

Evans, L.T.: **Crop Evolution, Adaptation and Yield.** - Cambridge University Press, Cambridge - New York - Melbourne 1993. ISBN: 0 521 29558 0. 500 pp., USD 32.95 (paperback edition 1996).

With much interest and admiring respect did I took this book into my hands. It is an extraordinary compendium of what was known by the beginning of 1990s on the importance of crops for the world supply, domestication and adaptation of crops, both general aspects of crop improvements and special problems of the appropriate crop, trends and limits of yield increases, resource efficient use as well as consideration on the future of yield. The author, Lloyd Evans, is a world-wide known crop scientist and plant physiologist. During the last four decades, he has considerably enriched our knowledge on biological mechanisms of yield formation. Among his papers, a great deal describes various aspects of crop photosynthesis. His many visits brought him not only to the "traditional" western countries but also to the institutes of the "Eastern-block". This is manifested by the fact that among his vast number of references many authors from the former "Soviet Block" countries have been included. Simply, an experienced expert wrote a book that should be on the shelf of most crop physiologists including specialists in photosynthesis.

The book starts with some information on the author's career. At the end of the book, the list of references occupies 93 pages, hence, it represents a unique source of literature. The book closes with a List of acronyms and abbreviations, and finally with a detailed Index.

In the "Introduction" (Chapter 1), the concept of the book as well as its individual topics are briefly discussed and explained. Chapter 2 deals with "Crop yields and world food supply", and describes food production and its allocation, the importance of individual crops, and the components of greater crop production. "The domestication of crop plants" is the title of Chapter 3. It contains the "why, when, where and what" concerning domestication from wild to cultivated plants. Chapter 4 describes "Adaptation and the ecology of yield". Besides some general considerations, it deals with the adaptation to daylength, temperature, irradiance, and water stress. The part describing the ecology of yield analyses the importance of latitude, solar radiation, temperature, and rainfall.

Chapter 5, "Physiological aspects of crop improvement", may be considered the most important to the readers of *Photosynthetica* as seen from the following selection of subtitles: Regulation of photosynthesis by sink activity, Yield limitation by source and sink, Crop photosynthesis, Intraspecific differences in  $\text{CO}_2$  exchange rate (analyzing some 24 crops!), Assessment of single leaf photosynthetic rate studies, Some component processes (the analyses include photosynthetic carboxylases and electron transport), Canopy photosynthesis and stand structure, Photorespiration, Dark respiration, Relative growth rate, Translocation and partitioning, etc.

"Increases in yield: trends and limits" (Chapter 6) describes exactly what the title says and includes a survey of record crop yields as well as estimates of potential yield and genetic yield potential. In the Conclusion to this Chapter the following quotation seems to be especially important: "The sustainability of agriculture is currently so fashionable a theme that the efforts by many generations of earlier agriculturists to maintain soil fertility, environmental quality and long-term productivity tend to be overlooked".

Chapter 7 analyses "Inputs and the efficient use of resources": it deals with fertilizers, irrigation, crop protection, energy and crop production. "The future of yield" is the title of the concluding Chapter 8 containing also the description of the effects of the rise in concentration of atmospheric  $\text{CO}_2$ . As seen from the content overview, molecular biology and breeding have not been included. Each chapter is supplied with numerous figures and summarizing tables.

It is a privilege for me to review this book the importance of which I am unable to describe with sufficient impact. For this reason, let me close this review by quoting some sentences from the preface: "The yield of crops is a fascinating subject of great historical significance and still central to our global housekeeping...the nature of greater yields is widely misunderstood yet...further increases in crop yields will be vital to the welfare of at least those four out of every five people on the Earth...". And finally, "it is a book about the nature of advances in agriculture". And I add: about an important part of the mankind culture and science. I recommend, try to have a look at this book.

L. NÁTR (*Praha*)