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BOOK REVIEW

JONES, D. G., DAVIES, D. R. (ed.): TEMPERATE LEGUMES: PHYSIOLOGY, GENETICS AND NODULATION. — Pitman Books, Boston, London, Melbourne 1983. 442 pp. £ 15.95.

The publication involves the papers presented at the symposium of British plant physiologists, geneticists, microbiologists and plant breeders, organized at the University of Reading in 1982 under the sponsorship of the Association of Applied Biologists.

Of 23 contributions, 14 dealt, more or less, with various aspects of biological N₂ fixation. The introductory paper by P.S. Nutman was followed by contributions summarizing the latest theoretical knowledge of biochemistry and physiology (*e.g.* formation and recycling of H₂ by bacteroids, role of leghemoglobin, respiration of rhizobia and bacteroids), as well as that of genetics of biological N₂ fixation (function of plasmids in genetic determination of N₂ fixation and symbiosis, methods of analysis of symbiotic genes, potential utilization of techniques of gene manipulation for extending and enhancing N₂ fixation).

Four papers gave a detailed and critical analysis of results hitherto obtained of the application of direct and indirect methods for the estimation of symbiotic N₂ fixation (*e.g.* acetylene-ethylene method, various modifications of ¹⁵N utilization, lysimetric methods), along with possible difficulties in interpretation of the results.

Three contributions deal with direct and indirect effects of agroecological factors and their interactions on the capacity of legumes to fix N₂. In another paper the reaction of soil is evaluated concerning its effect on rhizobia, host plants and their nodulation, and methodic procedures are proposed for the selection of *Rhizobium* strains resistant to acid soil reaction and elevated level of Al in the soil. This complex of contributions also contains a paper which, on the background of critical analysis of methods for the study of distribution of rhizobia in soil and rhizosphere, discusses the latest findings concerning the survival of rhizobia in soil, their mutual competitive relationships in nodulation of the host plant, as well as possible mechanisms of the specific interaction between the host plant and the nodulating strain of *Rhizobium*.

For geneticists and plant breeders the publication offers valuable information as regards the differences in partitionation of photosynthate flux between the standard (indeterminate) and dwarf (determinate) broad bean cultivar, the genetic determination and mechanism of regulation of pea seed size, a novel project of ideotype of pea plants as the basis of the breeding program, the possibility of selection of *Trifolium repens* genotypes resistant to low temperatures and frost-killing, and the genetically determined variability of phenologic phases of legumes and their yields in relationship to temperature.

Moreover, ecologists of field crops will appreciate the papers dealing with the effect of temperature and photoperiods on the course of reproductive phenophase in the genera *Vicia*, *Pisum*, *Phaseolus* and *Glycine*, physiology of the reproductive process and stability of broad bean yields, as well as the production potentials in cultivars of red and white clover grown as monocultures or in mixtures with grasses.

Special problems of inoculation of legumes by commercial preparations containing rhizobia are mentioned in the concluding part of the publication.

With regard to the fact that the majority of contributions is based on the critical analysis of the latest knowledge, and the publication has an expressively interdisciplinary character, it may be recommended to all specialists dealing with both theoretical and practical aspects of legume cultivation.

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