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Book review

VEGETABLE BRASSICAS AND RELATED CRUCIFERS

(2nd Edition)

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Brassica and related crops are among the most important and widely growing crops worldwide. They have very broad utilisation in human activities, such as fresh and processed food, fodder, and forage of animals, condiments, and ornamental plants. This group of plants belongs to one of the oldest domesticated crops with a wide geographic distribution and a history of growing and human utilisation. Brassicas are also very diverse from taxonomical and genetic viewpoints and have a rather long breeding history. The First Edition of this book was published by CABI in 2006; this volume received a very high evaluation and by reviewers was considered "an exemplary job in making horticultural sense". However, during the last two decades, enormous progress has been made in research, breeding, growing, and practical utilisation of these crops.

This newest edition of the book represents a very impressive, comprehensive and complex treatment of all the most important aspects of vegetable brassicas and crucifers used in horticulture. Compared with the previous first edition (CABI 2006), this recent edition was prepared by collaboration between prof. G.R. Dixon and Dr. R. Wells show substantial innovation and enhancement. The book content is substantially expanded; the original volume from 2006 contained 300 pages, and the new one has 544 pages, i.e. nearly double the size.

The book is divided into eight well-organised chapters, which logically cover step by step the entire subject as described in the book title.

Chapter 1 introduces the origins and diversity of *Brassica* and its relatives. This chapter provides crucial and basic information to understand the evolutionary history, phylogeny, taxonomy and biodiversity, domestication process, and forces driving crop development and wild plant populations, including genetic aspects of hybridisation and polyploidisation. There is also an overview of the complex contrast between wild and cultivated brassicas and a survey of cultivated *Brassica* species, their forms, and their origins.

Chapter 2 fluently continues on the background built in the first chapter and introduces the reader to breeding, genetics and model plants. They discuss breeding methodologies in detail, such as intercrossing using embryo rescue and protoplast fusion exploitation of lesser-known Brassicaceae for resistance breeding against pathogens and pests. There are also details about the most recent advances in genetic modification and genome sequencing and editing, genetic mapping and exploitation of genetic markers selection. The focus is on model Brassicas such as thale cress (*Arabidopsis thaliana*).

Chapter 3 deals with seed and seedling management. This chapter details factors responsible for seed development, physiological maturation and genetic control of seed development, including purity and vigour. Processes related to seed germination, seed enhancement, priming, coating and conditioning are described. For most important crops, the physiological control of growth stages is described.

Chapter 4 summarises the fundamental aspects of developmental physiology. This chapter creates the background for understanding physiological attributes operating during the development and maturation of the growth stages of brassicas. Most important brassicas are described as the growth stages and their physiological control. Recent research, including molecular dissection of these processes, shows more about under-

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standing accumulated thermal time and provides scientific background for maturity predictions. The first four chapters provide a sound theoretical background for the next chapter.

Chapter 5 is more practical and broadly covers various aspects of crop agronomy. This combines and integrates husbandry science, technology, soil, and other environmental factors, including recent climate changes. Knowledge in this area is crucial for breeders, growers, markets, consumers, consultants, and scientists. Most recent achievements are covered, like nutrient requirements, crop responses, improving soil health and quality, minimising artificial fertilisers, using biostimulants and biofertilisers is discussed, as well as some other topics related to brassicas growing.

Chapter 6 is a comprehensive overview of the competitive ecology and sustainable production. From a practical viewpoint, it focuses on various aspects of weed competition, ecology of weeds and their control. The most important factors of competition are described, e.g. light, space, nutritional status, and weeds as a source of pathogens and pests. Discussed are integrated crop management and its components like the use of tillage, non-tillage, intercropping and cover cropping, overseed, use of biostimulants and biofumigation for weed control. Exploitation of GPS (Global Positioning System) is examined.

Chapter 7 examines problems related to the control of pests and pathogens, and clearly shows how important role plays in *Brassica* growth. Forms of crop loss have been introduced, and new technologies such as pest and pathogen forecasting have made protection more efficient and less wasteful. Stressed also are complex problems related to the changing spectra of crops, pathogens and pests, including strategies for pest and pathogen control. In detail, the manipulation of husbandry systems is elaborated. The second part of this chapter is a detailed and comprehensive overview of important pests and pathogens of brassica crops.

Chapter 8 is the final one, which focuses on postharvest quality, value, and marketing. This is the crucial and final area of the whole process of growing brassica crops and utilisation; in this case, product quality plays a crucial role. The quality factors are defined in this chapter. The importance of cold-chain handling and sophisticated packaging is stressed. Also demonstrated are abiotic and biotic disorders that play crucial roles in finalising the product. A summary of harvesting operations and equipment for this purpose is provided, including storage, grading, food safety and degradation evaluation. Various aspects of marketing are also examined.

The book is logically arranged and, from the first look, attractive. The text is very well written, covering all the most important theoretical and practical aspects of vegetable brassicas and related crops. At the end of each chapter, the reader will also find a list of the most important and relevant references; from the viewpoint of the whole book, there are a huge number of references (ca over one thousand), mostly research papers, reviews and books. The book includes many high-quality colour photographs, tables, line diagrams, and illustrations, increasing the text's readability and understanding. At the end of the book is a very detailed Index covering all the most important terms, names and scientific names of organisms. This is very useful for quick orientation in the book and increases the ease of finding specific topics.

In conclusion, this book summarises important recent information, concepts, and methodologies related to vegetable brassicas and crops. Without any doubt, it's very well written and designed. This book is a valuable and essential reading. It can serve as an important source of information for researchers, university lecturers and horticulture students, plant sciences and biology, plant breeders and seed producers, and growers, processors and agricultural advisors. The authors are congratulated on their impressive job and valuable book, which has a broad international impact and long-lasting relevance.

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