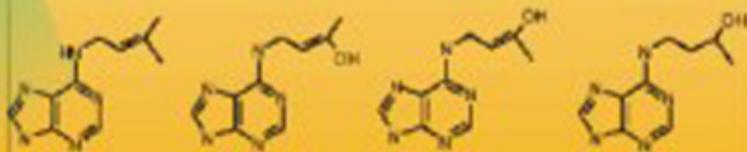


Handbook of

Seed Science and Technology



Amarjit S. Basra, PhD • Editor

Amarjit S. Basra, PhD
Editor

Handbook of Seed Science and Technology



Pre-publication
**REVIEWS,
COMMENTARIES,
EVALUATIONS . . .**

"The scope and depth of the content of the *Handbook* are impressive. The four sections comprise chapters covering all the major directions of contemporary seed inquiry, and the linking of these by chapter arrangement and within chapters to older anatomical, morphological, and physiological literature is a most positive feature. The reviewing of ecological, gene bank, crop issues, and seed testing and seed health issues rounds out the scope to provide a reference which will be as valuable to researchers as it will to teachers at all levels of education.

The *Handbook* is also a valuable resource for students, teachers, and researchers in areas allied to seed biology

and technology, particularly food technology, agricultural economics and bio-commerce, bio-engineering, epidemiology especially or crop diseases, toxicology and nutrition, nutrigenics, metabolomics, and all the other genetic technologies emergent in today's world. Seeds have always played a central role in the history of humankind and this book is a fine compendium, befitting in its scope and content."

David W. Fountain, PhD
*Associate Professor,
Institute of Molecular BioSciences;
Director, Centre for Plant Reproduction
and Seed Technology, Massey University,
New Zealand*



More pre-publication
REVIEWS, COMMENTARIES, EVALUATIONS . . .

"The *Handbook of Seed Science and Technology* is an up-to-date, comprehensive collection of information pertaining to seed development, dormancy, germination, ecology, and technology. Edited by Dr. Amarjit Basra, this handbook is an anthology of contributions from the most prominent seed scientists in the world today, whose research covers a wide range of species including *Arabidopsis*, a useful plant model, important agronomic crops such as cereals (rice and wheat), maize, grain legumes, cotton, and vegetable, tree, and weed seeds. It is a must-have for scientists who conduct seed research and for students who study seeds.

The book comprises twenty-six chapters organized into four sections. As a physiologist, I found the first two sections most interesting. These sections cover basic research related to seed development, dormancy, and germination, and offer a comprehensive review of the molecular genetic control, biochemical evidence, and functional significance of a wide range of topics including ovule development, genetically engineered seed nutritive value enhancement, and synthetic seed technology. Ecologists will find the most current basic and applied information on seed ecology. For people in the seed testing and regulating industry, the reviews of seed technology applications and detailed protocols are indispensable. The conservation of genetic resources for future generations, a major global concern, is discussed in detail at both genebank management and conservation methodology levels.

Each chapter provides a complete list of references and a discussion of future perspectives. The latter identify current knowledge gaps and propose future research directions needed to

address these gaps. These perspectives are useful especially for research foundations, government, and the biotechnology industry that fund seed-related research.

I strongly recommend this handbook to all scientists who work with seeds—a majority of plant scientists—since seeds, together with soil and water, are one of the most important factors affecting plant growth and productivity. Dr. Amarjit Basra is both a productive scientist and a prolific author. With the publication of this comprehensive handbook, he has achieved a significant accomplishment for which he should be highly commended."

Tara VanToai, PhD
USDA ARS SDRU;
Visiting Scientist,
The Institute for Genomic Research,
Rockville, Maryland



"This book seems very useful and much needed. Because of the nature of seed developmental biology, seed ecology and technology are still of great interest. The structure and composition of included papers are of high quality, and the scientific value meets high standards.

The potential value for the target audience seems very promising, especially for those involved in agriculture education, research, and policymaking. This book is a good addition to the field of seed science."

Michal V. Marek, DSc
Professor, Institute of Systems Biology
and Ecology, Academy of Sciences,
Budejovice, Czech Republic

More pre-publication

REVIEWS, COMMENTARIES, EVALUATIONS . . .

Throughout the world several thousand billion tons of seeds are produced yearly for food staples such as grains of cereals and legumes, for food industry such as oilseeds, and, last but not least, for sowing. A number of important properties have to be considered depending on their utilization in nutrition, industry, or plant production.

Handbook of Seed Science and Technology provides a state-of-the-art review of both the classical and the newly arisen fields of interest in seed science with integrated information on seed developmental biology and biotechnology, seed ecology, and seed technology. The authors present the latest research and advances in a wide range of subjects, including the biochemical processes involved in seed development, dormancy and germination, and

their regulation on the level of genes; the fortification of the nutritive value of seeds by genetic engineering; seed quality, seed vigor, and their assessment; and technologies in germplasm conservation. The last section in each chapter addresses new perspectives on the field presented, followed by extensive, up-to-date bibliographies.

Exciting, inspiring, as science can be; useful to students, researchers, or professionals interested in seed science, and also a valuable item in the agricultural university library collection."

Krisztina R. Végő, PhD

*Senior Researcher,
Research Institute for Soil Science
and Agricultural Chemistry
of Hungarian Academy of Sciences
(RISSAC)*

**Handbook
of Seed Science
and Technology**

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Disease Problems in Vegetable Production
Diseases Management in Arid Land Crops
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Dr. **Amarjit S. Basra** is an eminent plant physiologist at the Punjab Agricultural University in Ludhiana, India. He is currently a visiting scientist at the University of California at Davis. His outstanding work on seed quality and cotton fiber quality has been internationally recognized. Dr. Basra has more than 80 research publications to his credit, and is the lead editor of 11 books on topical subjects in plant/crop science. He is the Founding Editor in Chief of the *Journal of Crop Production* and the *Journal of New Seeds* (Food Products Press). He is a member of the American Society of Agronomy, the Crop Science Society of America, the American Society of Plant Biologists, the American Association for the Advancement of Sciences, the American Institute of Biological Sciences, the New York Academy of Sciences, the Australian Society of Plant Physiologists, the American Society for Horticultural Science, and the International Society of Horticultural Science. Dr. Basra is a decorated scientist who has received several coveted awards and honors and has made scientific visits to several countries fostering cooperation in agricultural research at the international level.

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