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Seeds: Ecology, Biogeography, and, Evolution of Dormancy and Germination

Carol C. Baskin, Jerry M. Baskin
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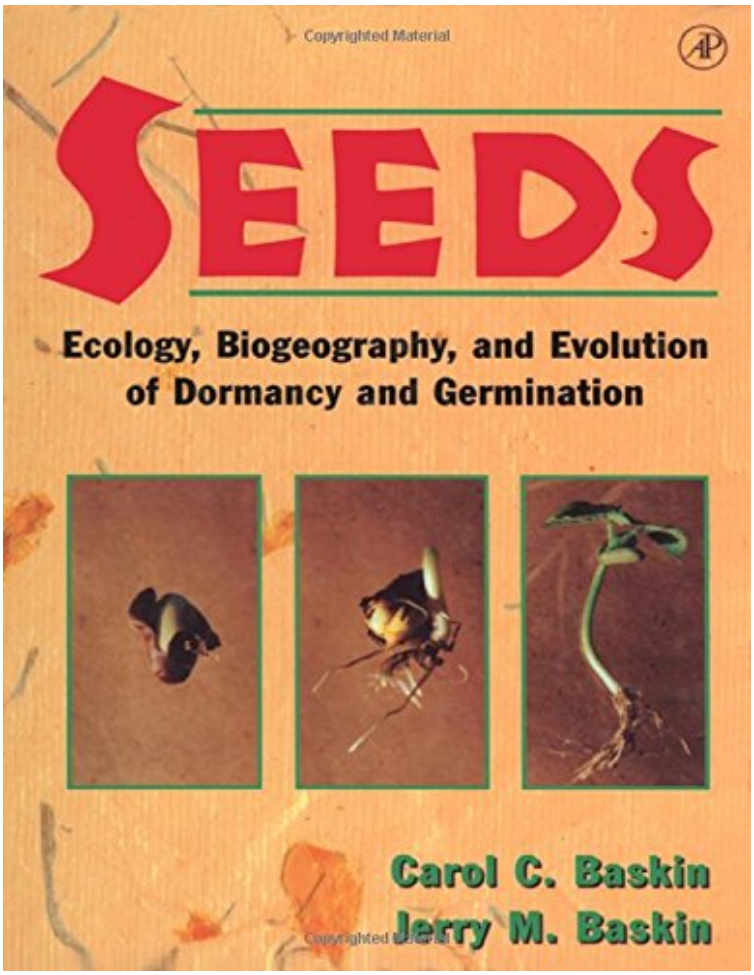

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Seeds: Ecology, Biogeography, and Evolution of Dormancy and Germination differs from all other books on seed germination. It is an all-encompassing volume that provides a working hypothesis of the ecological and environmental conditions under which various kinds of seed dormancy have developed. It also presents information on the seed germination of more than 3500 species of trees, shrubs, vines and herbaceous species, making this a valuable reference for anyone studying germination. This book delivers information on characteristics of each type of seed dormancy, how each type of dormancy is broken in nature, and what environmental conditions are required for germination after dormancy is broken. It explains how studies should be done to distinguish persistent from transient seed banks, and covers which species should be controlled, propagated, and conserved. Seeds gives the reader insight and guidelines for doing ecologically meaningful studies on the biogeography and evolution of seed dormancy and germination in order to better understand plant reproductive strategies, life history traits, adaptations to habitats, and physiological processes. Key Features* Evolutionary/phylogenetic origins and relationships of various kinds of seed dormancy* A world biogeographical perspective on seed dormancy and germination* Ecophysiology of seeds with each type of dormancy* Critical evaluation of methodology used in soil seed bank studies* Germination ecology of plants with specialized habitat and life cycle types* Genetic and maternal preconditioning effects on seed dormancy and germination* Guidelines for doing ecologically-meaningful germination studies

"The book is even now an important reference source and may be recommended to anyone interested in any aspect of seed biology." -P. Mrz for THIAZIA JOURNAL OF BOTANY (2002)"...this is a monumental overview that deserves to be readily available to all plant physiologists, seed ecologists, the staff of seed testing laboratories and forestry nurseries, seed conservationists-in fact anyone directly working on, or teaching about, the germination of seeds. ...this volume is set to be the first point of reference for seed germination and dormancy studies for many years."-Hugh W. Pritchard in ANNALS OF BOTANY (2000)"Baskin and Baskin have achieved a remarkable synthesis of the literature on seed dormancy and its impact on germination ecology. ...represents the culmination of decades of scholarly research, and the reader reaps the benefit in one volume. For those involved in plant ecology in any one of the ecosystems described, the coverage is excellent."-Alistair J. Murdoch, University of Reading, U.K., in CROP SCIENCE (2000)"This book is a grand, highly readable treatise..."-Ray Stross in HYDROBIOLOGIA (2000)"This book represents a very substantial contribution to scholarship and is likely to become a long-lived classic publication. ...I have no hesitation in recommending this book to all interested in plant ecology. There is no doubt in my mind that this book will prove to be a substantial contribution to the study of seed ecology, and I congratulate the authors on the completion of what can only be described as a singularly comprehensive account."-Richard Ellis in AFRICAN JOURNAL OF ECOLOGY (2000)"After finishing the book, I feel a little overwhelmed with all the material and the effort it took to bring it all together in such an organized and comprehensive manner. The content alone is valuable, especially for researchers... [Baskins] have brought together in one place an "impressive" collection and summary of information, provided methodologies, and used the insight of their collective experience to critically review methods and conclusions and to suggest directions for future work. ...For anyone interested in any aspect of seed germination, this is the place to start."-V. Thomas Parker, San Francisco State University, in ECOLOGY (September 1999)"Over the last three decades, the authors' names have become synonymous with detailed studies of seed germination and dormancy. Seeds stands out among the numerous volumes on germination because it is satisfyingly pervaded by the Baskins' understanding that, like any other trait, seed dormancy evolves. ...should be on the bookshelf of any ecologist, evolutionist, or theoretician who needs to know how seeds can be coaxed to get on with the rest of their life."-Susan J. Mazer in SCIENCE (January 1999)"This book is an all-encompassing volume that provides a working hypothesis of the ecological and environmental conditions under which various kinds of seed dormancy have developed."-WEED TECHNOLOGY (1999)"It is not often that a text may be viewed as a source book for an entire subject. Yet with ten years in the making and having been written by two of the foremost seed ecologists of recent years that is exactly what this is. The book contains an exhaustive coverage of the subject and will undoubtedly become the fundamental reference on seed ecology for many years to come. ...This is a massive text that is accurate, wide-ranging and complete; it highlights both what is known and what still requires investigation. It is a book that should be found in every scientific library and in the personal collections of anyone interested in the, often under-appreciated, importance of seeds in ecology."-Tim Pearson, University of Aberdeen, U.K., in JOURNAL OF TROPICAL ECOLOGY (1999)"The value of this text lies in its comprehensiveness. It brings together a very wide range of information and presents it in a logical and orderly fashion."-Bill Bourne in BIOLOGICAL AGRICULTURE AND HORTICULTURE (1999)"This book is a real tour de force, and something of a landmark in its field. For a start it must be the biggest book in seeds yet published. ...a treasure trove of information, with every possible aspect of seed germination and dormancy duly covered. ...Almost anyone working in the field of seed biology will find this text invaluable as (a) a guide to current research, (b) an up-to-date compendium of the literature, and (c) a source of ideas for experimental

work. Academics will also find the book a good source of material for teaching purposes."-Michael Fenner, University of Southampton, U.K., in JOURNAL OF BIOGEOGRAPHY (1999)"Anyone familiar with this field of research should appreciate the vast amount of information available in this text. It will be a reference for many years to comes. "-M.P. Schellenberg in CANADIAN FIELD-NATURALIST (1999)"'Monumental' is an overworked word, but it is one that applies to this book."-Ken Thompson in JOURNAL OF ECOLOGY (1999)"...a heroically broad-ranging compilation of the distribution of dormancy and germination types. It is a landmark publication, and will provide a foundation for much future theory and interpretation."-Mark Westoby, School of Biological Sciences, Macquarie University, in AUSTRALIAN JOURNAL OF ECOLOGY (1999)"...a mine of information about seeds and some aspects of their behavior. ...I have no doubt that many of those interested in various aspects of seeds and dormancy will wish to add it to their library and will find the purchase worthwhile."-A.M. Mayer, The Hebrew University of Jerusalem, in ISRAEL JOURNAL OF PLANT SCIENCE (1999)"If you are interested in seeds, their germination ecology, or evolution of seed plants, and do not already own this book, I encourage you to buy it for yourself and also order a copy for your library. ...virtually all pertinent studies of which I am aware of are included. ...I believe this book belongs on the desk of everyone interested in seed biology. ...We are indebted to the Baskins for their fine contribution, surely a labor of love, to the seed literature."-Mary A. Leck, Rider University, in PLANT SCIENCE BULLETIN (1998)"Baskin covers the ecology, biogeography, and evolution of dormancy and germination of seeds. Chapters treat ecologically meaningful germination studies; types of seed dormancy; germination; ecology of seeds with nondeep physiological dormancy; germination ecology of seeds with morphophysiological dormancy; germination of seeds with physical dormancy; germination ecology of seeds in the persistent seed bank; causes of within-species variation in seed dormancy and germination characteristics; a geographical perspective on germination ecology: tropical and subtropical zones, temperate and arctic zones; germination ecology of plants wtih specialized life cycles and/or habits; and biogeographical and evolutionary aspects of seed dormancy. Tables and figures; extensive references; subject and taxonomic indexes. For all agricultural libraries and anyone working in the botanical disciplines."-CHOICE"Ecologists, plant scientists, agriculturists, foresters, horticulturists, agribusiness researchers and the non-specialist general gardeners will want to add this informative and comprehensive title to their personal and professional reference libraries. Highly recommended!"-WISCONSIN BOOKWATCH (MIDWEST BOOK REVIEW)From the Back CoverThe evolution of seeds has contributed to one of the most astonishing explosions of biodiversity in history. Indeed, most plants employ seeds as reproductively crucial structures. Everything about seeds involves timing. Seeds result from fertilization occurring when conditions are favorable, i.e., after sufficient resources have been devoted to reproductive tissues. Furthermore, seeds help ensure that there are the necessary stored materials for the early growth and development of the next generation of plants. And finally, seeds allow the next generation to wait in a form of suspended animation until conditions for the next generation are once again favorable.This book about seeds focuses upon their two most important functions-dormancy and germination. The topics covered include the types of dormancy, theories of the relationship between dormancy and germination, the timing of germination, the various factors that control germination, and the general aspects of germination in different sorts of habitats. Ecologists, plant scientists, agriculturists, foresters-indeed, anyone interested in plants and their life cycles will want to add this title to his or her library.About the AuthorCarol C. Baskin received her B.S. Degree from Florida Southern College and a Ph.D. degree from Vanderbilt University. She became an Adjunct Associate Professor at the University of Kentucky in 1984 and an Adjunct Full Professor in 1991. Carol is also a Senior Research Fellow at Austin Peay State University in Clarksville, Tennessee. Her research efforts have been concerned with the ecological life cycles of herbaceous plant species, with a strong emphasis on seed germination ecology. These efforts have resulted in approximately 270 publications in refereed journals, four book chapters, more than 90 abstracts, and four book reviews. Dr. Baskin is a member of the Association of Southeastern Biologists and the Ecological Society of America, and is president-elect of the Ecological Society of America. She is also Chair of the North American Section of the International Association for Vegetation Science and Book Editor for Journal of Vegetation Science. Jerry M. Baskin holds a B.S. in biology from Union University and a Ph.D. from Vanderbilt University. After a year of postdoctoral study at the University of Florida, he joined the faculty at the University of Kentucky, Lexington, where he is now a Professor in the School of Biological Sciences. Dr. Baskin's primary research interests are plant species biology and plant geography. He has authored or co-authored about 280 scientific papers, four book chapters, about 100 abstracts, and 29 book reviews. He is Chairperson, Ecological Section of the Botanical Society of America; Secretary, Association of Southeastern Biologists; and President, Southern Appalachian Botanical Club. Baskin serves on the editorial boards of American Journal of Botany and Transactions of the Kentucky Academy of Science. He is also a co-editor of Journal of the Torrey Botanical Society and on the review board of Seed Science Research. Drs. Baskin are husband and wife.