.H.: Age-related decline in forest productivity: pattern and process. - *Adv. ecol. Res.* **27**: 213-262, 1997. [194 ref.]
- Ryan, M.G., Yoder, B.J.: Hydraulic limits to tree height and tree growth. - *BioScience* **47**: 235-242, 1997. [Ps; 49 ref.]
- Sakurai, H., Kusumoto, N., Inoue, K.: Function of the reaction center of green sulfur bacteria. - *Photochem. Photobiol.* **64**: 5-13, 1996. [73 ref.]
- Salvucci, M.E., Ogren, W.L.: The mechanism of Rubisco activase: Insights from studies of the properties and structure of the enzyme. - *Photosynth. Res.* **47**: 1-11, 1996. [82 ref.]
- Saralabai, V.C., Vivekanandan, M., Dabu, R.S.: Plant responses to high CO₂ concentration in the atmosphere. - *Photosynthetica* **33**: 7-37, 1997. [214 ref.]
- Schoefs, B., Bertrand, M.: Chlorophyll biosynthesis. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 49-69. Marcel Dekker, New York - Basel - Hong Kong 1997. [221 ref.]
- Semikhatova, O.A., Nikolaeva, M.G.: Dykhatel'naya sposobnost' vysshikh rastenii. Taksonomicheskii obzor. [Respiration capacity of higher plants with respect to their taxonomy: A review.] - *Fiziol. Rast.* **43**: 450-461, 1996. [48 ref.; in R.]
- Šesták, Z., Čauský, J.: Bibliography of reviews and methods of photosynthesis - 77. - *Photosynthetica* **32**: 297-320, 1996. [439 ref.]
- Shiba, T., Shimada, K.: Photosynthetic aspects of aerobic photosynthetic bacteria. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 505-512. Marcel Dekker, New York - Basel - Hong Kong 1997. [56 ref.]
- Sinha, R.P., Häder, D.-P.: Photobiology and ecophysiology of rice field cyanobacteria. - *Photochem. Photobiol.* **64**: 887-896, 1996. [Ps; 132 ref.]
- Smith, B.N.: Photosynthesis, respiration, and growth. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 811-818. Marcel Dekker, New York - Basel - Hong Kong 1997. [27 ref.]
- Smith, B.N.: The origin and evolution of C₄ photosynthesis. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 977-986. Marcel Dekker, New York - Basel - Hong Kong 1997. [55 ref.]
- Sonoike, K.: Photoinhibition of photosystem I: its physiological significance in the chilling sensitivity of plants. - *Plant Cell Physiol.* **37**: 239-247, 1996. [63 ref.]
- Stemler, A.J.: The case for chloroplast thylakoid carbonic anhydrase. - *Physiol. Plant.* **99**: 348-353, 1997. [44 ref.]
- Stern, D.B., Higgs, D.C., Yang, J.: Transcription and translation in chloroplasts. - *Trends Plant Sci.* **2**: 308-315, 1997. [54 ref.]
- Stitt, M.: Metabolic regulation of photosynthesis. - In: Baker, N.R. (ed.): *Photosynthesis and the Environment*. Pp. 151-190. Kluwer Academic Publishers, Dordrecht - Boston - London 1996. [218 ref.]
- Strehler, B.L.: Halcyon days with Bill Arnold. - *Photosynth. Res.* **48**: 11-18, 1996. [Ps; 29 ref.]
- Sugita, M., Sugiura, M.: Regulation of gene expression in chloroplasts of higher plants. - *Plant mol. Biol.* **32**: 315-326, 1996. [89 ref.]
- Süss, K.-H., Sainis, J.K.: Supramolecular organization of water-soluble photosynthetic enzymes in chloroplasts. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 305-314. Marcel Dekker, New York - Basel - Hong Kong 1997. [61 ref.]
- Synková, H., Wilhelmová, N., Šesták, Z., Pospíšilová, J.: Photosynthesis in transgenic plants with elevated cytokinin contents. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 541-553. Marcel Dekker, New York - Basel - Hong Kong 1997. [146 ref.]

- Taylor, T.C., Andersson, I.: Structural transitions during activation and ligand binding in hexadecameric Rubisco inferred from the crystal structure of the activated unliganded spinach enzyme. - *Nature struct. Biol.* **3**: 95-101, 1996. [29 ref.]
- Teramura, A.H., Ziska, L.H.: Ultraviolet-B radiation and photosynthesis. - In: Baker, N.R. (ed.): *Photosynthesis and the Environment*. Pp. 435-450. Kluwer Academic Publishers, Dordrecht - Boston - London 1996. [123 ref.]
- Thain, J.F., Wildon, D.C.: Electrical signalling in plants. - In: Smallwood, M., Knox, J.P., Bowles, D.J. (ed.): *Membranes: Specialized Functions in Plants*. Pp. 301-317. Bios Scientific Publ., Oxford 1996. [Ps, assimilate transport; 92 ref.]
- van Bel, A.J.E.: Interaction between sieve element and companion cell and the consequences for photoassimilate distribution. Two structural hardware frames with associated physiological software packages in dicotyledons? - *J. exp. Bot.* **47**(Special Issue) [Hall, J.L., Baker, D.A., Oparka, K.L. (ed.): *Transport of Assimilates*]: 1129-1140, 1996. [95 ref.]
- van Gorkom, H.J.: Electroluminescence. - *Photosynth. Res.* **48**: 107-116, 1996. [64 ref.]
- van Oosten, J.-J., Besford, R.T.: Acclimation of photosynthesis to elevated CO₂ through feedback regulation of gene expression: Climate of opinion. - *Photosynth. Res.* **48**: 353-365, 1996. [94 ref.]
- van Walraven, H.S., Bakels, R.H.A.: Function, structure and regulation of cyanobacterial and chloroplast ATP synthase. - *Physiol. Plant.* **96**: 526-532, 1996. [43 ref.]
- Vass, I.: Adverse effects of UV-B light on the structure and function of the photosynthetic apparatus. - In: Pessaraki, M. (ed.): *Handbook of Photosynthesis*. Pp. 931-949. Marcel Dekker, New York - Basel - Hong Kong 1997. [187 ref.]
- Vass, I., Govindjee: Thermoluminescence from the photosynthetic apparatus. - *Photosynth. Res.* **48**: 117-126, 1996. [114 ref.]
- Vidal, J., Pierre, J.-N., Echevarria, C.: The regulatory phosphorylation of C₄ phosphoenolpyruvate carboxylase: a cardinal event in C₄ photosynthesis. - In: Verma, D.P.S. (ed.): *Signal Transduction in Plant Growth and Development*. Pp. 141-166. Springer-Verlag, Wien - New York 1996. [109 ref.]
- Vivekanandan, M., Saralabai, V.C.: Light activation of photosynthetic enzymes. - In: Pessaraki, M. (ed.): *Handbook of Photosynthesis*. Pp. 367-380. Marcel Dekker, New York - Basel - Hong Kong 1997. [100 ref.]
- Vivekanandan, M., Saralabai, V.C.: The use of transgenic plants to manipulate photosynthetic processes and crop yield. - In: Pessaraki, M. (ed.): *Handbook of Photosynthesis*. Pp. 661-669. Marcel Dekker, New York - Basel - Hong Kong 1997. [61 ref.]
- Wahid, A., Rasul, E., ur-Rehman Rao, A., Iqbal, R.M.: Photosynthesis in leaf, stem, flower, and fruit. - In: Pessaraki, M. (ed.): *Handbook of Photosynthesis*. Pp. 623-632. Marcel Dekker, New York - Basel - Hong Kong 1997. [90 ref.]
- Walker, D.A.: 'Tell me where all past years are'. - *Photosynth. Res.* **51**: 2-26, 1997. [History of Ps research; 59 ref.]
- Walsh, R.P.D.: Microclimate and hydrology. - In: Richards, P.W. (ed.): *The Tropical Rain Forest. An Ecological Study*. 2nd Ed. Pp. 206-236. Cambridge Univ. Press, Cambridge - New York - Oakleigh 1996. [Ps; many ref.]
- Webber, A.N., Lee, H., Bingham, S.E.: Structure and function of photosystem I: a molecular approach. - In: Pessaraki, M. (ed.): *Handbook of Photosynthesis*. Pp. 219-230. Marcel Dekker, New York - Basel - Hong Kong 1997. [63 ref.]
- Weber, J., Senior, A.E.: Catalytic mechanism of F₁-ATPase. - *Biochim. biophys. Acta* **1319**: 19-58, 1997. [284 ref.]
- Wei, J.-M., Shen, Y.-K.: The role of photophosphorylation and related reactions in photosynthesis. - In: Pessaraki, M. (ed.): *Handbook of Photosynthesis*. Pp. 113-120. Marcel Dekker, New York - Basel - Hong Kong 1997. [62 ref.]

- Whitelegge, J.P.: Covalent modification of Photosystem II reaction center polypeptides. - In: Pessaraki, M. (ed.): Handbook of Photosynthesis. Pp. 241-256. Marcel Dekker, New York - Basel - Hong Kong 1997. [148 ref.]
- Xu, D.-Q., Shen, Y.-K.: Midday depression of photosynthesis. - In: Pessaraki, M. (ed.): Handbook of Photosynthesis. Pp. 451-459. Marcel Dekker, New York - Basel - Hong Kong 1997. [60 ref.]
- Yatsushashi, H.: Photoregulation systems for light-oriented chloroplast movement. - J. Plant Res. **109**: 139-146, 1994. [54 ref.]
- Young, A.J., Phillip, D., Savill, J.: Carotenoids in higher plants photosynthesis. - In: Pessaraki, M. (ed.): Handbook of Photosynthesis. Pp. 575-596. Marcel Dekker, New York - Basel - Hong Kong 1997. [116 ref.]
- Zeinalov, Y., Maslenskova, L.T.: Mechanisms of photosynthetic oxygen evolution. - In: Pessaraki, M. (ed.): Handbook of Photosynthesis. Pp. 129-150. Marcel Dekker, New York - Basel - Hong Kong 1997. [94 ref.]

METHODOLOGICAL PAPERS

A. Energy transformation, electron transfer, C fixation, and related methods

- Allen, B., Norman, H.A., Vincent, J.S., Chappelle, E.W.: Preparation of carotenoid enriched vesicles of monogalactosyldiacylglycerol and digalactosyldiacylglycerol for use in Raman studies to investigate leaf canopy damage. - J. Plant Physiol. **148** [Lichtenthaler, H.K. (ed.): Vegetation Stress]: 413-417, 1996.
- Armbrust, T.S., Chitnis, P.R., Guikema, J.A.: Organization of photosystem I polypeptides examined by chemical cross-linking. - Plant Physiol. **111**: 1307-1312, 1996. [Model.]
- Avice, J.C., Ourry, A., Lemaire, G., Boucaud, J.: Nitrogen and carbon flows estimated by ^{15}N and ^{13}C pulse-chase labeling during regrowth of alfalfa. - Plant Physiol. **112**: 281-290, 1996.
- Berry, M.C., Bratt, P.J., Evans, M.C.W.: Relaxation properties of the photosystem 1 electron transfer components: indications of the relative positions of the electron transfer cofactors in photosystem 1. - Biochim. biophys. Acta **1319**: 163-176, 1997. [Model.]
- Bosch, M.K., Gast, P., Franken, E.M., Zwanenburg, G., Hore, P.J., Hoff, A.J.: Magnetic interaction between Q_A^- and the triplet state of the primary donor in modified reaction centers of the photosynthetic bacterium *Rhodospirillum rubrum* R26. - Biochim. biophys. Acta **1276**: 106-116, 1996 [Model.]
- Caemmerer, S. von, Millgate, A., Farquhar, G.D., Furbank, R.T.: Reduction of ribulose-1,5-bisphosphate carboxylase/oxygenase by antisense RNA in the C_4 plant *Flaveria bidentis* leads to reduced assimilation rates and increased carbon isotope discrimination. - Plant Physiol. **113**: 469-477, 1997. [Calculation equations.]
- Castrillo, M., Aso, P., Longart, M., Vermehren, A.: *In situ* immunofluorescent localization of ribulose-1,5-bisphosphate carboxylase/oxygenase in mesophyll of C_4 dicotyledonous plants. - Photosynthetica **33**: 39-50, 1997.
- Christopher, D.A.: Leaf development and phytochrome modulate the activation of *psbD-psbC* transcription by high-fluence blue light in barley chloroplasts. - Photosynth. Res. **47**: 239-251, 1996. [Model.]
- Dau, H., Sauer, K.: Exciton equilibrium and Photosystem II exciton dynamics - a fluorescence study on Photosystem II membrane particles of spinach. - Biochim. biophys. Acta **1273**: 175-190, 1996. [Model.]
- Dau, H.: On the relation between absorption and fluorescence emission spectra of photosystems. Derivation of a Stepanov relation for pigment clusters. - Photosynth. Res. **48**: 139-145, 1996. [Model.]

- Day, A., Poulton, J.: Extranuclear DNA. - In: Ord, M.G., Stocken, L.A. (ed.): Foundations of Modern Biochemistry. Vol. 2. Pp. 59-97. JAI Press, Greenwich - London 1996. [Chloroplast; 46 ref.]
- Denev, I.D., Minkov, I.N.: Use of fluorescence probes 1-aniline-8-naphthalene sulfonate and pyrene for studying the localisation of proteins in inner membranes from wheat etioplasts. - *Photosynthetica* **33**: 303-312, 1997.
- Dracheva, T.V., Novoderezhkin, V.I., Razjivin, A.P.: Site homogeneity and exciton delocalization in the photosynthetic antenna. - *Photosynth. Res.* **49**: 269-276, 1996. [Model.]
- Du, Y.-C., Nose, A., Kawamitsu, Y., Murayama, S., Wasano, K., Uchida, Y.: An improved spectrophotometric determination of the activity of ribulose-1,5-bisphosphate carboxylase. - *Jap. J. Crop Sci.* **65**: 714-721, 1996.
- Fiege, R., Zweggart, W., Bittl, R., Adir, N., Renger, G., Lubitz, W.: EPR and ENDOR studies of the water oxidizing complex of Photosystem II. - *Photosynth. Res.* **48**: 227-237, 1996. [Model.]
- Frapart, Y.-M., Boussac, A., Albach, R., Anxolabéhère-Mallart, E., Delroisse, M., Verlhac, J.-B., Blondin, G., Girerd, J.-J., Guilhem, J., Cesario, M., Rutherford, A.W., Lexa, D.: Chemical modeling of the oxygen-evolving center in plants. Synthesis, structure, and electronic and redox properties of a new mixed valence Mn-oxo cluster: $[(Mn_2^{III,IV}O_2)(bisimMe_2en)_2]^{3+}$ (bisimMe₂en=*N,N'*-dimethyl-*N,N'*-bis(imidazol-4-ylmethyl)ethane-1,2-diamine). EPR detection of an imidazole radical induced by UV irradiation at low temperature. - *J. amer. chem. Soc.* **118**: 2669-2678, 1996.
- Freiberg, A., Allen, J.P., Williams, J.C., Woodbury, N.W.: Energy trapping and detrapping by wild type and mutant reaction centers of purple non-sulfur bacteria. - *Photosynth. Res.* **48**: 309-319, 1996. [Model.]
- Fritz, L., Stringher, C.G., Colepiccolo, P.: Imaging oscillations in *Gonyaulax*: a chloroplast rhythm of nitrate reductase visualized by immunocytochemistry. - *Braz. J. med. biol. Res.* **29**: 111-117, 1996.
- Geel, C., Versluis, W., Snel, J.F.H.: Estimation of oxygen evolution by marine phytoplankton from measurement of the efficiency of Photosystem II electron flow. - *Photosynth. Res.* **51**: 61-70, 1997. [Model.]
- Giglioli-Guivarch, N., Pierre, J.-N., Brown, S., Chollet, R., Vidal, J., Gadal, P.: The light-dependent transduction pathway controlling the regulatory phosphorylation of C4 phosphoenolpyruvate carboxylase in protoplasts from *Digitaria sanguinalis*. - *Plant Cell* **8**: 573-586, 1996. [Model.]
- Gilmore, A.M., Hazlett, T.L., Debrunner, P.G., Govindjee: Photosystem II chlorophyll *a* fluorescence lifetimes and intensity are independent of the antenna size differences between barley wild-type and *chlorina* mutants: Photochemical quenching and xanthophyll cycle-dependent nonphotochemical quenching of fluorescence. - *Photosynth. Res.* **48**: 171-187, 1996. [Model.]
- Goldsmith, J.O., Boxer, S.G.: Rapid isolation of bacterial photosynthetic reaction centers with an engineered poly-histidine tag. - *Biochim. biophys. Acta* **1276**: 171-175, 1996.
- Gómez Lejero, C., Krogmann, D.W.: Large scale preparations of photosynthetic catalysts from cyanobacteria. - *Photosynth. Res.* **47**: 293-299, 1996.
- Greenfield, S.R., Wasielewski, M.R.: Excitation energy transfer and charge separation in the isolated Photosystem II reaction center. - *Photosynth. Res.* **48**: 83-97, 1996. [Model.]
- Groma, G.I., Bogomolni, R.A., Stoekenius, W.: The photocycle of bacteriorhodopsin at high pH and ionic strength. II. Time-dependent anisotropy studied by partially saturating photoselection. - *Biochim. biophys. Acta* **1319**: 69-85, 1997. [Model.]
- Hashimoto, A., Ettinger, W.F., Yamamoto, Y., Tleg, S.M.: Assembly of newly imported oxygen-evolving complex subunits in isolated chloroplasts: sites of assembly and mechanism of binding. - *Plant Cell* **9**: 441-452, 1997. [Model.]

- Heber, U., Miyake, C., Mano, J., Ohno, C., Asada, K.: Monodehydroascorbate radical detected by electron paramagnetic resonance spectrometry is a sensitive probe of oxidative stress in intact leaves. - *Plant Cell Physiol.* **37**: 1066-1072, 1996.
- Hecks, B., Wilhelm, C., Trissl, H.-W.: Functional organization of the photosynthetic apparatus of the primitive alga *Mantoniella squamata*. - *Biochim. biophys. Acta* **1274**: 21-30, 1996. [Model.]
- Heimann, S., Schreiber, U.: Characterisation of a H₂O₂-oxidisable cytochrome *b*-559 in intact chloroplasts with a new type of LED array spectrophotometer. - *Photosynth. Res.* **47**: 187-197, 1996.
- Heisel, F., Sowinska, M., Miehe, J.A., Lang, M., Lichtenthaler, H.K.: Detection of nutrient deficiencies of maize by laser induced fluorescence imaging - I *Plant Physiol.* **148** [Lichtenthaler, H.K. (ed.): *Vegetation Stress*]: 622-631, 1996. [Scheme of the device.]
- Huber, M., Isaacson, R.A., Abresch, E.C., Gaul, D., Schenck, C.C., Feher, G.: Electronic structure of the oxidized primary electron donor of the HL (M202) and HL (L173) heterodimer mutants of the photosynthetic bacterium *Rhodobacter sphaeroides*: ENDOR on single crystals of reaction centers. - *Biochim. biophys. Acta* **1273**: 108-128, 1996. [Devices, procedures.]
- Jansson, S., Andersen, B., Scheller, H.V.: Nearest-neighbor analysis of higher-plant photosystem I holocomplex. *Plant Physiol.* **112**: 409-420, 1994.
- Jenney, F.E., Jr., Prince, R.C., Daldal, F.: The membrane-bound cytochrome *c*₂ of *Rhodobacter capsulatus* can serve as an electron donor to the photosynthetic reaction center of *Rhodobacter sphaeroides*. - *Biochim. biophys. Acta* **1273**: 159-164, 1996.
- Joliot, P., Joliot, A., Verméglio, A.: Photo-induced cyclic electron transfer operates in frozen cells of *Rhodobacter sphaeroides*. - *Biochim. biophys. Acta* **1318**: 374-384, 1997. [Model.]
- Kamlowski, A., van der Est, A., Fromme, P., Krauß, N., Schubert, W.-D., Klukas, O., Stehlik, D.: The structural organization of the PsaC protein in Photosystem I from single crystal EPR and X-ray crystallographic studies. - *Biochim. biophys. Acta* **1319**: 199-213, 1997. [Model.]
- Kretschmann, H., Schlodder, E., Witt, H.T.: Net charge oscillation and proton release during water oxidation in photosynthesis. An electrochromic band shift study at pH 5.5-7.0. - *Biochim. biophys. Acta* **1274**: 1-8, 1996. [Model.]
- Lee, J.W., Lee, I., Greenbaum, E.: Platinization: a novel technique to anchor photosystem I reaction center onto a metal surface at biological temperature and pH. - *Biosensors Bioelectronics* **11**: 375-387, 1996.
- Maier, R.M., Zeltz, P., Kössel, H., Bonnard, G., Gualberto, J.M., Grienemberger, J.M.: RNA editing in plant mitochondria and chloroplasts. - *Plant mol. Biol.* **32**: 343-365, 1996. [Review, 113 ref.]
- Marsh, J.J., Wilson, K.J., Leberer, H.G.: Structural similarities between spinach chloroplast and cytosolic class I fructose 1,6-bisphosphate aldolases. Immunochemical and amino-terminal amino acid sequence analysis. - *Plant Physiol.* **91**: 1393-1401, 1989.
- McCormac, D.J., Marwood, C.A., Bruce, D., Greenberg, B.M.: Assembly of photosystem I and II during the early phases of light-induced development of chloroplasts from proplastids in *Spirodela oligorrhiza*. - *Photochem. Photobiol.* **63**: 837-845, 1996. [Model.]
- Meunier, P.C., Burnap, R.L., Sherman, L.A.: Improved 5-step modeling of the Photosystem II S-state mechanism in cyanobacteria. - *Photosynth. Res.* **47**: 61-76, 1996.
- Miller, M.S., Moser, L.E., Waller, S.S., Klopfenstein, T.J., Kirsch, B.H.: Immunofluorescent localization of RuBPCase in degraded C4 grass tissue. - *Crop Sci.* **36**: 169-175, 1996.
- Morin, X.K., Soll, J.: Immunogold labelling of cryosectioned pea chloroplasts and initial localization of the proteins associated with the protein import machinery. - *Planta* **201**: 119-127, 1997.
- Nobel, P.S., Israel, A.A., Wang, N.: Growth, CO₂ uptake, and responses of the carboxylating enzymes to organic carbon in two highly productive CAM species at current and doubled CO₂ concentrations. - *Plant Cell Environ.* **19**: 585-592, 1996. [Model.]

- Ogawa, N., Kai, T., Yabuta, N., Izui, K.: Phosphoenolpyruvate carboxylase of maize leaves: an improved method for purification and reduction of the inhibitory effect of malate by ethylene glycol and bicarbonate. - *Plant Cell Physiol.* **38**: 76-80, 1997.
- Olive, J., Ajlani, G., Astier, C., Recouvreur, M., Vernotte, C.: Ultrastructure and light adaptation of phycobilisome mutants of *Synechocystis* PCC 6803. - *Biochim. biophys. Acta* **1319**: 275-282, 1997. [Model.]
- Osuka, A., Marumo, S., Mataga, N., Taniguchi, S., Okada, T., Yamazaki, I., Nishimura, Y., Ohno, T., Nozaki, K.: A stepwise electron-transfer relay mimicking the primary charge separation in bacterial photosynthetic reaction center. - *J. amer. chem. Soc.* **118**: 155-168, 1996. [Model.]
- Ouzounidou, G., Moustakas, M., Strasser, R.J.: Sites of action of copper in the photosynthetic apparatus of maize leaves: Kinetic analysis of chlorophyll fluorescence, oxygen evolution, absorption changes and thermal dissipation as monitored by photoacoustic signals. - *Aust. J. Plant Physiol.* **24**: 81-90, 1997.
- Parry, M.A.J., Andralojc, P.J., Parmar, S., Keys, A.J., Habash, D., Paul, M.J., Alred, R., Quirk, W.P., Servaites, J.C.: Regulation of Rubisco by inhibitors in the light. - *Plant Cell Environ.* **20**: 528-534, 1997. [Procedures.]
- Peters, W.S., Bernstein, N.: The determination of relative elemental growth rate profiles from segmental growth rates. A methodological evaluation. - *Plant Physiol.* **113**: 1395-1404, 1997.
- Pfündel, E., Meister, A.: Flow cytometry of mesophyll and bundle-sheath chloroplast thylakoids of maize (*Zea mays* L.). - *Cytometry* **23**: 97-105, 1996.
- Prasil, O., Kolber, Z., Berry, J.A., Falkowski, P.G.: Cyclic electron flow around Photosystem II *in vivo*. - *Photosynth. Res.* **48**: 395-410, 1996. [Model.]
- Quiles, M.J., Albacete, M.E., Sabater, B., Cuello, J.: Isolation and partial characterization of the NADH dehydrogenase complex from barley chloroplast thylakoids. - *Plant Cell Physiol.* **37**: 1134-1142, 1996.
- Rawlyer, A., Siegenthaler, P.A.: Cyclodextrins: a new tool for the controlled lipid depletion of thylakoid membranes. - *Biochim. biophys. Acta* **1278**: 89-97, 1996.
- Robinson, D.L., Pathirana, S.M., Gantt, J.S., Vance, C.P.: Immunogold localization of nodule-enhanced phosphoenolpyruvate carboxylase in alfalfa. - *Plant Cell Environ.* **19**: 602-608, 1996.
- Rochaix, J.-D.: Post-transcriptional regulation of chloroplast gene expression in *Chlamydomonas reinhardtii*. - *Plant mol. Biol.* **32**: 327-341, 1996. [Assembly of Ps complexes; review, 94 ref.]
- Rodrigo, J., Rivas, E., Herrero, M.: Starch determination in plant tissues using a computerized image analysis system. - *Physiol. Plant.* **99**: 105-110, 1997.
- Salih, G., Wiklund, R., Tyystjärvi, T., Mäenpää, P., Gerez, C., Jansson, C.: Constructed deletions in lumen-exposed regions of the D1 protein in the cyanobacterium *Synechocystis* 6803: Effects on D1 insertion and accumulation in the thylakoid membrane, and on Photosystem II assembly. - *Photosynth. Res.* **49**: 131-140, 1996. [Model.]
- Saribas, A.S., Ding, H., Dutton, P.L., Daldal, F.: Substitutions at position 146 of cytochrome *b* affect drastically the properties of heme *b_L* and the *Q_o* site of *Rhodobacter capsulatus* cytochrome *bc₁* complex. - *Biochim. biophys. Acta* **1319**: 99-108, 1997. [Model.]
- Scheller, H.V.: *In vitro* cyclic electron transport in barley thylakoids follows two independent pathways. - *Plant Physiol.* **110**: 187-194, 1996.
- Schluchter, W.M., Shen, G., Zhao, J., Bryant, D.A.: Characterization of *psaI* and *psaL* mutants of *Synechococcus* sp. strain PCC 7002: A new model for state transitions in cyanobacteria. - *Photochem. Photobiol.* **64**: 53-66, 1996.
- Schols, M.J.C., Aardewijn, P., van Walraven, H.S.: Membrane vesicles from *Synechocystis* 6803 showing proton and electron transport and high ATP synthase activities. - *Photosynth. Res.* **47**: 301-305, 1996. [Preparation of membrane vesicles.]
- Smith, P.J., Pace, R.J.: Evidence for two forms of the *g* = 4.1 signal in the *S₂* state of photosystem II. Two magnetically isolated manganese dimers. - *Biochim. biophys. Acta* **1275**: 213-220, 1996.
- Swegle, M., Mattoo, A.K.: Identification and amino acid sequences of tryptic peptides of a novel ferredoxin-NADP⁺ oxidoreductase from rice. - *Plant Cell Physiol.* **37**: 1183-1187, 1996.

- Tanaka, K., Takio, S., Yamamoto, I., Satoh, T.: Purification of the cytosolic CuZn-superoxide dismutase (CuZn-SOD) of *Marchantia paleacea* var. *diptera* and its resemblance to CuZn-SOD from chloroplasts. - *Plant Cell Physiol.* **37**: 523-529, 1996.
- Tsionsky, M., Cardon, Z.G., Bard, A.J., Jackson, R.B.: Photosynthetic electron transport in single guard cells as measured by scanning electrochemical microscopy. - *Plant Physiol.* **113**: 895-901, 1997.
- Uemura, K., Suzuki, Y., Shikanai, T., Wadano, A., Jensen, R.G., Chmara, W., Yokota, A.: A rapid and sensitive method for determination of relative specificity of RuBisCO from various species by anion-exchange chromatography. - *Plant Cell Physiol.* **37**: 325-331, 1996.
- Vogel, H., Fischer, S., Valentin, K.: A model for the evolution of the plastid sec apparatus inferred from *secY* gene phylogeny. - *Plant mol. Biol.* **32**: 685-692, 1996.
- Williams, T.G., Flanagan, L.B., Coleman, J.R.: Photosynthetic gas exchange and discrimination against $^{13}\text{CO}_2$ and $\text{C}^{18}\text{O}^{16}\text{O}$ in tobacco plants modified by an antisense construct to have low chloroplastic carbonic anhydrase. - *Plant Physiol.* **112**: 319-326, 1996.
- Woodrow, I.E., Kelly, M.E., Mott, K.A.: Limitation of the rate of ribulosebisphosphate carboxylase activation by carbamylation and ribulosebisphosphate activase activity: Development and tests of a mechanistic model. - *Aust. J. Plant Physiol.* **23**: 141-149, 1996.
- Yaguchi, T., Oguni, A., Ouchiya, N., Igarashi, Y., Kodama, T.: A non-radioisotopic anion-exchange chromatographic method to measure the CO_2/O_2 specificity factor for ribulose bisphosphate carboxylase/oxygenase. - *Biosci. Biotechnol. Biochem.* **60**: 942-944, 1996.
- Yamaguchi, M., Hatefi, Y.: High cyclic transhydrogenase activity catalyzed by expressed and reconstituted nucleotide-binding domains of *Rhodospirillum rubrum* transhydrogenase. - *Biochim. biophys. Acta* **1318**: 225-234, 1997. [Model of proton-translocating transhydrogenation.]
- Yoshida, A., Takagaki, Y., Nishimune, T.: Enzyme immunoassay for phycocyanin as the main component of *Spirulina* color in foods. - *Biosci. Biotechnol. Biochem.* **60**: 57-60, 1996.
- Yu, S.-G., Björn, L.O.: Effects of UVB radiation on light-dependent and light-independent protein phosphorylation in thylakoid proteins. - *J. Photochem. Photobiol. B* **37**: 212-218, 1997. [Model.]

B. Analysis of chloroplast pigments and their *in vivo* complexes

- Arvidson, P.-O., Bratt, C.E., Carlsson, M., Åkerlund, H.-E.: Purification and identification of the violaxanthin deepoxidase as a 43 kDa protein. - *Photosynth. Res.* **49**: 119-129, 1996.
- Bollivar, D.W., Beale, S.I.: The chlorophyll biosynthesis enzyme Mg-protoporphyrin IX monomethyl ester (oxidative) cyclase. Characterization and partial purification from *Chlamydomonas reinhardtii* and *Synechocystis* sp. PCC 6803. - *Plant Physiol.* **112**: 105-114, 1996.
- Buck, D.R., Struve, W.S.: Tubular exciton models for BChl *c* antennae in chlorosomes from green photosynthetic bacteria. - *Photosynth. Res.* **48**: 367-377, 1996.
- Castelli, F., Contillo, R., Miceli, F.: Non-destructive determination of leaf chlorophyll content in four crop species. - *J. Agron. Crop Sci.* **177**: 275-283, 1996. [Chl meter.]
- Demmig-Adams, B., Adams, W.W., III, Barker, D.H., Logan, B.A., Bowling, D.R., Verhoeven, A.S.: Using chlorophyll fluorescence to assess the fraction of absorbed light allocated to thermal dissipation of excess excitation. - *Physiol. Plant.* **98**: 253-264, 1996.
- Earl, H.J., Tollenaar, M.: Maize leaf absorbance of photosynthetically active radiation and its estimation using a chlorophyll meter. - *Crop Sci.* **37**: 436-440, 1997.
- Eichacker, L.A., Edhofer, I., Wanner, G.: Cryopreservation of chlorophyll synthesis and apoprotein stabilization in barley etioplasts. - *Plant Physiol.* **112**: 633-639, 1996.
- Emeniser, C., Simunovic, N., Sander, L.C., Schwartz, S.J.: Separation of geometrical carotenoid isomers in biological extracts using a polymeric C_{30} column in reversed-phase liquid chromatography. - *J. agr. Food Chem.* **44**: 3887-3893, 1996.

- Frąckowiak, D., Cegielski, R., Niedbalska, M., Waloszek, A., Więckowski, S.: Thermal deactivation of excitation in pigment molecules in thylakoids. - *Photosynthetica* **32**: 439-453, 1996. [Model.]
- Gilmore, A.M., Hazlett, T.L., Debrunner, P.G., Govindjee: Comparative time-resolved photosystem II chlorophyll *a* fluorescence analyses reveal distinctive differences between photoinhibitory reaction center damage and xanthophyll cycle-dependent energy dissipation. - *Photochem. Photobiol.* **64**: 552-563, 1996. [Model.]
- Gitelson, A.A., Merzlyak, M.N.: Signature analysis of leaf reflectance spectra: Algorithm development for remote sensing of chlorophyll. - *J. Plant Physiol.* **148** [Lichtenthaler, H.K. (ed.): *Vegetation Stress*]: 494-500, 1996.
- Gruszecki, W.I., Matuła, M., Ko-chi, N., Koyama, Y., Krupa, Z.: *Cis-trans*-isomerization of violaxanthin in LHC II: violaxanthin isomerization cycle within the violaxanthin cycle. - *Biochim. biophys. Acta* **1319**: 267-274, 1997. [Model.]
- Heaton, J.W., Lencki, R.W., Marangoni, A.G.: Kinetic model of chlorophyll degradation in green tissue. - *J. agr. Food Chem.* **44**: 399-402, 1996.
- Idso, S.B., Kimball, B.A., Hendrix, D.L.: Effects of atmospheric CO₂ enrichment on chlorophyll, and nitrogen concentrations of sour orange tree leaves. - *Environ. exp. Bot.* **36**: 323-331, 1996. [Chlorophyll meter.]
- Kamimura, Y., Mori, T., Yamasaki, T., Kato, S.: Isolation, properties and a possible function of a water-soluble chlorophyll *a/b*-protein from Brussels sprouts. - *Plant Cell Physiol.* **38**: 133-138, 1997.
- Kaurov, Yu.N., Pogosyan, S.I., Mikoelyan, A.S., Voznyak, B., Khapter, R.: Opyt primeneniya metoda registratsii termokhemioluminesentsii khlorofilla dlya otsenki funktsional'nogo sostoyaniya prirodnikh soobshchestv fitoplanktona (po rezul'tatam 23-go reisa NIS "Vityaz"). [Chlorophyll thermochemioluminescence as an indicator of life activity of natural phytoplankton (measured in the course of the 23rd cruise of the R/V "Vityaz").] - *Fiziol. Rast.* **43**: 629-637, 1996. [In R.]
- Kobayashi, M.: Study of precise pigment composition of photosystem I-type reaction centers by means of normal-phase HPLC. - *J. Plant Res.* **109**: 223-230, 1996. [Model.]
- Krishnan, P., Ravi, I., Nayak, S.K.: Methods for determining leaf chlorophyll content of rice: A reappraisal. - *Indian J. exp. Bot.* **34**: 1030-1033, 1996.
- Marangoni, A.G.: Kinetic model for chlorophyll degradation in green tissue. 2. Pheophorbide degradation to colorless compounds. - *J. agr. Food Chem.* **44**: 3735-3740, 1996.
- Mercadante, A.Z., Rodriguez-Amaya, D.B., Britton, G.: HPLC and mass spectrometric analysis of carotenoids from mango. - *J. agr. Food Chem.* **42**: 120-123, 1997.
- Mimuro, M., Nishimura, Y., Yamazaki, I., Kobayashi, M., Wang, Z.Y., Nozawa, T., Shimada, K., Matsuura, K.: Excitation energy transfer in the green photosynthetic bacterium *Chloroflexus aurantiacus*: A specific effect of 1-hexanol on the optical properties of baseplate and energy transfer processes. - *Photosynth. Res.* **48**: 263-270, 1996. [Model.]
- Morimoto, H.: A diffusion model for the evolution of metalloporphyrin. - *J. math. Biol.* **34**: 689-706, 1996.
- Oba, T., Watanabe, T., Mimuro, M., Kobayashi, M., Yoshida, S.: Aggregation of chlorophyll *a'* in aqueous methanol. - *Photochem. Photobiol.* **63**: 639-648, 1996. [Model.]
- Ohtsuka, T., Ito, H., Tanaka, A.: Conversion of chlorophyll *b* to chlorophyll *a* and the assembly of chlorophyll with apoproteins by isolated chloroplasts. - *Plant Physiol.* **113**: 137-147, 1997. [Procedures.]
- Sailaja, M.V., Chandrasekhar, Y., Narayana Rao, D., Rama Das, V.S.: Laser-induced chlorophyll fluorescence ratio in certain plants exhibiting leaf heliotropism. - *Aust. J. Plant Physiol.* **24**: 159-164, 1997. [Experimental setup.]
- Sanders, R., van Zandvoort, M.A.M.J., Draaijer, A., Levine, Y.K., Gerritsen, H.C.: Confocal fluorescence lifetime imaging of chlorophyll molecules in polymer matrices. - *Photochem. Photobiol.* **64**: 817-820, 1996.

- Schreiber, U., Kühl, M., Klimant, I., Reising, H.: Measurement of chlorophyll fluorescence within leaves using a modified PAM Fluorometer with a fiber-optic microprobe. - *Photosynth. Res.* **47**: 103-109, 1996. [Experimental set-up.]
- Shinano, T., Lei, T.T., Kawamukai, T., Inoue, M.T., Koike, T., Tadano, T.: Dimethylsulfoxide method for the extraction of chlorophylls *a* and *b* from the leaves of wheat, field bean, dwarf bamboo, and oak. - *Photosynthetica* **32**: 409-415, 1996.
- Shinkarev, V.P., Xu, C.H., Govindjee, Wraight, C.A.: Kinetics of the oxygen evolution step in plants determined from flash-induced chlorophyll *a* fluorescence. - *Photosynth. Res.* **51**: 43-49, 1994. [Method for measuring kinetics of oxygen evolution.]
- Thompson, J.A., Schweizer, L.E., Nelson, R.L.: Association of specific leaf weight, an estimate of chlorophyll, and chlorophyll concentration with apparent photosynthesis in soybean. - *Photosynth. Res.* **49**: 1-10, 1996. [Use of the *Minolta 502 SPAD* device.]
- Turner, L., Houghton, J.D., Brown, S.B.: Purification and identification of apophycocyanin α and β subunits from soluble protein extracts of the red alga *Cyanidium caldarium*. Light exposure is not a prerequisite for biosynthesis of the protein moiety of this photosynthetic accessory pigment. - *Planta* **201**: 78-83, 1997.
- Wedemayer, G.J., Kidd, D.G., Glazer, A.N.: Cryptomonad biliproteins: Bilin types and locations. - *Photosynth. Res.* **48**: 163-170, 1996. [Isolation and characterization.]
- Young, A.J., Orset, S., Tsavalos, A.J.: Methods for carotenoid analysis. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 597-622. Marcel Dekker, New York - Basel - Hong Kong 1997. [Review, 89 ref.]

C. Analysis of gas exchange and accumulation of dry matter and energy

- Ågren, G.I.: Nitrogen productivity or photosynthesis minus respiration to calculate plant growth? - *Oikos* **76**: 529-535, 1996. [Model.]
- Andriolo, J.L., Le Bot, J., Gary, C., Sappe, G., Orlando, P., Brunel, B., Sarrouy, C.: An experimental set-up to study carbon, water, and nitrate uptake rates by hydroponically grown plants. - *J. Plant Nutr.* **19**: 1441-1462, 1996.
- Atkin, O.K., Westbeek, M.H.M., Cambridge, M.L., Lambers, H., Pons, T.L.: Leaf respiration in light and darkness. A comparison of slow- and fast-growing *Poa* species. *Plant Physiol.* **113**: 961-965, 1997. [Procedure, model.]
- Baille, M., Romero-Aranda, R., Baille, A.: Gas-exchange responses of rose plants to CO₂ enrichment and light. - *J. hort. Sci.* **71**: 945-956, 1996. [Model.]
- Baille, M., Romero-Aranda, R., Baille, A.: Stomatal conductance of rose whole plants in greenhouse conditions: analysis and modelling. - *J. hort. Sci.* **71**: 957-970, 1996. [Model.]
- Balls, G.R., Palmer-Brown, D., Sanders, G.E.: Investigating microclimate influences on ozone injury in clover (*Trifolium subterraneum*) using artificial neural networks. - *New Phytol.* **132**: 271-280, 1996. [Model; Chl, Car.]
- Barradas, V.L., Jones, H.G.: Responses of CO₂ assimilation to changes in irradiance: laboratory and field data and a model for beans (*Phaseolus vulgaris* L.). - *J. exp. Bot.* **47**: 639-645, 1996.
- Barták, M., Nijs, I., Impens, I.: The effects of long-term exposure of *Lolium perenne* L. plants to elevated CO₂ and/or elevated air temperature on quantum yield of photosystem 2 and net photosynthesis. - *Photosynthetica* **32**: 549-562, 1996. [Set-up with fluorometer and infra-red gas analyser.]
- Berlyn, G.P., Albers, B.J., Thadani, R.: A cytophotometric technique for measuring photosynthetic potential of leaves: Preliminary research and development. - *Biotech. Histochem.* **71**: 251-257, 1996. [Leaf optical properties.]
- Berninger, F., Mäkelä, A., Hari, P.: Optimal control of gas exchange during drought: Empirical evidence. - *Ann. Bot.* **77**: 469-476, 1996. [Model.]

- Blasius, B., Beck, F., Lüttge, U.: A model for photosynthetic oscillations in crassulacean acid metabolism (CAM). - J. theor. Biol. **184**: 345-351, 1997.
- Borland, A.M.: A model for the partitioning of photosynthetically fixed carbon during the C₃-CAM transition in *Sedum telephium*. - New Phytol. **134**: 433-444, 1996.
- Brewer, C.A.: What's so bad about being wet all over. Investigating leaf surface wetness. - Amer. Biol. Teach. **58**: 414-417, 1996. [Ps.]
- Buckley, T.N., Farquhar, G.D., Mott, K.A.: Qualitative effects of patchy stomatal conductance distribution features on gas exchange calculations. - Plant Cell Environ. **20**: 867-880, 1997. [Model.]
- Buschmann, C., Schweiger, J., Lichtenthaler, H.K., Richter, P.: Application of the Karlsruhe CCD-OMA LIDAR-fluorosensor in stress detection of plants. - J. Plant Physiol. **148** [Lichtenthaler, H.K. (ed.): Vegetation Stress]: 548-554, 1996.
- Carey, E.V., DeLucia, E.H., Ball, J.T.: Stem maintenance and construction respiration in *Pinus ponderosa* grown in different concentrations of atmospheric CO₂. - Tree Physiol. **16**: 125-130, 1996. [Calculation.]
- Carlson, T.N., Bunce, J.A.: Will a doubling of atmospheric carbon dioxide concentration lead to an increase or a decrease in water consumption by crops? Ecol. Model. **88**: 241-246, 1996. [Model.]
- Carter, G.A., Cibula, W.G., Miller, R.L.: Narrow-band reflectance imagery compared with thermal imagery for early detection of plant stress. - J. Plant Physiol. **148** [Lichtenthaler, H.K. (ed.): Vegetation Stress]: 515-522, 1996.
- Chen, D.X., Hunt, H.W., Morgan, J.A.: Responses of a C₃ and C₄ perennial grass to CO₂ enrichment and climate change: Comparison between model predictions and experimental data. - Ecol. Model. **87**: 11-27, 1996.
- Chikushi, J., Eguchi, H.: Two dimensional analysis of relative growth in lettuce leaf. - Biotronics **18**: 37-44, 1989.
- Clarke, J.M., Clarke, F.R.: Considerations in design and analysis of experiments to measure stomatal conductance of wheat. - Crop Sci. **36**: 1401-1405, 1996.
- Collier, D.E., Grodzinski, B.: Growth and maintenance respiration of leaflet, stipule, tendril, rachis, and petiole tissues that make up the compound leaf of pea (*Pisum sativum*). - Can. J. Bot. **74**: 1331-1337, 1996. [Model.]
- Curtis, P.S.: A meta-analysis of leaf gas exchange and nitrogen in trees grown under elevated carbon dioxide. - Plant Cell Environ. **19**: 127-137, 1996. [Model.]
- Domingo, F., Van Gardingen, P.R., Brenner, A.J.: Leaf boundary layer conductance of two native species in southeast Spain. - Agr. Forest Meteorol. **81**: 179-199, 1996.
- Dugas, W.A., Reicosky, D.C., Kiniry, J.R.: Chamber and micrometeorological measurements of CO₂ and H₂O fluxes for three C₄ grasses. - Agr. Forest Meteorol. **83**: 113-133, 1997.
- Düring, H., Stoll, M.: Stomatal patchiness of grapevine leaves. I. Estimation of non-uniform stomatal apertures by a new infiltration technique. - Vitis **35**: 65-68, 1996.
- Eckardt, N.A., Snyder, G.W., Portis, A.R., Ogren, W.L.: Growth and photosynthesis under high and low irradiance of *Arabidopsis thaliana* antisense mutants with reduced ribulose-1,5-bisphosphate carboxylase/oxygenase activase content. - Plant Physiol. **113**: 575-586, 1997. [Procedures.]
- Falge, E., Graber, W., Siegwolf, R., Tenhunen, J.D.: A model of the gas exchange response of *Picea abies* to habitat conditions. - Trees **10**: 277-287, 1996.
- Frey, B., Scheidegger, C., Günthard-Goerg, M.S., Matyssek, R.: The effects of ozone and nutrient supply on stomatal response in birch (*Betula pendula*) leaves as determined by digital image-analysis and X-ray microanalysis. - New Phytol. **132**: 135-143, 1996.
- Gavrikov, V.L., Sekretenko, O.P.: Shoot-based tree-dimensional model of young Scots pine growth. - Ecol. Model. **88**: 183-193, 1996.
- Grams, T.E.E., Beck, F., Lüttge, U.: Generation of rhythmic and arrhythmic behaviour of Crassulacean acid metabolism in *Kalanchoë daigremontiana* under continuous light by varying

- the irradiance or temperature: Measurements *in vivo* and model simulations. - *Planta* **198**: 110-117, 1996.
- Green, S.R., McNaughton, K.G.: Modelling effective stomatal resistance for calculating transpiration from an apple tree. - *Agr. Forest Meteorol.* **83**: 1-26, 1997.
- Griffin, K.L., Ross, P.D., Sims, D.A., Luo, Y., Seemann, J.R., Fox, C.A., Ball, J.T.: EcoCELLS: Tools for mesocosm scale measurements of gas exchange. - *Plant Cell Environ.* **19**: 1210-1211, 1996. [Review, 56 ref.]
- Guidi, L., Nali, C., Ciompi, S., Lorenzini, G., Soldatini, G.F.: The use of chlorophyll fluorescence and leaf gas exchange as methods for studying the different responses to ozone of two bean cultivars. - *J. exp. Bot.* **48**: 173-179, 1997.
- Hakala, K., Mela, T., Laurila, H., Kaukoranta, T.: Arrangement of experiments for simulating the effects of elevated temperatures and elevated CO₂ levels on field-sown crops in Finland. - *Agr. Food Sci. Finland* **5**: 25-47, 1996. [Open-top chamber.]
- Harbinson, J., Burcham, K., Wilton, D.: A design for a disequilibrium humidifier suitable for gas conditioning in photosynthetic measurement systems. - *Biotronics* **18**: 1-8, 1989.
- Hartwell, J., Bowsher, C.G., Emes, M.J.: Recycling of carbon in the oxidative pentose phosphate pathway in non-photosynthetic plastids. - *Planta* **200**: 107-112, 1996. [Procedures.]
- He, D., Edwards, G.F.: Estimation of diffusive resistance of bundle sheath cells to CO₂ from modelling of C₄ photosynthesis. - *Photosynth. Res.* **49**: 195-208, 1996.
- He, D., Edwards, G.E.: Evaluation of the potential to measure photosynthetic rates in C₃ plants (*Flaveria pringlei* and *Oryza sativa*) by combining chlorophyll fluorescence analysis and a stomatal conductance model. - *Plant Cell Environ.* **19**: 1272-1280, 1996.
- Heissner, A.: Der CO₂-Gaswechsel von Paprikapflanzen in Abhängigkeit von der Bestrahlungsstärke, der CO₂-Konzentration, der Lufttemperatur und dem Dampfdruck-sättigungsdefizit der Luft: Messungen und Modell. - *Gartenbauwissenschaft* **62**: 78-90, 1997.
- Hendrey, G.R., Long, S.P., McKee, I.F., Baker, N.R.: Can photosynthesis respond to short-term fluctuations in atmospheric carbon dioxide? - *Photosynth. Res.* **51**: 179-184, 1997. [Combined open-gas exchange and modulated fluorescence systems.]
- Hiroki, M., Watanabe, M.M.: Field measurement of carbon dioxide evolution from soil by a flow-through chamber method using a portable photosynthesis meter. - *Soil Sci. Plant Nutr.* **43**: 255-260, 1997.
- Hoad, S.P., Grace, J., Jeffree, C.E.: A leaf disc method for measuring cuticular conductance. - *J. exp. Bot.* **47**: 431-437, 1996.
- Hogan, K.P., Whitehead, D., Kallarackal, J., Buwalda, J.G., Meekings, J., Rogers, G.N.D.: Photosynthetic activity of leaves of *Pinus radiata* and *Nothofagus fusca* after 1 year of growth at elevated CO₂. - *Aust. J. Plant Physiol.* **23**: 623-630, 1996. [Model.]
- Huntingford, C., Cox, P.M.: Use of statistical and neural network techniques to detect how stomatal conductance responds to changes in the local environment. - *Ecol. Model.* **97**: 217-246, 1997.
- Ingestad, T., Hellgren, O., Hesseldahl, H., Lund Ingestad, A.-B.: Methods and applications to control the uptake rate of carbon. - *Physiol. Plant.* **98**: 667-676, 1996.
- Jacobs, C.M.J., van den Hurk, B.J.J.M., de Bruin, H.A.R.: Stomatal behaviour and photosynthetic rate of unstressed grapevines in semi-arid conditions. - *Agr. Forest Meteorol.* **80**: 111-134, 1996. [Model.]
- Jiao, J., Leonardos, E.D., Grodzinski, B.: Approaches to measuring plant productivity and growth. - In: Pessarakli, M. (ed.): *Handbook of Photosynthesis*. Pp. 699-716. Marcel Dekker, New York - Basel - Hong Kong 1997. [Review, 185 ref.]
- Kaitaniemi, P., Honkanen, T.: Simulating source-sink control of carbon and nutrient translocation in a modular plant. - *Ecol. Model.* **88**: 227-240, 1996.
- Kitano, M., Yokomakura, F., Eguchi, H.: Interactive dynamics of fruit and stem growth in tomato plants as affected by root water condition. II. Relation with sucrose translocation. - *Biotronics* **25**: 77-84, 1996. [Method for collecting phloem sap.]

- Körner, C., Würth, M.: A simple method for testing leaf responses of tall tropical forest trees to elevated CO₂. - *Oecologia* **107**: 421-425, 1996. [Gas exchange system and chamber.]
- Laisk, A., Loreto, F.: Determining photosynthetic parameters from leaf CO₂ exchange and chlorophyll fluorescence. Ribulose-1,5-bisphosphate carboxylase/oxygenase specificity factor, dark respiration in the light, excitation distribution between photosystems, alternative electron transport rate, and mesophyll distribution between photosystems, alternative electron transport rate, and mesophyll diffusion resistance. - *Plant Physiol.* **110**: 903-912, 1996.
- Leuning, R.: Scaling to a common temperature improves the correlation between the photosynthesis parameters $J_{\max}$ and $V_{\max}$. - *J. exp. Bot.* **48**: 345-347, 1997. [Model.]
- Lewis, J.D., Tissue, D.T., Strain, B.R.: Seasonal response of photosynthesis to elevated CO₂ in loblolly pine (*Pinus taeda* L.) over two growing seasons. - *Global Change Biol.* **2**: 103-114, 1996. [Model.]
- Lima da Silva, A., Hariscain, P., Ollat, N., Doazan, J.P.: Estimation de la capacité photoautotrophique de vitroplants de porte-greffe de vigne (var. Gravesac): mise au point d'un système de mesure de la photosynthèse nette de vitroplants. - *Vitis* **35**: 73-78, 1996. [Open system with IRGA for plants *in vitro*.]
- Lloyd, J., Kruijt, B., Hollinger, D.Y., Grace, J., Francey, R.J., Wong, S.-C., Kelliher, F.M., Miranda, A.C., Farquhar, G.D., Gash, J.H.C., Vygodskaya, N.N., Wright, I.R., Miranda, H.S., Schulze, E.-D.: An alternative interpretation of the appropriateness and correct means for the evaluation of CO₂ recycling indices. - *Aust. J. Plant Physiol.* **24**: 399-405, 1997.
- Mäkelä, A., Berninger, F., Hari, P.: Optimal control of gas exchange during drought: theoretical analysis. - *Ann. Bot.* **77**: 461-467, 1996.
- Mankin, K.R., Fynn, R.P.: Modeling individual nutrient uptake by plants: Regulating demand to microclimate. - *Agr. Syst.* **50**: 101-114, 1996. [Ps, growth.]
- Marek, M.V., Kalina, J.: Comparison of two experimental approaches used in the investigations of the long-term effects of elevated CO₂ concentration. - *Photosynthetica* **32**: 129-133, 1996.
- Marshall, J.D., Monserud, R.A.: Homeostatic gas-exchange parameters inferred from ¹³C/¹²C in tree rings of conifers. - *Oecologia* **105**: 13-21, 1996. [Ps.]
- Matejovič, I.: The application of Dumas method for determination of carbon, nitrogen, and sulphur in plant samples. - *Rost. Výroba (Praha)* **42**: 313-316, 1996.
- McConnaughay, K.D.M., Bassow, S.L., Bernston, G.M., Bazzaz, F.A.: Leaf senescence and decline of end-of-season gas exchange in five temperate deciduous tree species grown in elevated CO₂ concentrations. - *Global Change Biol.* **2**: 25-33, 1996. [Models.]
- McPherson, H.G., Manson, P.J., Snelgar, W.P.: Non-destructive measurement of dormant bud respiration rates. - *Photosynthetica* **33**: 125-138, 1997. [Dynamic closed air system, bud chamber and clamp.]
- Medlyn, B.E.: The optimal allocation of nitrogen within the C₃ photosynthetic system at elevated CO₂. - *Aust. J. Plant Physiol.* **23**: 593-603, 1996. [Model.]
- Miller, D.P., Howell, G.S., Flore, J.A.: A whole-plant, open, gas-exchange system for measuring net photosynthesis of potted woody plants. - *HortScience* **31**: 944-946, 1996.
- Nátr, L.: Annual course of simulated rate of photosynthesis under natural conditions. - *Rost. Výroba (Praha)* **43**: 205-208, 1997.
- Nijs, I., Impens, I.: Effects of elevated CO₂ concentration and climate-warming on photosynthesis during winter in *Lolium perenne*. - *J. exp. Bot.* **47**: 915-924, 1996. [Model.]
- Niu, G., Kozai, T.: Simulation of the growth of potato plantlets cultured photoautotrophically *in vitro*. - *Trans. ASAE* **40**: 255-260, 1997. [Ps.]
- Ober, E.S., Sharp, R.E.: A microprocessor for direct measurement of O₂ partial pressure within plant tissues. - *J. exp. Bot.* **47**: 447-454, 1996.
- Pachepsky, L.B., Acock, B.: An adequate model of photosynthesis - II. Dependence of parameters on environmental factors. - *Agr. Systems* **50**: 227-238, 1996.

- Pachepsky, L.B., Haskett, J.D., Acock, B.: An adequate model of photosynthesis - I. Parameterization, validation and comparison of models. - *Agr. Systems* **50**: 209-225, 1996.
- Pearcy, R.W., Gross, L.J., He, D.: An improved dynamic model of photosynthesis for estimation of carbon gain in sunfleck light regimes. - *Plant Cell Environ.* **20**: 411-424, 1997.
- Poni, S., Magnanini, E., Rebutti, B.: An automated chamber system for measurements of whole-vine gas exchange. - *HortScience* **32**: 64-67, 1997.
- Pritchard, S.G., Peterson, C.M., Prior, S.A., Rogers, H.H.: Elevated atmospheric CO₂ differentially affects needle chloroplast ultrastructure and phloem anatomy in *Pinus palustris*: interactions with soil resource availability. - *Plant Cell Environ.* **20**: 461-471, 1997. [Procedures.]
- Reddy, K.R., Hodges, H.F., McKinion, J.M.: Modeling temperature effects on cotton internode and leaf growth. - *Crop Sci.* **37**: 503-509, 1997.
- Rice, S.K., Giles, L.: The influence of water content and leaf anatomy on carbon isotope discrimination and photosynthesis in *Sphagnum*. - *Plant Cell Environ.* **19**: 118-124, 1996. [Gas exchange system.]
- Richter, T., Fukshansky, L.: Optics of a bifacial leaf: 1. A novel combined procedure for deriving the optical parameters. - *Photochem. Photobiol.* **63**: 507-516, 1996.
- Richter, T., Fukshansky, L.: Optics of a bifacial leaf: 2. Light regime as affected by the leaf structure and the light source. - *Photochem. Photobiol.* **63**: 517-527, 1996.
- Rico, M., Gallego, H.A., Moreno, G., Santa Regina, I.: Stomatal response of *Quercus pyrenaica* Willd to environmental factors in two sites differing in their annual rainfall (Sierra de Gata, Spain). - *Ann. Sci. forest.* **53**: 221-234, 1996. [Model.]
- Šantrůček, J., Sage, R.F.: Acclimation of stomatal conductance to a CO₂-enriched atmosphere and elevated temperature in *Chenopodium album*. - *Aust. J. Plant Physiol.* **23**: 467-478, 1996. [Model.]
- Sasaki, H., Samejima, M., Ishii, R.: Analysis by $\delta^{13}\text{C}$ measurement on mechanism of cultivar difference in leaf photosynthesis of rice (*Oryza sativa* L.). - *Plant Cell Physiol.* **37**: 1161-1166, 1996. [Procedures.]
- Sassenrath-Cole, G.F., Lu, G., Hodges, H.F., McKinion, J.M.: Photon flux density versus leaf senescence in determining photosynthetic efficiency and capacity of *Gossypium hirsutum* L. leaves. - *Environ. exp. Bot.* **36**: 439-446, 1996. [Calculations.]
- Shinano, T., Osaki, M., Tadano, T.: Problems in the methods of estimation of growth and maintenance respiration. - *Soil Sci. Plant Nutr.* **42**: 773-784, 1996.
- Smith, E.C., Griffiths, H.: A pyrenoid-based carbon-concentrating mechanism is present in terrestrial bryophytes of the class *Anthocerotae*. - *Planta* **200**: 203-212, 1996. [Procedures.]
- Strachan, I.B., Harvey, L.E.: Quantifying the effects of temporal autocorrelation on climatological regression models using geostatistical techniques. - *Can. J. Forest Res.* **26**: 864-871, 1996. [Model of stomatal conductance.]
- Syvertsen, J.P., Lloyd, J.: CO₂ assimilation of *Citrus* leaves: from mesophyll conductance to gross primary productivity of trees in different climates. - *Acta Hort.* **416** [Habib, R., Blaise, P. (ed.): *Comp. Mod. on Fruit Research*]: 147-154, 1996. [Model.]
- Tardieu, F., Lafarge, T., Simmoneau, T.: Stomatal control by fed or endogenous xylem ABA in sunflower: interpretation of correlations between leaf water potential and stomatal conductance in anisohydric species. - *Plant Cell Environ.* **19**: 75-84, 1996.
- Thornley, J.H.M., Cannell, M.G.R.: Temperate forest responses to carbon dioxide, temperature and nitrogen: a model analysis. - *Plant Cell Environ.* **19**: 1331-1348, 1996.
- Verhoef, A.: The effect of temperature differences between porometer head and leaf surface on stomatal conductance measurements. - *Plant Cell Environ.* **20**: 641-646, 1997.
- Vesala, T., Ahonen, T., Hari, P., Krissinel, E., Shokhirev, N.: Analysis of stomatal CO₂ uptake by a three-dimensional cylindrically symmetric model. - *New Phytol.* **132**: 235-245, 1996.
- Vogelmann, T.C., Bornman, J.F., Yates, D.J.: Focusing of light by leaf epidermal cells. - *Physiol. Plant.* **98**: 43-56, 1996. [Ps; procedures.]

- Walcroft, A.S., Silvester, W.B., Whitehead, D., Kelliher, F.M.: Seasonal changes in stable carbon isotope ratios within annual rings of *Pinus radiata* reflect environmental regulation of growth processes. - Aust. J. Plant Physiol. **24**: 57-68, 1997.
- Wang, K.Y.: Apparent quantum yield in Scots pine after four years of exposure to elevated temperature and CO₂. - Photosynthetica **32**: 339-353, 1996. [Open gas exchange system with IRGA.]
- Wilson, K.B., Bunce, J.A.: Effects of carbon dioxide concentration on the interactive effects of temperature and water vapour on stomatal conductance in soybean. - Plant Cell Environ. **20**: 230-238, 1997.
- Wullschlegel, S.D., Hanson, P.J., Edwards, G.S.: Growth and maintenance respiration in leaves of northern red oak seedlings and mature trees after 3 years of ozone exposure. - Plant Cell Environ. **19**: 577-584, 1996. [Models.]
- Yamaguchi, J.: An estimate of the photosynthate pool size from the equilibrium of ¹⁴CO₂. - Photosynthetica **32**: 87-95, 1996. [Open and close gas exchange systems.]
- Zur, B., Reid, J.F., Hesketh, J.D.: The dynamics of a maize canopy development. 1. Leaf ontogeny. - Biotronics **18**: 55-66, 1989. [Model.]

D. Canopies and aquatic communities: analysis of structure, production, and mass and energy exchange

- Aber, J.D., Reich, P.B., Goulden, M.L.: Extrapolating leaf CO₂ exchange to the canopy: a generalized model of forest photosynthesis compared with measurements by eddy correlation. - Oecologia **106**: 257-265, 1996.
- Annicchiarico, P., Marrani, G.: Prediction of adaptability and yield stability of durum wheat genotypes from yield response in normal and artificially drought-stressed conditions. - Field Crops Res. **46**: 71-80, 1996.
- Baldocchi, D., Valentini, R., Running, S., Oechel, W., Dahlman, R.: Strategies for measuring and modelling carbon dioxide and water vapour fluxes over terrestrial ecosystems. - Global Change Biol. **2**: 159-168, 1996.
- Baldocchi, D., Valentini, R., Running, S., Oechel, W., Dahlman, R.: Strategies for measuring and modelling carbon dioxide and water vapour fluxes over terrestrial ecosystems. - Global Change Biol. **2**: 159-168, 1996.
- Baldocchi, D.D., Vogel, C.A.: Energy and CO₂ flux densities above and below a temperate broad-leaved forest and a boreal pine forest. - Tree Physiol. **16**: 5-16, 1996.
- Bellairs, S.M., Turner, N.C., Hick, P.T., Smith, R.C.G.: Plant and soil influences on estimating biomass of wheat in plant breeding plots using field spectral radiometers. - Aust. J. agr. Res. **47**: 1017-1034, 1996.
- Berninger, F.: Effects of drought and phenology on GPP in *Pinus sylvestris*: a simulation study along a geographical gradient. - Funct. Ecol. **11**: 33-42, 1997. [Production model.]
- Blackmer, T.M., Schepers, J.S.: Aerial photography to detect nitrogen stress in corn. - J. Plant Physiol. **148** [Lichtenthaler, H.K. (ed.): Vegetation Stress]: 440-444, 1996.
- Blackmer, T.M., Schepers, J.S., Varvel, G.E., Meyer, G.E.: Analysis of aerial photography for nitrogen stress within corn fields. - Agron. J. **88**: 729-733, 1996. [Yield prediction.]
- Boucher, N.P., Prézelin, B.B.: Spectral modeling of UV inhibition of *in situ* Antarctic primary production using a field-derived biological weighting function. - Photochem. Photobiol. **64**: 407-418, 1996.
- Bugmann, H.K.M., Yan, X., Sykes, M.T., Martin, P., Lindner, M., Desanker, P.V., Cumming, S.G.: A comparison of forest gap models: model structure and behaviour. - Climatic Change **34**: 289-313, 1996.
- Bunce, J.A., Wilson, K.B., Carlson, T.N.: The effect of doubled CO₂ on water use by alfalfa and orchard grass: simulating evapotranspiration using canopy conductance measurements. - Global Change Biol. **3**: 81-87, 1997. [Model.]

- Chen, J.M.: Optically-based methods for measuring seasonal variation of leaf area index in boreal conifer stands. - *Agr. Forest Meteorol.* **80**: 135-163, 1996.
- Chen, S.G., Impens, I., Ceulemans, R.: Modelling the effects of elevated atmospheric CO₂ on crown development, light interception and photosynthesis of poplar in open top chambers. - *Global Change Biol.* **3**: 97-106, 1997.
- Cohen, W.B., Kushla, J.D., Ripple, W.J., Garman, S.L.: An introduction to digital methods in remote sensing of forested ecosystems: Focus on the Pacific Northwest, USA. - *Environ. Manage.* **20**: 421-435, 1996.
- Constable, J.V.H., Taylor, G.E., Jr., Laurence, J.A., Weber, J.A.: Climatic change effects on the physiology and growth of *Pinus ponderosa*: Expectations from simulation modeling. - *Can. J. Forest Res.* **26**: 1315-1325, 1996. [TREGRO model.]
- Coughlan, J.C., Dungan, J.L.: Combining remote sensing and forest ecosystem modelling: An example using the Regional HydroEcological Simulation System (RHESys). - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 135-158. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Review, 60 ref.]
- Craufurd, P.Q., Qi, A., Ellis, R.H., Summerfield, R.J., Roberts, F.H.: Development in cowpea (*Vigna unguiculata*). II. Effect of temperature and saturation deficit on time to flowering in photoperiod-insensitive genotypes. - *Exp. Agr.* **32**: 13-28, 1996.
- Cutini, A.: The influence of drought and thinning on leaf area index estimates from canopy transmittance method. - *Ann. Sci. Forest.* **53**: 595-603, 1996.
- Dai, T., Wiegert, R.G.: Estimation of the primary productivity of *Spartina alterniflora* using a canopy model. - *Ecography* **19**: 410-423, 1996.
- Dai, T., Wiegert, R.G.: Estimation of the primary productivity of *Spartina alterniflora* using a canopy model. - *Ecography* **19**: 410-423, 1996.
- De Leeuw, J., Wielemaker, A., Demunck, W., Herman, P.M.J.: Net aerial primary production (NAPP) of the marsh macrophyte *Scirpus maritimus* estimated by a combination of destructive and non-destructive sampling methods. - *Vegetatio* **123**: 101-108, 1996.
- Den Hertog, J., Stulen, I., Fonseca, F., Delea, P.: Modulation of carbon and nitrogen allocation in *Urtica dioica* and *Plantago major* by elevated CO₂: Impact of accumulation of nonstructural carbohydrates and ontogenic drift. - *Physiol. Plant.* **98**: 77-88, 1996. [Simulation of RGR.]
- Dewar, R.C.: A simple model of light and water use evaluated for *Pinus radiata*. - *Tree Physiol.* **17**: 259-265, 1997.
- Eschenbach, C., Kappen, L.: Leaf area index determination in an alder forest: a comparison of three methods. - *J. exp. Bot.* **47**: 1457-1462, 1996.
- Eschenbach, C.: Modellierung der Primärproduktion der Schwarzerle (*Alnus glutinosa*). - *EcoSys* **4**: 195-206, 1996.
- Ewert, F., Porter, J., Honermeier, B.: Use of AFRCWHEAT2 to predict the development of main stem and tillers in winter triticale and winter wheat in North East Germany. - *Eur. J. Agron.* **5**: 89-103, 1996.
- Fong, P., Jacobson, M.E., Meslier, M.C., Lirman, D., Harwell, M.C.: Investigating the management potential of a seagrass model through sensitivity analysis and experiments. - *Ecol. Appl.* **7**: 300-315, 1997.
- Friberg, T., Boegh, E., Soegaard, H.: Carbon dioxide flux, transpiration and light response of millet in the Sahel. - *J. Hydrol.* **189**: 633-650, 1997.
- Frolking, S., Goulden, M.L., Wofsy, S.C., Fan, S.M., Sutton, D.J., Munger, J.W., Bazzaz, A.M., Daube, B.C., Crill, P.M., Aber, J.D., Band, L.E., Wang, X., Savage, K., Moore, T., Harriss, R.C.: Modelling temporal variability in the carbon balance of a spruce/moss boreal forest. - *Global Change Biol.* **2**: 343-366, 1996.
- Futakuchi, K., Ishii, R.: [Estimation of leaf area index in rice canopy by tube solarimeter and photodiode.] - *Jap. J. Crop Sci.* **66**: 135-136, 1997. [In Jap.]

- Gallardo, M., Snyder, R.L., Schulbach, K., Jackson, L.E.: Crop growth and water use model for lettuce. - *J. Irrig. Drain. Eng.* **122**: 354-359, 1996.
- Gao, Q., Zhang, X.S.: A simulation study of responses of the northeast China transect to elevated CO₂ and climate change. - *Ecol. Appl.* **7**: 470-483, 1997.
- Gilmore, D.W., Seymour, R.S.: Crown architecture of *Abies balsamea* from four canopy positions. - *Tree Physiol.* **17**: 71-80, 1997. [Model.]
- Goward, S.N., Dye, D.G.: Global biospheric monitoring with remote sensing. - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 241-272. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Ps; review, 198 ref.]
- Gower, S.T., Pongracic, S., Landsberg, J.J.: A global trend in belowground carbon allocation: can we use the relationship at smaller scales? - *Ecology* **77**: 1750-1755, 1996. [Model.]
- Goyne, P.J., Meinke, H., Milroy, S.P., Hammer, G.L., Harre, J.M.: Development and use of a barley crop simulation model to evaluate production management strategies in north-eastern Australia. - *Aust. J. agr. Res.* **47**: 997-1015, 1996.
- Granier, A., Bréda, N.: Modelling canopy conductance and stand transpiration of an oak forest from sap flow measurements. - *Ann. Sci. forest.* **53**: 537-546, 1996.
- Green, R.M., Lucas, N.S., Curran, P.J., Foody, G.M.: Coupling remotely sensed data to an ecosystem simulation model - an example involving a coniferous plantation in upland Wales. - *Global Ecol. Biogeogr. Lett.* **5**: 192-205, 1996.
- Haggar, J.P., Ewel, J.J.: Primary productivity and resource partitioning in model tropical ecosystems. - *Ecology* **78**: 1211-1221, 1997.
- Harazono, Y., Yoshimoto, M., Kawamura, T.: [Photosynthesis rate distribution and light use efficiency within a soybean canopy determined by numerical simulation with the neo soil plant atmosphere model.] - *J. agr. Meteorol.* **52**: 281-291, 1996. [In Jap., ab: E.]
- Hättenschwiler, S., Körner, C.: Effects of elevated CO₂ and increased nitrogen deposition on photosynthesis and growth of understory plants in spruce model ecosystems. - *Oecologia* **106**: 172-180, 1996.
- Hättenschwiler, S., Körner, C.: System-level adjustments to elevated CO₂ in model spruce ecosystems. - *Global Change Biol.* **2**: 377-387, 1996.
- Hayashi, Y., Kurose, Y., Yamauchi, Y., Kohno, Y.: [Application of an estimation model for radiation incidence to the complex terrain of Kuma in Ehime prefecture.] - *Bull. Shikoku nat. agr. Exp. Sta.* **60**: 127-141, 1996. [In Jap., ab: E.]
- Hunt, E.R., Jr., Piper, S.C., Nemani, R., Keeling, C.D., Otto, R.D., Running, S.W.: Global net carbon exchange and intra-annual atmospheric CO₂ concentrations predicted by an ecosystem process model and three-dimensional atmospheric transport model. - *Global biogeochem. Cycles* **10**: 431-456, 1996.
- Invernizzi, S., Terpin, K.: A generalized logistic model for photosynthetic growth. - *Ecol. Model.* **94**: 231-242, 1997.
- Jayaweera, M., Asaeda, T.: Modeling of biomanipulation in shallow, eutrophic lakes: An application to Lake Bleiswijkse Zoom, the Netherlands. - *Ecol. Model.* **85**: 113-127, 1996. [Chl.]
- Jupp, D.L.B., Walker, J.: Detecting structural and growth changes in woodlands and forest: The challenge for remote sensing and the role of geometric-optical modelling. - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 75-108. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Review, 80 ref.]
- Keane, R.E., Morgan, P., Running, S.W.: FIRE-BGC - a mechanistic ecological process model for simulating fire succession on coniferous forest landscapes of the northern Rocky Mountains. - *USDA Forest Serv. Intermountain Res. Sta. Res. Pap.* **INT-RP-484**: 1-122, 1996. [Ps.]
- Keane, R.E., Ryan, K.C., Running, S.W.: Simulating effects of fire on northern Rocky Mountain landscapes with the ecological process model FIRE-BGC. - *Tree Physiol.* **16**: 319-331, 1996.

- Kellomäki, S., Väisänen, H.: Modelling the dynamics of the forest ecosystem for climate change studies in the boreal conditions. - *Ecol. Model.* **97**: 121-140, 1997.
- King, D.A.: A model to evaluate factors controlling growth in *Eucalyptus* plantations of southeastern Australia. - *Ecol. Model.* **87**: 181-203, 1996.
- Klubertanz, T.H., Pedigo, L.P., Carlson, R.E.: Reliability of yield models of defoliated soybean based on leaf area index *versus* leaf area removed. - *J. econ. Entomol.* **89**: 751-756, 1996.
- Korol, R.L., Milner, K.S., Running, S.W.: Testing a mechanistic model for predicting stand and tree growth. - *Forest Sci.* **42**: 139-153, 1996.
- Kostrej, A., Balogh, Z.: Vzťahy medzi teplotným a vlhkostným režimom vzduchu a rastovými charakteristikami ozimnej pšenice. [Relationships between air temperature and humidity regime and growth characteristics of winter wheat.] - *Rost. Výroba (Praha)* **42**: 1-4, 1996. [Model; in Slovak, ab: E.]
- Kramer, K., Friend, A., Leinonen, I.: Modelling comparison to evaluate the importance of phenology and spring frost damage for the effects of climate change on growth of mixed temperate-zone deciduous forests. - *Climate Res.* **7**: 31-41, 1996.
- Landsberg, J.J., Prince, S.D., Jarvis, P.G., McMurtrie, R.E., Luxmore, R., Medlyn, B.E.: Energy conversion and use in forests: An analysis of forest production in terms of radiation utilisation efficiency (ϵ). - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 273-298. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Model; review, 95 ref.]
- Larsen, D.R., Kershaw, J.A., Jr.: Influence of canopy structure assumptions on predictions from Beer's law. A comparison of deterministic and stochastic simulations. - *Agr. Forest Meteorol.* **81**: 61-77, 1996.
- Lee, N.I., Nakane, K.: Forest vegetation classification and biomass estimation based on Landsat TM data in a mountainous region of west Japan. - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 159-171. Kluwer Academic Publishers, Dordrecht - Boston - London 1997.
- Lindquist, J., Kropff, M.J.: Applications of an ecophysiological model for irrigated rice (*Oryza sativa*) - *Echinochloa* competition. - *Weed Sci.* **44**: 52-56, 1996. [LAI.]
- Luan, J., Muetzelfeldt, R.I., Grace, J.: Hierarchical approach to forest ecosystem simulation. - *Ecol. Model.* **86**: 37-50, 1996. [Pa.]
- Luo, Y., Sims, D.A., Thomas, R.B., Tissue, D.T., Ball, J.T.: Sensitivity of leaf photosynthesis to CO₂ concentration is an invariant function for C₃ plants: A test with experimental data and global applications. - *Global biogeochem. Cycles* **10**: 209-222, 1996. [Model.]
- Martin, M.E., Aber, J.D.: Estimating forest canopy characteristics as inputs for models of forest carbon exchange by high spectral resolution remote sensing. - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 61-72. Kluwer Academic Publishers, Dordrecht - Boston - London 1997.
- Mattson, A.: Predicting field performance using seedling quality assessment. - *New Forests* **3**: 227-252, 1997. [Review, 174 ref.]
- McIntyre, B.D., Riha, S.J., Ong, C.K.: Light-interception and evapotranspiration in hedgerow agroforestry systems. - *Agr. Forest Meteorol.* **80**: 31-40, 1996. [Model.]
- McKane, R.B., Rastetter, E.B., Shaver, G.R., Nadelhoffer, K.J., Giblin, A.E., Laundre, J.A., Chapin, F.S., III: Climatic effects on tundra carbon storage inferred from experimental data and a model. - *Ecology* **78**: 1170-1187, 1997.
- McKane, R.B., Rastetter, E.B., Shaver, G.R., Nadelhoffer, K.J., Giblin, A.E., Laundre, J.A., Chapin, F.S., III: Reconstruction and analysis of historical changes in carbon storage in arctic tundra. - *Ecology* **78**: 1188-1198, 1997. [Model.]
- Medlyn, B.E.: Interactive effects of atmospheric carbon dioxide and leaf nitrogen concentration on canopy light use efficiency: A modeling analysis. - *Tree Physiol.* **16**: 201-209, 1996.
- Mesplé, F., Troussellier, M., Casellas, C., Legendre, P.: Evaluation of simple statistical criteria to qualify a simulation. - *Ecol. Model.* **88**: 9-18, 1996. [Comparison of models.]

- Milner, K.S., Running, S.W., Coble, D.W.: A biophysical soil-site model for estimating potential productivity of forested landscapes. - *Can. J. Forest Res.* **26**: 1174-1186, 1996.
- Miranda, A.C., Miranda, H.S., Lloyd, J., Grace, J., Francey, R.J., McIntyre, J.A., Meir, P., Riggan, P., Lockwood, R., Brass, J.: Fluxes of carbon, water and energy over Brazilian cerrado: an analysis using eddy covariance and stable isotopes. - *Plant Cell Environ.* **20**: 315-328, 1997.
- Mogensen, V.O., Jensen, C.R., Mortensen, G., Thage, J.H., Koribidis, J., Ahmed, A.: Spectral reflectance index as an indicator of drought of field grown oilseed rape (*Brassica napus* L.). - *Eur. J. Agron.* **5**: 125-135, 1996.
- Monteith, J.L.: The quest for balance in crop modeling. - *Agron. J.* **88**: 695-697, 1996.
- Murtaugh, P.A.: The statistical evaluation of ecological indicators. - *Ecol. Applications* **6**: 132-139, 1996. [Model, remote sensing of pigments.]
- Murty, D., McMurtrie, R.E., Ryan, M.G.: Declining forest productivity in aging forest stands: a modeling analysis of alternative hypotheses. - *Tree Physiol.* **16**: 187-200, 1996.
- Nemani, R.R., Running, S.W.: Implementation of a hierarchical global vegetation classification in ecosystem function models. - *J. Veget. Sci.* **7**: 337-346, 1996.
- Nemani, R.R., Running, S.W., Pielke, R.A., Chase, T.N.: Global vegetation cover changes from coarse resolution satellite data. - *J. geophys. Res.* **101**: 7157-7162, 1996.
- Niinemets, Ü., Tenhunen, J.D.: A model separating leaf structural and ecological effects on carbon gain along light gradients for the shade-tolerant species *Acer saccharum*. - *Plant Cell Environ.* **20**: 845-866, 1997.
- Nilson, T., Ross, J.: Modeling radiative transfer through forest canopies: Implications for canopy photosynthesis and remote sensing. - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 23-60. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Review, 45 ref.]
- Nygren, P., Kiema, P., Rebottaro, S.: Canopy development, CO₂ exchange and carbon balance of a modelled agroforestry tree. - *Tree Physiol.* **16**: 733-745, 1996.
- Ogawa, K., Takano, Y.: Seasonal courses of CO₂ exchange and carbon balance in fruits of *Cinnamomum camphora*. - *Tree Physiol.* **17**: 415-420, 1997. [Ps, C flow model.]
- Olioso, A., Carlson, T.N., Brisson, N.: Simulation of diurnal transpiration and photosynthesis of a water stressed soybean crop. - *Agr. Forest Meteorol.* **81**: 41-59, 1996.
- Ozier Lafontaine, H., Vercambre, G., Tournabize, R.: Radiation and transpiration partitioning in a maize-sorghum intercrop: Test and evaluation of two models. - *Field Crops Res.* **49**: 127-145, 1997.
- Pan, Y., McGuire, A.D., Kicklighter, D.W., Melillo, J.M.: The importance of climate and soils for estimates of net primary production: a sensitivity analysis with the terrestrial ecosystem model. - *Global Change Biol.* **2**: 5-23, 1996.
- Parisi, A.V., Wong, I.C.F.: Plant canopy shape and the influences on UV exposure to the canopy. - *Photochem. Photobiol.* **64**: 143-148, 1996. [Models.]
- Peterson, D.L.: Forest structure and productivity along the Oregon transect. - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 173-218. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Procedures; review, 122 ref.]
- Pitacco, A., Gallinaro, N.: Micrometeorological assessment of sensitivity of canopy resistance to vapour pressure deficit in a Mediterranean oak forest. - *Ann. Sci. forest.* **53**: 513-520, 1996. [Model.]
- Poni, S., Rebucci, B., Magnanini, E., Intrieri, C.: Preliminary results on the use of a modified point quadrat method for estimating canopy structure of grapevine training systems. - *Vitis* **35**: 23-28, 1996.
- Pontailier, J.Y., Ceulemans, R., Guittet, J., Mau, F.: Linear and non-linear functions of volume index to estimate woody biomass in high density young poplar stands. - *Ann. Sci. Forest.* **54**: 335-345, 1997.

- Poorter, H., Garnier, E.: Plant growth analysis: an evaluation of experimental design and computational methods. - *J. exp. Bot.* **47**: 1343-1351, 1996.
- Rastetter, E.B.: Validating models of ecosystem response to global change. How can we best assess models of long-term global change? - *BioScience* **46**: 190-198, 1996. [Ps.]
- Ruimy, A., Kergoat, L., Field, C.B., Saugier, B.: The use of CO₂ flux measurements in models of the global terrestrial carbon budget. - *Global Change Biol.* **2**: 287-296, 1996.
- Sala, A., Tenhunen, J.D.: Simulations of canopy net photosynthesis and transpiration in *Quercus ilex* L. under the influence of seasonal drought. - *Agr. Forest Meteorol.* **78**: 203-222, 1996.
- Sands, P.J.: Modelling canopy production. III. Canopy light-utilisation efficiency and its sensitivity to physiological and environmental variables. - *Aust. J. Plant Physiol.* **23**: 103-114, 1996.
- Schelde, K., Kelliher, F.M., Massman, W.J., Jensen, K.H.: Estimating sensible and latent heat fluxes from a temperate broad-leaved forest using the Simple Biosphere (SiB) model. - *Agr. Forest Meteorol.* **84**: 285-295, 1997.
- Sellers, P.J., Dickinson, R.E., Randall, D.A., Betts, A.K., Hall, F.G., Berry, J.A., Collatz, G.J., Denning, A.S., Mooney, H.A., Nobre, C.A., Sato, N., Field, C.B., Henderson-Sellers, A.: Modeling the exchanges of energy, water, and carbon between continents and the atmosphere. - *Science* **275**: 502-505, 1997. [Review, 62 ref.]
- Shekh, A.M., Bapuji Rao, B., Patel, P.B., Kumpavat, V.S., Venkatesh, H.: Limitation in estimating yield from transpiration in Indian mustard (*Brassica juncea*). - *Indian J. agr. Sci.* **66**: 227-229, 1996.
- Sherriff, D.W., Mattay, J.P., McMurtrie, R.E.: Modeling productivity and transpiration of *Pinus radiata*: climatic effects. - *Tree Physiol.* **16**: 183-186, 1996.
- Smith, G.S., Curtis, J.P.: A fast and effective method of measuring tree structure in 3 dimensions. - *Acta Hort.* **416** [Habib, R., Blaise, P. (ed.). *Comp. Mod. on Fruit Research*]: 15-20, 1996. [Magnetic position tracking.]
- Staggenborg, S.A., Lascano, R.J., Krieg, D.R.: Determining cotton water use in a semiarid climate with the GOSSYM cotton simulation model. - *Agron. J.* **88**: 740-745, 1996.
- Stenberg, P.: Simulations of the effects of shoot structure and orientation on vertical gradients in intercepted light by conifer canopies. - *Tree Physiol.* **16**: 99-108, 1996.
- Strachan, I.B., McCaughey, J.H.: Spatial and vertical leaf area index of a deciduous forest resolved using the LAI-2000 plant canopy analyzer. - *Forest Sci.* **42**: 176-181, 1996.
- Thornley, J.H.M.: Modelling water in crops and plant ecosystems. - *Ann. Bot.* **77**: 261-275, 1996.
- Tournebize, R., Sinoquet, H., Bussi re, F.: Modelling evapotranspiration partitioning in a shrub/grass alley crop. - *Agr. Forest Meteorol.* **81**: 255-272, 1996 [Stomatal conductance]
- Trodd, N.M.: Analysis and representation of heathland vegetation from near-ground level remotely-sensed data. - *Glob. Ecol. Biogeogr. Lett.* **5**: 206-216, 1996.
- Turner, D.P., Dodson, R., Marks, D.: Comparison of alternative spatial resolutions in the application of a spatially distributed biogeochemical model over complex terrain. - *Ecol. Model.* **90**: 53-67, 1996. [LAI.]
- Vitta, J.I., Quintanilla, C.F.: Canopy measurements as predictors of weed-crop competition. - *Weed Sci.* **44**: 511-516, 1996. [Growth analysis.]
- Wallace, D.J., Picot, J.J.C.: A comparison of two Lagrangian dispersion models applied to forest canopies. - *Agr. Forest Meteorol.* **53**: 337-346, 1991.
- Wallin, D.O., Harmon, M.E., Cohen, W.B., Fiorella, M., Ferrell, W.K.: Use of remote sensing to model land use effects on carbon flux in forests of the Pacific Northwest, USA. - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 219-237. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Review, 53 ref.]
- Walter, J.-M.N., Himmler, C.G.: Spatial heterogeneity of a Scots pine canopy: an assessment by hemispherical photographs. - *Can. J. Forest Res.* **26**: 1610-1619, 1996.
- Weaver, S.E.: Simulation of crop-weed competition: Models and their applications. - *Phytoprotection* **77**: 3-11, 1996.

- Webb, W.L.: Atmospheric CO₂, climate change, and tree growth: a process model 1. Model structure. - *Ecol. Model.* **56**: 81-107, 1991.
- Weishampel, J.F., Knox, R.G., Ranson, K.J., Williams, D.L., Smith, J.A.: Integrating remotely sensed spatial heterogeneity with a three-dimensional forest succession model. - In: Gholz, H.L., Nakane, K., Shimoda, H. (ed.): *The Use of Remote Sensing in the Modeling of Forest Productivity*. Pp. 109-133. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Review, 107 ref.]
- Welles, J.M., Cohen, S.: Canopy structure measurement by gap fraction analysis using commercial instrumentation. - *J. exp. Bot.* **47**: 1335-1342, 1996. [*LAI-2000*.]
- Welles, J.M., Norman, J.M.: Instrument for indirect measurement of canopy architecture. - *Agron. J.* **83**: 818-825, 1991.
- West, N.E., Reese, G.A.: Comparison of some methods for collecting and analyzing data on aboveground net production and diversity of herbaceous vegetation in a northern Utah subalpine context. - *Vegetatio* **96**: 145-163, 1991. [Ps.]
- Wetzel, R.G., Brammer, E.S., Lindström, K., Forsberg, C.: Photosynthesis of submersed macrophytes in acidified lakes II. Carbon limitation and utilization of benthic CO₂ sources. - *Aquat. Bot.* **22**: 107-120, 1985 [Assimilation chamber.]
- Wiles, L.J., Wilkerson, G.G.: Modeling competition for light between soybean and broadleaf weeds. - *Agr. Syst.* **35**: 37-51, 1991.
- Wilks, D.S.: Estimating the consequences of CO₂-induced climatic change on North American grain agriculture using general circulation model information. - *Climatic Change* **13**: 19-42, 1988. [Review; 62 ref.]
- Williams, J.H., Saxena, N.P.: The use of non-destructive measurement and physiological models of yield determination to investigate factors determining differences in seed yield between genotypes of "desi" chickpeas (*Cicer arietinum*). - *Ann. appl. Biol.* **119**: 105-112, 1991.
- Williams, M., Rastetter, E.B., Fernandes, D.N., Goulden, M.L., Wofsy, S.C., Shaver, G.R., Melillo, J.M., Munger, J.W., Fan, S.-M., Nadelhofer, K.J.: Modelling the soil-plant-atmosphere continuum in a *Quercus-Acer* stand at Harvard Forest: the regulation of stomatal conductance by light, nitrogen and soil/plant hydraulic properties. - *Plant Cell Environ.* **19**: 911-927, 1994.
- Wiltshire, K.H., Schroeder, F., Knauth, H.D., Kausch, H.: Oxygen consumption and production rates and associated fluxes in sediment-water systems: A combination of microelectrode, incubation and modelling techniques. - *Arch. Hydrobiol.* **137**: 457-486, 1996.
- Woollons, R.C., Whyte, A.G.D.: Multiple covariance: its utility in analyzing forest fertilizer experiments. - *Forest Ecol. Manage.* **25**: 59-72, 1988. [Model, growth.]
- Wu, J., Vankat, J.L.: An area-based model of species richness dynamics of forest Islands. - *Ecol. Model.* **58**: 249-271, 1991.
- Wu, S.-T.: Potential application of multipolarization SAR for pine-plantation biomass estimation. - *IEEE Trans. Geosci. remote Sens.* **25**: 403-409, 1987.
- Yamamoto, H., Suzuki, Y., Hayakawa, S.: Estimation of leaf area index in crop canopies using plant canopy analyzer. - *Jap. J. Crop Sci.* **64**: 333-335, 1995. [In Jap.]
- Yang, X., Chen, J.-L.: A mathematical model for prediction of time course of vegetable supply based on meteorological factors. - *Agr. Forest Meteorol.* **49**: 35-44, 1989.
- Zakrzewski, W.T., Bella, I.E.: Two new height models for volume estimation of lodgepole pine stands. - *Can. J. Forest Res.* **18**(2): 195-201, 1988.

F. Measurement of leaf area, and surface and volume of plant organs

- Baker, B., Olszyk, D.M., Tingey, D.: Digital image analysis to estimate leaf area. - *J. Plant Physiol.* **148** [Lichtenthaler, H.K. (ed.): *Vegetation Stress*]: 530-535, 1996.
- Bartelink, H.H.: Allometric relationships on biomass and needle area of Douglas-fir. - *Forest Ecol. Manage.* **86**: 193-203, 1996. [Model.]
- Bignami, C., Rossini, F.: Image analysis estimation of leaf area index and plant size of young hazelnut plants. - *J. hort. Sci.* **71**: 113-121, 1996.

- Gamiely, S., Randle, W.M., Mills, H.A., Smittle, D.A.: A rapid nondestructive method for estimating leaf area of onions. - HortScience **26**: 206, 1991.
- Gregorczyk, A.: Application of the Richards function to the description of leaf area growth in maize (*Zea mays* L.). - Acta Soc. Bot. Pol. **63**: 5-7, 1994.
- Gross, E.D., Martin, D.F., Sexton, W.C.: A convenient method for measuring fresh weight of filamentous algae. - Biomed. Lett. **46**: 35-37, 1991.
- Joshi, N.L.: Leaf dry weight and area relationship to estimate the leaf area of pearl millet and greengram. - Ann. arid Zone **30**: 75-78, 1991.
- Kitano, M., Hamakoga, M., Yokomakura, P., Eguchi, H.: Interactive dynamics of fruit and stem growth in tomato plants as affected by root water condition. I. Expansion and contraction of fruit and stem. - Biotronics **25**: 67-75, 1996. [Laser displacement sensor system for measuring volume changes.]
- Korva, J.T., Forbes, G.A.: A simple and low-cost method for leaf area measurement of detached leaves. - Exp. Agr. **33**: 65-72, 1991.
- Lecoeur, J., Wery, J., Sinclair, T.R.: Model of leaf area expansion in field pea subjected to soil water deficits. - Agron. J. **88**: 467-472, 1994.
- Maguire, D.A., Batista, J.I.F.: Sapwood taper models and implied sapwood volume and foliage profiles for coastal Douglas-fir. - Can. J. Forest Res. **26**: 849-863, 1996.
- Nesmith, D.S.: Nondestructive leaf area estimation of rabbiteye blueberries. - HortScience **26**: 1332, 1991.
- Nerozzi, F., Rossi, F., Facini, O., Georgiadis, T.: Light transmittance and sunlit leaf area estimation in a peach canopy. - J. hort. Sci. **72**: 271-283, 1997. [Model.]
- Nyakwende, E., Paull, C.J., Atherton, J.G.: Non-destructive determination of leaf area in tomato plants using image processing. - J. hort. Sci. **72**: 255-262, 1997.
- Payne, W.A., Wendt, C.W., Hossner, L.R., Gates, C.E.: Estimating pearl millet leaf area and specific leaf area. - Agron. J. **83**: 937-941, 1991.
- Soto, E., Ortega Delgado, E., Valdés, R., García, V., Pardo, J.: Relación entre el área foliar parcial y total de plantas de dos variedades de caña de azúcar. [Relationship between partial and total leaf area of two sugarcane cultivars.] - Cienc. agr. **30**: 37-41, 1987. [In Span., ab: E.]
- Starzecki, W., Libik, A., Gembolys, E.: The use of linear measurements for defining of leaf area blades in cultivation of greenhouse tomato. - Folia Horticult. **1**: 21-29, 1989.
- Stenberg, P.: Correcting LAI-2000 estimates for the clumping of needles in shoots of conifers. - Agr. Forest Meteorol. **79**: 1-8, 1996.
- Urban, L., Fabret, C., Barthélémy, L.: Interpreting changes in stem diameter in rose plants. - Physiol. Plant. **92**: 668-674, 1994.

F. PAR and environmental measurements

- Alshooshan, A.A.: Estimation of photosynthetically active radiation under an arid climate. - J. agr. Eng. Res. **66**: 9-13, 1997. [Model.]
- Becker, P., Weingarten, D.S.: A comparison of several models for separating direct and diffuse components of solar irradiation. - Agr. Forest Meteorol. **53**: 347-353, 1991.
- Berkelaar, E.J., Ormrod, D.P., Hale, B.A.: The influence of photosynthetically active radiation on the effects of ultraviolet-B radiation on *Arabidopsis thaliana*. - Photochem. Photobiol. **64**: 110-116, 1996. [Model.]
- Björn, L.O., Vogelmann, T.C.: Quantifying light and ultraviolet radiation in plant biology. - Photochem. Photobiol. **64**: 403-406, 1996.
- Dorman, J.F., Vogelmann, T.C.: Penetration of blue and UV radiation measured by fiber optics in spruce and fir needles. - Physiol. Plant. **72**: 699-705, 1988.
- Campbell, R.J., Marini, R.P.: Instantaneous light measurements predict relative cumulative light levels within an apple canopy. - J. amer. Soc. hort. Sci. **117**: 678-684, 1992.

- Guertal, E.A., Elkins, C.B.: Spatial variability of photosynthetically active radiation in a greenhouse. - J. amer. Soc. hort. Sci. **121**: 321-325, 1996. [Semivariograms.]
- Harazono, Y.: [Measurement of micrometeorology.] - Refrigeration **71**: 56-63, 1996. [In Jap., ab: E.]
- Hoque, E., Remus, G.: Reflective light properties of tissue layers in beech (*Fagus sylvatica* L.) leaves. - Photochem. Photobiol. **63**: 498-506, 1996. [Measurement of reflectance by a cytophotometer.]
- Huner, N.P.A., Maxwell, D.P., Gray, G.R., Savitch, L.V., Krol, M., Ivanov, A.G., Falk, S.: Sensing environmental temperature change through imbalances between energy supply and energy consumption: Redox state of photosystem II. - Physiol. Plant **98**: 358-364, 1996. [Review, 42 ref.]
- Kärh , P., Visuri, R., Leszczynski, K., Manoochehri, F., Jokela, K., Ikonen, E.: Detector-based calibration method for high-accuracy solar UV measurements. - Photochem. Photobiol. **64**: 340-343, 1996.
- Nienow, J.A., Meyer, M.A.: Biologically relevant physical measurements in the ice-free valleys of southern Victoria Land: Soil temperature profiles and ultraviolet radiation. - Antarctic J. **21**: 222-224, 1986
- Parisi, A.V., Wong, J.C.F., Galea, V.: A method for evaluation of UV and biologically effective exposures to plants. - Photochem. Photobiol. **64**: 326-333, 1996.
- Parker, G.G., Stone, P.J., Bowers, D.: A balloon for microclimate observations within the forest canopy. - J. appl. Ecol. **33**: 173-177, 1996.
- Pontailier, J.-Y.: A cheap quantum sensor using a gallium arsenide photodiode. - Funct. Ecol. **4**: 591-596, 1990.
- Pontailier, J.-Y., Gonty, B.: A simple red:far-red sensor using gallium arsenide phosphide detectors. - Funct. Ecol. **10**: 535-540, 1996.
- Rochette, P., Desjardins, R.L., Pattey, E., Lessard, R.: Instantaneous measurement of radiation and water use efficiencies of a maize crop. - Agron. J. **88**: 627-635, 1996.
- S nchez, O., Mas, J.: Measurement of light absorption and determination of the specific rate of light uptake in cultures of phototrophic microorganisms. - Appl. environ. Microbiol. **62**: 620-624, 1996.
- Saxton, W.L., McCaughey, J.H.: Measurement considerations and trends in biomass heat storage of a mixed forest. - Can. J. Forest Res. **18**: 143-149, 1988. [Tree temperature sensor.]
- Tang, Yan-Hong, Washitani, I., Tsuchiya, T., Iwaki, H.: Spatial heterogeneity of photosynthetic photon flux density in the canopy of *Miscanthus sinensis*. - Ecol. Res. **4**: 339-349, 1989.
- Vogelmann, T.C., Nishio, J.N., Smith, W.K.: Leaves and light capture: light propagation and gradients of carbon fixation within leaves. - Trends Plant Sci. **1**: 65-70, 1996. [Review, 39 ref.]
- Widell, K.O., Vogelmann, T.C.: Fiber optic studies of light gradients and spectral regime within *Lactuca sativa* achenes. - Physiol. Plant. **72**: 706-712, 1988.

G. Cultivation of experimental material and phytotronics

- Bailliez, C., Largeau, C., Casadevall, E., Yang, L.W., Berkloff, C.: Photosynthesis, growth and hydrocarbon production of *Botryococcus braunii* immobilized by entrapment and adsorption in polyurethane foams. - Appl. Microbiol. Biotechnol. **29**: 141-147, 1988.
- Bena-Amotz, A.: New mode of *Dunaliella* biotechnology: two-phase growth for β -carotene production. - J. appl. Phycol. **7**: 65-68, 1995.
- Buelna, G., Pouliot, Y., de la No , J.: Performance and operating parameters of a photobioreactor. - In: Stadler, T., Mollion, J., Verdu, M.-C., Karamanos, Y., Morvan, H., Christianen, D. (ed.): Algal Biotechnology. Pp. 189-198. Elsevier Applied Science, Amsterdam 1988.
- Bula, R.J., Morrow, R.C., Tibbitts, T.W., Barta, D.J., Ignatius, R.W., Martin, T.S.: Light-emitting diodes as a radiation source for plants. - HortScience **26**: 203-205, 1991
- Chalabi, Z.S., Bailey, B.J.: Sensitivity analysis of a non-steady state model of the greenhouse microclimate. - Agr. Forest Meteorol. **56**: 111-127, 1991. [Stomatal resistance, LAI.]

- Chikushi, J., Mori, K., Eguchi, H.: Analysis of air currents in phytotrons by the finite element method. - *Biotronics* **18**: 45-54, 1989.
- Chikushi, J., Toh, K., Eguchi, H.: Application of heat pump system to the air temperature control in growth chamber. - *Biotronics* **18**: 67-73, 1989.
- Daunicht, H.-J.: Gas turnover and gas conditions in hermetically closed plant production systems. - In: Goto, E., Kurata, K., Hayashi, M., Sase, S. (ed.): *Plant Production in Closed Ecosystems*. Pp. 225-244. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Ps; review, 24 ref.]
- De Riek, J., Van Cleemput, O., Debergh, P.C.: Carbon metabolism of micropropagated *Rosa multiflora* L. - *In Vitro Cell Dev. Biol.* **27P**(2): 57-63, 1991. [Set-up for flushing CO₂ from the culture headspace.]
- Dupré, C., Guary, J.C., Grizeau, D.: Culture of an autoflocculent microalga in a vertical tubular photobioreactor for phycoerythrin production. - *Biotechnol. Techniques* **9**: 185-190, 1995.
- Eguchi, H., Yoshida, S., Toh, K., Hamakoga, M., Kitano, M.: Growth of cucumber plants (*Cucumis sativus* L.) under variable-value control of air temperature by using natural light intensity as feedback signal. - *Biotronics* **25**: 45-53, 1996. [Growth chamber.]
- Eguchi, T., Kitano, M., Eguchi, H.: Effect of root temperature on sink strength of tuberous root in sweet potato plants (*Ipomoea batatas* Lam.). *Biotronics* **23**: 75-80, 1994. [Controlled-temperature chamber, photosynthates.]
- Eguchi, T., Kitano, M., Eguchi, H.: New system of hydroponics for growth analysis of sweet potato tuber. - *Biotronics* **25**: 85-88, 1996.
- Fischer, U., Santore, U.J., Husemann, W., Barz, W., Alfermann, A.W.: Semicontinuous cultivation of photoautotrophic cell suspension cultures in a 20 l airlift-reactor. - *Plant Cell Tissue Organ Cult.* **38**: 123-134, 1994.
- Fricke, A., Krug, H.: Influence of humidification and dehumidification on greenhouse climate as well as water relations and productivity of cucumber. I. Influence on greenhouse climate. - *Gartenbauwissenschaft* **62**: 9-17, 1997.
- Goto, E.: Environmental control for plant production in space CELSS. - In: Goto, E., Kurata, K., Hayashi, M., Sase, S. (ed.): *Plant Production in Closed Ecosystems*. Pp. 279-296. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Ps; review, 62 ref.]
- Hall, R.D., Riksen-Bruinsma, T., Weyens, G.J., Rosquin, I.J., Denys, P.N., Evans, I.J., Lathouwers, J.E., Lefebvre, M.P., Dunwell, J.M., van Tunen, A., Krens, F.A.: A high efficiency technique for the generation of transgenic sugar beets from stomatal guard cells. - *Nature Biotechnol.* **14**: 1133-1138, 1996.
- Hirasawa, T., Takei, M., Ishihara, K.: A minirhizotron method for measuring root system of soybean plants growing in the field. - *Jap. J. Crop Sci.* **64**: 78-85, 1995.
- Ivanova, T.N., Sapunova, S.M., Kostov, P.T.: New biotechnological experiment "Greenhouse Svet-2" for the "Mir-Shuttle-95" mission. - *Acta vet. (Brno)* **65**: 5-9, 1996.
- Javanmardian, M., Palsson, B.O.: High-density photoautotrophic algal cultures: Design, construction, and operation of a novel photobioreactor system. - *Biotechnol. Bioeng.* **38**: 1182-1189, 1991.
- Kozai, T., Kubota, C., Kitaya, Y.: Greenhouse technology for saving the earth in the 21st century. In: Goto, E., Kurata, K., Hayashi, M., Sase, S. (ed.): *Plant Production in Closed Ecosystems*. Pp. 139-152. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Review, 15 ref.]
- Kurata, K., Quan, Z., Nunomura, O.: Optimal shapes of parallel east-west oriented single-span tunnels with respect to direct light transmissivity. - *J. agr. Eng. Res.* **48**: 89-100, 1991.
- Kurata, K.: Scale-model experiments of applying a Fresnel prism to greenhouse covering. - *Solar Energy* **46**: 53-57, 1991.
- Lee, Y.-K., Low, C.-S.: Effect of photobioreactor inclination on the biomass productivity of an outdoor algal culture. - *Biotechnol. Bioeng.* **38**: 995-1000, 1991.
- Livanský, K., Bartoš, J.: Longitudinal profile of pCO₂ in algal suspension on an open-field cultivation surface. *Arch. Hydrobiol.* **73**: 587-598, 1987.

- Lívanský, K., Bartoš, J.: Relationship between $p\text{CO}_2$ and pH in a medium for algal culture. - Arch. Hydrobiol. **73**: 425-431, 1986.
- Martin, C.A., Ingram, D.L., Nell, T.A.: Growth and photosynthesis of *Magnolia grandiflora* "St. Mary" in response to constant and increased container volume. - J. amer. Soc. hort. Sci. **116**: 439-445, 1991.
- McLeod, A.R.: Outdoor supplementation systems for studies of the effects of increased UV-B radiation. - Plant Ecol. **128**: 78-92, 1997. [Review, 46 ref.]
- Miglietta, F., Giuntoli, A., Bindi, M.: The effect of free air carbon dioxide enrichment (FACE) and soil nitrogen availability on the photosynthetic capacity of wheat. - Photosynth. Res. **47**: 281-290, 1996. [System for CO_2 enrichment of small field plots.]
- Milhet, Y., Costes, C.: La fertilisation carbonée gazeuse, moyen de forçage des productions horticoles en serre. - Compt. rend. Acad. Agr. Fr. **74**(5): 63-71, 1988. [Review; 19 ref.]
- Miszalski, Z., Mydlarz, J., Libik, A.: Zmodyfikowana metoda szklarniowej uprawy pomidorów. [Modified method of tomato growing in the greenhouse.] - Ogródnictwo **25**(10): 12-13, 1988. [In Pol., ab: E, G, R.]
- Mitsui, A., Cao, S.: Isolation and culture of marine nitrogen-fixing unicellular cyanobacteria *Synechococcus*. - In: Abelson, J.N., Simon, M.I. (ed.): Methods in Enzymology. Vol. 167. Pp. 105-113. Academic Press, San Diego - New York - Berkeley - Boston - London - Sydney - Tokyo - Toronto 1988.
- Miyamoto, K., Wable, O., Benemann, J.R.: Vertical tubular reactor for microalgae cultivation. - Biotechnol. Lett. **10**: 703-708, 1988.
- Miyazaki, A., Tokuda, S., Agata, W., Kubota, F., Song, X.: [On the photosynthetic production and water cleaning ability of *Cyperus alternifolius* L. grown by the floating culture system.] - Jap. J. Crop Sci. **66**: 325-326, 1997. [In Jap., ab: E.]
- Murase, H., Tani, A., Nishiura, Y., Kiyota, M.: Growth monitoring of green vegetables cultured in a centrifuge phytotron. - In: Goto, E., Kurata, K., Hayashi, M., Sase, S. (ed.): Plant Production in Closed Ecosystems. Pp. 305-319 Kluwer Academic Publishers, Dordrecht - Boston - London 1997.
- Nederhoff, E.M.: Carbon dioxide balance. - In: Bakker, J.C., Bot, G.P.A., Challa, H., Van de Braak, N.J. (ed.): Greenhouse Climate Control. Pp. 151-153. Wageningen Pers, Wageningen 1995. [Many ref.]
- Nederhoff, E.M.: Techniques of CO_2 -enrichment. - In: Bakker, J.C., Bot, G.P.A., Challa, H., Van de Braak, N.J. (ed.): Greenhouse Climate Control. Pp. 195-201. Wageningen Pers, Wageningen 1995.
- Ohmayer, G., Hein, U.: Mathematische Beschreibung der Energieverteilung in einer Pflanzenbelichtungsanlage und Bestimmung der optimalen Leuchtenanordnung. - Gartenbauwissenschaft **56**: 185-190, 1991.
- Oota, T., Ushiyama, M., Yoshida, M., Takenaga, H., Aso, S., Aso, S.: Effects of photosynthate translocation to the nodules of soybean plant. - Bull. Isotope Center Tokyo Univ. Agr. **6**: 27-32, 1991. [Cultivation method for soybean.]
- Pekárková, B., Hindák, F., Šmarda, J.: Morphological characteristics and physiological properties of a coccoid rhodophycean alga *Rhodella grisea* from thermal springs at Piešťany, Czechoslovakia. - Arch. Protistenkunde **135**: 69-83, 1988. [Chl, Car, Bil, cultivation apparatus.]
- Poynter, J., Bearden, D.: Biosphere 2: A closed bioregenerative life support system, an analog for long duration space missions. - In: Goto, E., Kurata, K., Hayashi, M., Sase, S. (ed.): Plant Production in Closed Ecosystems. Pp. 263-277. Kluwer Academic Publishers, Dordrecht - Boston - London 1997. [Review, 17 ref.]
- Kafarel, C.R., Ashenden, T.W.: A facility for the large-scale exposure of plants to gaseous atmospheric pollutants. - New Phytol. **117**: 345-349, 1991.
- Ramcharan, C., Ingram, D.L., Nell, T.A., Barrett, J.E.: Fluctuations in leaf carbon assimilation as affected by root-zone temperature and growth environment. - HortScience **26**: 1200-1202, 1991. [Comparison of greenhouse and growth room.]

- Rijkeboer, M., Gons, H.J.: The relationship between oxygen exchange and changes in seston in laboratory scale enclosures. - Verh. int. Verein. Limnol. **23**: 756-761, 1988. [Cultivation device.]
- Roberts, A.V., Smith, E.F., Horan, I., Walker, S., Matthews, D., Mottley, J.: Stage III techniques for improving water relations and autotrophy in micropropagated plants. - In: Lumsden, P.J., Nicholas, J.R., Davies, W.J. (ed.): Physiology, Growth and Development of Plants in Culture. Pp. 314-322. Kluwer Academic Publishers. Dordrecht - Boston - London 1994.
- Schlipalin, I.: The extensive commercial cultivation of *Dunaliella salina*. Bioresour. Technol. **38**: 241-243, 1991.
- Semb, K.: Growth characteristics of spring barley and selected weeds. I. Effect of irradiance in growth chambers. - Weed Res. **36**: 339-352, 1996.
- Semb, K.: Growth characteristics of spring barley and selected weeds. II. Effect of temperature and irradiance in growth chambers. - Weed Res. **36**: 353-367, 1996.
- Shchegolev, S.A.: Izucheniye vliyaniya intensivnosti solnechnoi radiatsii na produktivnost' pomidorov v plenochnykh teplytsakh. [Effect of solar irradiance on productivity of tomatoes in foil greenhouses.] - Ovoshchevodstvo Bakhchevodstvo **32**: 41-44, 1987. [In R.]
- Sitnitskii, P.A., Gulyaev, B.I.: Mini-fitotron dlya issledovaniya vliyaniya povyshennykh kontsentratsii CO₂ na fotosintez, rost i produktivnost' rastenii. [Mini-phytotron to study the effect of increased CO₂ concentration on photosynthesis, growth and productivity of plants.] - Fiziol. Biokhim. kul't. Rast. **20**: 540-544, 1988. [In R, ab: E.]
- Spring, G.M., Priestman, G.H., Grime, J.P.: A new field technique for elevating carbon dioxide levels in climate change experiments. - Funct. Ecol. **10**: 541-545, 1996.
- Starzecki, W., Miculov, N., Libik, A., Dimitrov, J.: Relacje pomiedzy podstawowymi czynniki procesu fotosyntezy w szklarniach. [Relations between the basic factors of the photosynthetic process in greenhouses.] - Zesz. naukowe Akad. Roln. im. H. Kollataja Krakowie **234** (Ogrodnictwo 18): 3-16, 1989. [In Pol., ab: E, R.]
- Suzuki, T., Nishimura, K., Ohtaguchi, K., Koide, K.: Chemometrics approach to the analysis of a synergism of temperature, light intensity and carbon dioxide concentration on the growth of *Anacystis nidulans*. - J. chem. Eng. Jap. **24**: 563-568, 1991. [Cultivation apparatus.]
- Tako, Y.: Closed plant experiment facility (CPEF) in closed ecology experiment facilities (CEEf) and preliminary studies on CPEF operation. - In: Goto, E., Kurata, K., Hayashi, M., Sase, S. (ed.): Plant Production in Closed Ecosystems. Pp. 321-338. Kluwer Academic Publishers, Dordrecht - Boston - London 1997.
- Talbot, P., Gortares, M.P., Lencki, R.W., De La Noüe, J.: Absorption of CO₂ in algal mass culture systems: A different characterization approach. - Biotechnol. Bioeng. **37**: 834-842, 1991.
- Trainor, F.R., Walleit, S., Grochowski, J.: A useful algal growth medium. - J. Phycol. **27**: 460-461, 1991.
- Talbot, P., Thébault, J.-M., Dauta, A., De La Noüe, J.: A comparative study and mathematical modeling of temperature, light and growth of three microalgae potentially useful for wastewater treatment. - Water Res. **25**: 465-472, 1991.
- Ting, K.C.: Automation and systems analysis. - In: Goto, E., Kurata, K., Hayashi, M., Sase, S. (ed.): Plant Production in Closed Ecosystems. Pp. 171-178. Kluwer Academic Publishers, Dordrecht Boston London 1997. [Model.]
- Tingey, D.T., McVeety, B.D., Waschmann, R., Johnson, M.G., Phillips, D.L., Rygielwicz, P.T., Olszyk, D.M.: A versatile sun-lit controlled-environment facility for studying plant and soil processes. - J. environ. Quality. **25**: 614-625, 1996.
- Tischner, T., Veisz, O.: Cross-gradient growth bench for the optimization of plant growth conditions. - Biotronics **25**: 89-97, 1996.
- Tredici, M.R., Carozzi, P., Zittelli, G.C., Materassi, R.: A vertical alveolar panel (VAP) for outdoor mass cultivation of microalgae and cyanobacteria. - Bioresource Technol. **38**: 153-159, 1991.
- Walters, R.G., Horton, P.: Acclimation of *Arabidopsis thaliana* to the light environment: Changes in composition of the photosynthetic apparatus. - Planta **195**: 248-256, 1994. [Radiation sources.]

- Yoshida, S., Eguchi, H.: Environmental analysis of aerial O₂ transport through leaves for root respiration in relation to water uptake in cucumber plants (*Cucumis sativus* L.) in O₂-deficient nutrient solution. - J. exp. Bot. **45**: 187-192, 1994. [Air-tight hydroponics with gas chromatograph-mass spectrometric system for ¹⁸O₂ tracing.]
- Yurgalevitch, C.M., Janes, H.W.: Carbon dioxide enrichment of the root zone of tomato seedlings. - J. hort. Sci. **63**: 265-270, 1988. [Dry matter accumulation and distribution.]

H. Choice of useful tools and laboratory equipment

- Barabás, K., Váró, G., Keszthelyi, L.: Electric phenomena in dried chloroplasts. J. Photochem. Photobiol. **B26**: 37-44, 1994. [Sample holder and amplifier.]
- Burstein, E.A.: An improved algorithm of resolution of fluorescence spectra into quencher accessibility-associated components. - Photochem. Photobiol. **63**: 278-280, 1996.
- Clark, L.J., Whalley, W.R., Dexter, A.R., Barraclough, P.B., Leigh, R.A.: Complete mechanical impedance increases the turgor of cells in the apex of pea roots. - Plant Cell Environ. **19**: 1099-1102, 1996. [Growth measuring.]
- Dawson, T.E.: Determining water use by trees and forests from isotopic, energy balance and transpiration analyses: the roles of tree size and hydraulic lift. - Tree Physiol. **16**: 263-272, 1996.
- Ebert, G., Lenz, F.: Jahresverlauf der Wurzelatmung von Apfelbäumen und ihr Beitrag zur CO₂-Bilanz. - Gartenbauwissenschaft **56**: 130-133, 1991. [Chamber for measuring root respiration, Ps.]
- Ebert, G., Völker, R., Haehn, K.: Optisches Verfahren zur nicht destruktiven Messung der Wurzeloberfläche. - Gartenbauwissenschaft **56**: 160-163, 1991.
- Friedmann, E.L., McKay, C.P.: A method for the continuous monitoring of snow: Application to the cryptoendolithic microbial community of Antarctica. - Antarctic J. **19**: 179-181, 1985.
- Fuchs, E.E., Livingston, N.J.: Hydraulic control of stomatal conductance in Douglas fir [*Pseudotsuga menziesii* (Mirb.) Franco] and alder [*Alnus rubra* (Bong)] seedlings. - Plant Cell Environ. **19**: 1091-1098, 1996.
- Fukui, K., Kadowaki, K., Harada, K.: Implication of the image analysis methods in biotechnology. - JARQ **22**: 253-259, 1989.
- Granier, A., Biron, P., Bréda, N., Pontailier, J.-Y., Saugier, B.: Transpiration of trees and forest stands: short and long-term monitoring using sapflow methods. - Global Change Biol. **2**: 265-274, 1996.
- Hatfield, J.L., Allen, R.G.: Evapotranspiration estimates under deficient water supplies. - J. Irrig. Drain Eng. ASCE **122**: 301-308, 1996.
- Herbst, M., Kappen, L., Thamm, F., Vanselow, R.: Simultaneous measurements of transpiration, soil evaporation and total evaporation in a maize field in northern Germany - I exp Bot **47**: 1957-1962, 1996. [Diffusion porometer.]
- Irvine, J., Grace, J.: Non-destructive measurement of stem water content by time domain reflectometry using short probes. - J. exp. Bot. **48**: 813-818, 1997.
- Jolicoeur, M., Chavarie, C., Carreau, P.J., Archambault, J.: Development of a helical-ribbon impeller bioreactor for high-density plant cell suspension culture. - Biotechnol. Bioeng. **39**: 511-521, 1992.
- Kobata, T., Hara, S.: A convenient method for determining the effect of abscisic acid on the stomatal aperture of rice (*Oryza sativa* L.) by feeding solution to the leaf tip. - Jap. J. Crop Sci. **63**: 638-642, 1994. [Stomatal resistance.]
- Köckenberger, W., Pope, J.M., Xia, Y., Jeffrey, K.R., Komor, E., Callaghan, P.T.: A non-invasive measurement of phloem and xylem water flow in castor bean seedlings by nuclear magnetic resonance microimaging. - Planta **201**: 53-63, 1997.
- Kraszewski, A.W., Nelson, S.O.: Resonant microwave cavities for sensing properties of agricultural products. - Trans. ASAE **35**: 1315-1321, 1992.

- Langan, S.J., Ewers, F.W., Davis, S.D.: Xylem dysfunction caused by water stress and freezing in two species of co-occurring chaparral shrubs. - *Plant Cell Environ.* **20**: 425-437, 1997. [Portable chilling apparatus for simulating natural freeze-thaw events.]
- Livanský, K.: Kinetics of pH equilibration in solutions of hydrogen carbonate during bubbling with a gas containing carbon dioxide. - *Coll. Czech. chem. Commun.* **50**: 553-558, 1985.
- Marrison, J.L., Leech, R.M.: The subcellular and intra-organelle recognition of nuclear and chloroplast transcripts in developing leaf cells. - *Plant J.* **6**: 605-614, 1994. [Chloroplast, RuBPCO.]
- McLeod, A.R.: An open-air system for exposure of young forest trees to sulphur dioxide and ozone. - *Plant Cell Environ.* **18**: 215-222, 1995.
- Mohan, S.: Intercomparison of evapotranspiration estimates. - *Hydrolog. Sci. J.* **36**(5): 447-460, 1991. [Comparison of five methods.]
- Nay, S.M., Mattson, K.G., Bormann, B.T.: Biases of chamber methods for measuring soil CO₂ efflux demonstrated with a laboratory apparatus. - *Ecology* **75**: 2460, 1994.
- Obenland, D.M., Brown, C.S.: The influence of altered gravity on carbohydrate metabolism in excised wheat leaves. - *J. Plant Physiol.* **144**: 696-699, 1994. [Scheme of a clinostat.]
- Overmann, J., Beatty, J.T., Hall, K.J., Pfennig, N., Northcote, T.G.: Characterization of a dense, purple sulfur bacterial layer in a meromictic salt lake. - *Limnol. Oceanogr.* **36**: 846-859, 1991. [Rack for incubation of water samples.]
- Pages, L., Aries, F.: SARAH: modèle de simulation de la croissance, du développement et de l'architecture des systèmes racinaires. - *Agronomie* **8**: 889-896, 1988.
- Pasumarty, S.V., Minchin, P.E.H., Fountain, D.W., Thomas, R.G.: Influence of shade on the growth and sink activity of young flower heads and peduncles of white clover (*Trifolium repens* L.). - *J. exp. Bot.* **42**: 705-710, 1991. [System for measuring peduncle growth rate.]
- Pfau, J., Hanelt, D., Nultsch, W.: A new dual-beam microphotometer for determination of action spectra of light-induced phaeoplast movements in *Dictyota dichotoma*. - *J. Plant Physiol.* **133**: 572-579, 1988. [Scheme of dual beam microphotometer.]
- Phillips, D.L., Marks, D.G.: Spatial uncertainty analysis: Propagation of interpolation errors in spatially distributed models. - *Ecol. Model.* **91**: 213-229, 1996.
- Pitman, W.D., Piacitelli, C.K., Aiken, G.E., Barton, F.E., II.: Botanical composition of tropical grass-legume pastures estimated with near-infrared reflectance spectroscopy. - *Agron. J.* **83**: 103-107, 1991.
- Richter, H.: Water relations of plants in the field: some comments on the measurement of selected parameters. - *J. exp. Bot.* **48**: 1-7, 1997.
- Royer, S.M.: A simple method for collecting and mounting ribboned serial sections of epoxy embedded specimens. - *Stain Technol.* **63**: 23-26, 1988.
- Shibayama, M., Morinaga, S., Inoue, Y.: Detection of water status in rice paddies using high resolution field spectra of visible to mid-infrared ranges. - IGARSS'93 (Better Understanding of Earth Environment). Vol. II. Pp. 519-521. Kogakuin University, Tokyo 1993.
- Smith, D.M., Allen, S.J.: Measurement of sap flow in plant stems. - *J. exp. Bot.* **47**: 1833-1844, 1996. [Comparison of methods.]
- Sperry, J.S., Salandra, N.Z., Pockman, W.T., Cochard, H., Cruiziat, P., Davis, S.D., Ewers, F.W., Tyree, M.T.: New evidence for large negative xylem pressures and their measurement by the pressure chamber methods. - *Plant Cell Environ.* **19**: 427-436, 1996. [Review, 18 ref.]
- Stockner, J.G., Klut, M.E., Cochlan, W.P.: Leaky filters: A warning to aquatic ecologists. - *Can. J. Fish. aquat. Sci.* **47**: 16-23, 1990. [Chloroplast.]
- Tamponnet, C., Barbotin, J.-N., Piton, F.: A quick preparative method for electron microscopy observations of delicate objects using alginate embedding medium. - *Stain Technol.* **63**: 155-158, 1988.
- Thatipamala, R., Rohani, S., Hill, G.A.: Spectrophotometric method for high biomass concentration measurements. - *Biotechnol. Bioeng.* **38**: 1007-1011, 1991.