
Preface

This third edition of integrated information on Plant Systematics has largely been influenced by the developments of the first few years of twenty first century. Past two decades have seen development of new tools of biotechnology, vigorous utilization of molecular data in understanding phylogeny, and redefining affinities and arrangements of plant groups. Recent years have also seen disappearance of gaps between numerical and cladistic methodologies, and integration of former into the latter for complete understanding of phylogenetic relationships. These trends have largely influenced the combination of numerical and cladistic methods under one chapter, and enlarged discussion on Molecular Systematics, discussing new concepts, tools and recent achievements. New chapters on Pteridophytes and Gymnosperms have been added for complete understanding of systematics of vascular plants.

It is being increasingly realized that actual photographs of plants and plant parts enable better understanding of taxonomic information, the trend usefully exploited by recent publications by Simpson (2006) and Judd et al. (3rd ed., 2008). The present edition incorporates more than 500 colour photographs of plants from diverse families of plants. High-resolution images of these as also the additional plants have been provided in the CD-ROM being supplied along with the book, latter including 772 photographs. This has largely been possible through the kind courtesy of my son Manpreet Singh and daughter-in-law Komal, who sponsored my recent visit to California, and provided me the opportunity to visit and photograph temperate plants in and around California. The book as such contains images of both tropical plants (largely from Delhi), temperate American plants and plants from other parts of the World growing in the Botanical Gardens of University of California and San Francisco Botanical Garden. I wish to record the help rendered by the members of TAXACOM in the identification of some of the American plants.

The focus of the present edition has been to further consolidate the information on the principles of plant systematics, include detailed discussion on all major systems of classification, and significantly, also include discussion on the selected families of vascular plants, without sacrificing the discussion on basic principles. The families included for discussion are largely those which have wide representation, as also those that are less

known but significant in evaluating the phylogeny of angiosperms. The discussion of the families also has a considerable focus on their phylogenetic relationships, as evidenced by recent cladistic studies, with liberal citation of molecular data. Several additional families have been included for detailed discussion in the present volume.

Recent internet revolution has greatly helped in propagating taxonomic information, with numerous searchable databases, online programs for identification and data analysis available for ready reference. The information concerning these has been included at appropriate places in various chapters for easy utilization. In light of this, the separate chapter on web has been omitted. The outputs of computer programs, especially used in molecular studies and construction of phylogenetic trees has been included based on actual or hypothetical data. This will acquaint readers with the handling of raw data and working of computer programs.

The author has attempted to strike a balance between classical fundamental information and the recent developments in plant systematics. Special attention has been devoted to the information on botanical nomenclature, identification and phylogeny of angiosperms with numerous relevant examples and detailed explanation of the important nomenclatural problems. An attempt has been made to present a continuity between orthodox and contemporary identification methods by working on a common example. The information on methods of identification using computers has been further enhanced to help better on-line identification.

For providing me inspiration for this book, I am indebted to my undergraduate students, who helped me to improve the material through frequent interactions. I am also indebted to my wife Mrs. K.G. Singh for constant support and bearing with my overindulgence with this book. I also wish to acknowledge the help rendered by my son Kanwarpreet Singh at various stages.

I wish to record thanks to all the colleagues whose inputs have helped me to improve the information presented here. I also wish to place on record sincere thanks to Dr. Jef Veldkamp for valuable information on nomenclature, Dr. Gertrud Dahlgren for photographs and literature, Dr. P.F. Stevens for literature on APG II and trees from his APweb, Dr. Robert Thorne for making available his 2007 classification, Dr. James Reveal for his help on nomenclatural problems, Dr. D.L. Dilcher for his photograph, Dr. Julie Barcelona and Harry Wiriadinata for photographs of *Rafflesia*, the authorities of New York Botanical Garden, Missouri Botanical Garden, USA, Royal Botanic Gardens Kew and University of California, Santa Cruz, for photographs used in the book.

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