

TEXTBOOK OF

# Bryophyta

AFROZ ALAM



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**BRYOPHYTA**



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*This book is dedicated to an Eminent Bryologist of India*  
*My Guru ji*  
*Prof. S.C. Srivastava*  
*F. N. A. Sc.*



# Foreword

Bryophytes are the second largest group of green land plants. However, one has not the impression that bryology gains the appropriate recognition. Bryophytes are not just small green land plants, but they represent an alternative pathway in the evolution of plants. They have a homoiohydric life syndrome, a different ecological role, a different physiology, are haplonts with the according consequences (homologous recombination).

This requires, however, appropriate textbooks to support students with the necessary knowledge. There are only a few hundred scientists worldwide who specialize on bryophytes, and the number is strongly declining. Also, for that reason there is a need for bryologists. But the students “must have something in hand”, must have appropriate facilities to enhance their knowledge on this interesting field. A professor of botany at University of Valdivia, Chile, once explained to me why there are only very few bryologists in Latin America: there are no textbooks available, and how students should be stimulated in a field such as bryology?

The situation in India is not as bad, since it is by far the most active country in bryology in the tropics and in SE-Asia and there is a long tradition of bryological textbooks. However, most if not all are outdated today. As in most other natural sciences, the scientific progress has added a lot of new insights. This concerns especially the molecular methods in taxonomy, systematics and geobotany. Therefore, textbooks need to be updated in regular intervals.

In the present times, there is a special need for detailed depiction of all aspects of bryophytes. Today, science is much specialized and the “bryologist” does not exist anymore. Most bryologists work on narrow subjects. They have hardly an outbox of all aspects of bryophytes. They can hardly “look over the edge of their plate”, as a German phrase goes. They work on knock out genes but have hardly seen any bryophyte except for their *Physcomitrella* cultures. They have no idea about structure and life of bryophytes, how they have evolved, how they survive in harsh environments, how they are adapted, how they are surviving outside the lab, which is necessary to understand such organisms.

We need a modern, stimulating, vivid overview of bryology. I am sure that Dr. Afroz Alam has fulfilled this purpose and hope that his book will have a wide distribution and use amongst Indian students.

**Jan-Peter Frahm**

Former Professor Emeritus

The Nees Institute for Biodiversity of Plants

Friedrich-Wilhelms-Universität Bonn



# Preface

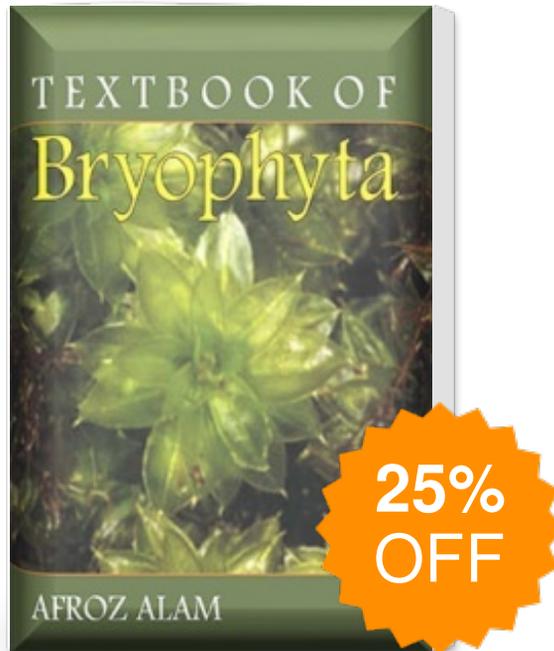
The main objective of the present title “Textbook of Bryophyta” is to meet the requirements of botany students and to provide authentic and standard study material related to this remarkable group of plants. This book has been compiled exclusively to accomplish the need of undergraduate (B.Sc.) and postgraduate (M.Sc.) students of botany of all Indian universities. However, aspirants for civil services and other competitive examinations will surely gain advantage from this book.

The book is compiled in a very comprehensible style and aims to provide a complete account of bryophyta in a simple language and in a profusely illustrated manner for better understanding. The book is divided into twelve chapters which deal with Introduction of these plants, Life forms, Life cycle, Cytogenetics, Classification, Class Hepaticopsida, Class Anthocerotopsida, Class Bryopsida, Uses of bryophytes, Conservation of bryophytes, Molecular bryology and an account on some distinguished Indian bryologists, respectively. The description of plants is well supplemented by suitable photo-plates and line drawings which will give a complete and striking view, with an added advantage to the readers in identifying the plants in their natural habitats. The subject matter has been arranged in what seems to the author a logical order. Care has been taken to bring the subject matter up-to-date keeping in view the latest researches on the bryophytes.

Suggestions to improve the book will be thankfully accepted.

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