
This text portrays the comprehensive body of theory and practice which constitutes the science of plant breeding at a level within the intellectual grasp of most serious undergraduate students. The author has broken with precedent by excluding the usual introductory or survey chapters on elementary genetics, biometry, and experimental design. This has allowed sufficient space to introduce basic ideas involved in quantitative and population genetics, genotypic-environmental relationships, and mating systems. He, furthermore, adopted an organization which emphasizes the genetic bases of breeding self- and cross-fertilized plants, without treating the various crop species individually. This departure avoids a certain amount of duplication permitting an amplification of concepts and methods unusual in a beginning text.

These changes have led some readers to conclude that the book is too advanced for the average undergraduate in agriculture. Thirty of the 36 chapters are clearly written for the undergraduate student. The author is careful to present in the introduction to new subjects an appropriate historical and developmental background. The principle of introducing new concepts and definitions in simplified form, followed at some later stage by a more rigorous statement, has been rather consistently applied. Important ideas are clearly enunciated. The examples from breeding experience used in illustration of the many theoretical and practical points seemed to the reviewer to have been particularly well chosen. A special effort has been made to present balanced viewpoints, and to note the frequent variations and exceptions to present rules. There is no attempt made to suggest that plant breeding is simpler than it actually is nor to reduce it to a handful of routine operational details.

The author carefully points out that six chapters were included primarily as a challenge to the exceptional undergraduate in developing insight into important concepts in selection theory; they seem to more nearly meet the needs of beginning graduate students.

The text contains a modest number of pertinent photographs which are nearly always good reproductions. Liberal and effective use has been made of tables and figures that are excellent in design and reproduction. Selected references at the ends of chapters, a useful 8-page glossary, and a detailed index complete the text.

The minor printing errors are quite insignificant in view of the general excellence of the book.—M. W. Adams, Michigan State University, E. Lansing.


The agronomist or plant breeder who had his genetics courses fifteen years ago by reading the first edition of the textbook on which this text is based (or the Scientific American) may find it difficult even to recognize the subject. The genetics of microorganisms, which at that time was devoted in a large part to demonstrating the well known phenomena of mutation and recombination which occur in viruses and bacteria, has become the center of genetics. The chemical understanding of the gene, which at that time seemed so far in the future, is now at hand.

This book begins, not with Mendel's laws or with a discussion of mitosis and meiosis, but directly with transformation experiments, DNA chemistry, and bacteriophage genetics. The starting point is the concept of heredity as that which is transmissible from one generation to the next (or as that which is transmitted from cell to cell during differentiation). The reader is taken on a tour over the genetic terrain, from virus to animal, from bacteria to plant; from the genes which have been studied in the laboratory to the genes which control development, metabolism, and structure. The emphasis throughout is on the latest results bearing on the nature and functioning of the genetic material, as revealed by the elegant experimental methods of modern microbial genetics. Before the reader has finished the book, he will have learned about most of the classical concepts of transmission and physiological genetics that have been worked out from studies on multicellular organisms, for these come in due course.

The author's view is that cell genetics and population genetics have become so different in methodological and content as to be better treated independently, so population genetics is not discussed at all (except for such things as chemostat experiments with bacteria). The approach is as mechanistic as possible, with chemical descriptions being applied whenever possible.

This is the best source that I know of for what must be a major problem to most readers of this journal, keeping up with the fusion of new knowledge of chemical genetics. It is very well written. It is as complete in its defined area as any book of its size could be. It can be read by anyone who has a general background in biology and chemistry. It is particularly good reading for those whose knowledge of genetics is mainly classical; here in a single volume is the whole field of modern chemical genetics. Even if one didn't already know, it would be clear that the authors are deeply immersed in the research themselves, their depth of insight, their awareness of current problems, and the excitement of new and rapid discovery permeate the entire volume.

I found the book most exciting reading. Anyone who tried to buy a copy from the publisher in the weeks shortly after publication can testify as to its popularity.—JAMES F. CROW, Medical Genetics Department, University of Wisconsin.


The staff at the Grassland Research Institute has described in considerable detail the experimental techniques now in use and the equipment employed at the Institute. Techniques described are those which have been tried and found to be satisfactory. The detailed information is published here with the hope that it will prove useful and time-saving for other workers in similar fields. These methods and techniques may serve as a basis for refinements or adaptations even if they cannot be used in toto.

Techniques are discussed under these headings:

I. Experimental Design and Interpretation
II. Herbage Plant Investigations
III. Animal Investigations
IV. Plant/Soil Studies
V. Extension Trials
VI. Special Laboratory Equipment and Its Use

This is an excellent treatment of grassland research problems and means of finding answers to these problems. The book should be very helpful to anyone working in this area of complex plant-animal interrelations.

The book emphasizes the team approach and reviews the importance of fundamentals and, then, operational research. It is well illustrated and has an extensive bibliography and a glossary.

Of special interest is the 1959–60 annual report for the Institute which may be obtained with this book. This publication, "Experiments in Progress Number 13" contains a "running commentary on the research work of the institute and provides a most valuable record." A number of short articles of topical interest, dealing with special facets of work, are included. This 123-page companion publication is available from the same publishers, 7/6. ($1.05). This is a unique combination; a book on grassland research techniques and an annual report giving results of research completed and being carried out using the techniques. The publications, singly or in combination, should be available to all those engaged in grassland research.—J. M. SCHOLL, University of Wisconsin.


Through a careful selection of superb photographs and their combination with an illuminating text, the authors have achieved a goal for which many others have strived. The book is built around the concept of the forest as a community of living things whose lives are inextricably intertwined with one another and bound to their physical environment.

The second volume contains 190 photographs and illustrations, 81 in color, and includes chapters on the Forest Year, Ancient Landscapes, Tree Engineering, The Web of Forest Life, The Hidden World of the Soil, Rise and Fall of the Wilderness, and Forests of the Future. The appendix includes a bibliography, statistics on some record trees, and a key to tree recognition.