

Preface

Climbers (lianas and vines) are one of the most interesting, but much-neglected, groups of plants. They occur in all woody ecosystems of the world. High climbers play an important ecological role in forest ecosystem dynamics and functioning, exhibiting a wonderful example of economy of nature. It allows a plant to attain maximum exposure to sunlight, water, and nutrients with minimum expense in vegetation support. Phylogenetically, climbers are found in over 125 families of flowering plants as well as among several fern groups and even in one significant gymnosperm genus, *Gentum*.

Though a climber is a straggling plant, it plays vital roles in horticulture, medicine, and agriculture. Some climbing species are grown for ornamental purpose also. The most commonly used medicinal climbers, viz., *Abrus precatorious*, *Aristolochia indica*, *Cissus quadriangulairs*, *Coccinia inidca*, *Gloriosa superba*, *Gymnema sylvestre*, *Hemidesmus indicus*, *Tinospora cordifolia*, *Tylophora indica*, and *Decalepis hamiltonii*, play an important role to cure ailments related to skin, cough, fever, headache, diabetes, rheumatism, asthma, dysentery, and poison bites. *Bougainvillea* spp., *Gloriosa superba*, *Ceropegia* spp., *Allamanda*, *Passiflora* spp., etc. are some common ornamental climbers.

This book has been written in the vicinity of the books on climbing plant species. As there is no recent book on climbers, the aim of this book is to gather up-to-date information on recent trends of biotechnology and research in light of the surge in the demand for climber-based medicine. The chapters are focused on eight different themes. The book begins with a discussion on the evolution of a climbing habit and their diversification in angiosperms, the second theme highlights the use of some important climbers as medicine, while the rest of the themes (third to eighth) describe biotechnological interventions for conservation and the qualitative and quantitative improvement of climbers (both medicinal and ornamental). Authors have tried to collect the protocols for in vitro propagation and synthetic seed production of most of the studied climbers, including threatened and rare species. During the past few decades, the development and use of molecular markers for the detection and exploitation of DNA polymorphism is one of the most significant

progresses in the field of plant biotechnology and their genetic studies. This book has a separate theme on “Molecular marker approaches: quality assessment and authentication for medicinal value.” Chapters in this theme provide a general account on various molecular markers and their applications in quality assessments and improvement of medicinal and ornamental climbers.

During preparation of this book, we made our sincere efforts to provide good scientific information on climbers. We hope the book will be useful for researchers in academia, industry, and agriculture planning. We also hope that our earnest endeavor will have a great reception by graduate students and teachers.

As editors, we would like to thank all the authors and coauthors for their timely submissions and cooperation during the compilation of the book. We also gratefully acknowledge permission from many authors and journals to include previously published data. The editors deeply appreciate the time-to-time assistance provided by the Springer book editorial team, especially by Mariska van der Stigchel, whose enthusiastic guidance throughout the period of compilation helped us to complete the task smoothly.

The task of completing this book could not have been accomplished without the patience and understanding of our family members, dear friends, postdocs, and research scientists. Finally, we sincerely acknowledge the blessings from the Almighty God, who provided us the boost for completing this energetic task.

Aligarh, India
6 April 2015

Anwar Shahzad
Shiwali Sharma
Saeed A. Siddiqui

Biotechnological strategies for the conservation of
medicinal and ornamental climbers

Shahzad, A.; Sharma, S.; Siddiqui, S.A. (Eds.)

2016, XIV, 506 p. 25 illus., 1 illus. in color., Hardcover

ISBN: 978-3-319-19287-1