

Schlegel, R.H.J.: **Concise Encyclopedia of Crop Improvement. Institutions, Persons, Theories, Methods, and Histories.** – Haworth Food & Agricultural Products Press™, The Haworth Press, Birmingham 2007. ISBN 978-1-56022-146-3. 331 pp., USD 139.95.

Plant breeding is a subject that has its roots in the distant past of human civilisation and has achieved a considerable complexity over the years. Modern textbooks and/or scientific books dealing with this topic usually do not provide a sufficient coverage of the historical developments in this field and a volume providing a concise summary of the history of crop improvement has been missing in the libraries for a long time. The book of Prof. Schlegel very nicely fills this gap in the scientific literature and offers many useful insights into the most important methods, techniques and personages contributing to the advancements made in the breeding of crop plants during the long history of human agriculture.

The book comprises six main chapters, a short Notes section, an extensive Glossary of the major terms, a Bibliography, and an Index. After short introduction to the topic in Chapter 1, the next thirty pages of Chapter 2 deal with the ancient history of plant cultivation and breeding. The reader will learn main facts about the agriculture and horticulture in Sumeria, Mesopotamia, Judea and Egypt, as well as about the growing of crops in ancient (or less ancient) China or India. A basic information is given also on the agriculture of three main historical cultures of New World – Aztecs, Mayas, and Incas. These historical summaries are mostly written in the chronological order, although departures from this system are not unusual when the author feels the need to emphasize some topic (this can sometimes lead to a slight confusion of the reader). The main crop species cultivated in and/or originating from these historical areas are always listed (though, perhaps, a tabular arrangement of these lists would be better), and (more or less interesting) quotations from ancient texts appropriate to the subject are sometimes included. A very short essays on Greek and Roman approaches to crop breeding and the agriculture in Arabic world conclude this section and are followed by the description of the European agriculture during the Middle-Ages and of the experimentation in plant breeding during the 16th and the beginning of 17th centuries. In my opinion, this section could be more extensive and slightly more detailed (particularly the impact of the introduction of New World plant species into the European agriculture and horticulture could be more emphasized and the post-medieval agricultural practice and improvements in Europe, Americas, and Asia could also be described in more detail); however, even this “short” version provides the reader with the most important facts on this topic and lists the principal writers of this period, who published books on agricultural (or horticultural) subjects. The final part of Chapter 2 (named for some reason “Interest”) gives a very nice summary of the major advances in plant breeding (and general plant science) from the 17th to the 19th centuries; the work of all leading scientists and practical breeders from this period (mostly European, but American as well) is described and their most important ideas and observations are carefully noted.

The Chapter 3 is named “Mendel’s Contribution to Inheritance and Breeding”. However, the actual (well written and easily readable) story of the origin, neglect and re-discovery of the 1866 paper of Johann Gregor Mendel, which marks the beginnings of the modern genetics, occupies only the first

fourteen pages of this chapter, and the rest (70 pp.) is devoted to the description of various methods and designs used in plant breeding during the 20th century. The reader will obtain information on the use of various types of selection in crop breeding programmes, the combination, backcross, polycross or shuttle breeding, the near-isogenic lines, and other topics. However, even though the individual sections usually start with the description of the respective breeding system/method, it is not always possible to comprehend its principal characteristics without some previous knowledge of the techniques or designs these approaches are based on. Rather, the author deals with these topics from the historical point of view and offers various examples of the practical results achieved by the particular method of breeding (sometimes these examples are rather too detailed!). This does in no way diminish the value of the book, as its purpose is not to explain the individual breeding methods, but to give an outline of the progress made in crop breeding during the past and the present. Other parts of the Chapter 2 deal with the mutation breeding, chromosome manipulations, polyploidisation and haploidisation, grafting methods, etc. The chapter ends with the short overview of the history of plant quantitative genetics and bioinformatics.

The following Chapter 4 describes the history of “modern” plant breeding, i.e. the begin of molecular genetics, the application of *in vitro* techniques for plant propagation and germplasm conservation, and the major approaches of plant genomics, genetic engineering, and marker-assisted selection. Again, this subject could be described in more detail and the latest advances of plant molecular genetics and its use in crop breeding are not fully covered here, but this is due to the rapid progress made during the last year or two and it simply cannot be helped. On the whole, this chapter gives a solid enough foundation for the further learning about the modern approaches to plant breeding and offers a clear idea of the prospects and directions in the near future. Intellectual property rights, patenting and plant variety protections are the topics of the short (7 pp.) fifth chapter of the book. The author gives here a very interesting overview of the history and presents the legislation on the protection of plant varieties/breeding technologies in the United States and Europe.

The final chapter of the book (Chapter 6) presents the comprehensive list of important scientists and breeders somehow connected with crop breeding and science. Each of the almost 200 name (with additional names referring to one of these principal entries) consists of a short paragraph describing the contribution of the respective person to plant/agricultural science and often including his/her short biography and main associates as well. If for no other reason than this impressive list, the book of Prof. Schlegel should certainly be added to the library of every scientist or breeder interested in the history of plant science and crop improvement (or, given that the birth of modern genetics is based on the experiments made mostly with plants, in the history of genetics *per se*) and is an absolute necessity for university instructors teaching in the fields of plant science or agriculture.

D. HOLÁ (*Praha*)