

H.N. Gour



Physiological and Molecular Plant Pathology

Foreword by



Dr. M S Swaminathan

**PHYSIOLOGICAL AND
MOLECULAR PLANT
PATHOLOGY**

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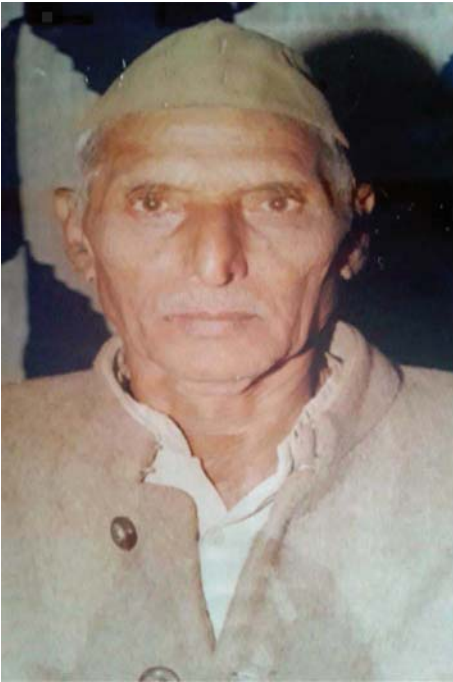
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*Dedicated to
My Parents*



*Late Shri Udai Lal Gour and Smt Ganga Gour
I miss them*

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Foreword

It gives me pleasure to write foreword for this treatise entitled "**Physiological and Molecular Plant Pathology**" completed by Dr. H.N. Gour, under the DST USERS Scheme, which embodies the *hitherto* little overlooked twin aspects viz. Physiology and Molecular biology of plant diseases incited by abiotic/biotic agencies. These two phenomenal aspects nevertheless are significant foundation stones of the pathogenesis and pathogenicity. I am reminded, at this point, the statement of legendary plant pathologists J G Horsfall and A E Dimond, mentioned in their classical treatise *plant pathology* (1961) that, "understanding a disease is **science (Laboratory)** and managing a disease in land is an **art.**" This book thus signifies the Lab to Land (science is understanding and art is doing) concept of dealing with disease management enabling scientists to achieve goals at the door-step of second green revolution.

The book with the given title and comprehensive contents with latest developments (referred work of 2015-16) as such may have a considerable wide scope for all those teachers, students, scientists and scholars who are dedicatedly pursuing their research interests on the various mechanisms and processes of biological life cycles of fungi, bacteria, viruses; the application of molecular strategies for management of plant diseases, producing transgenics, application of RNAi technology and all challenging issues pertaining to social affairs, biosafety issues, bioterrorism, agroterrorism, conservation of Biodiversity etc. This book may find an equal importance for PG students since its contents are fully designed on the approved course programme of ICAR in plant pathology which has been adopted by all state agricultural universities (SAUs). I hope it will prove to be an important source of literature. However, there always remain a scope for improvements and modifications. I wish the work a success.

A handwritten signature in black ink, which appears to read 'D. S. Swaminathan'.

M S Swaminathan

PREFACE

Since the publication of the book entitled **Physiological Plant Pathology** by RKS Wood way back in 1967, there have no serious attempts been made to bring out any substantial compilation on such important aspects of plant pathology, articulated in a book form. Lately, faculty and students alike have deeply felt the need of a book encompassing the details of the latest research work spread over in journals, reviews, books, bulletins etc on physiological, biochemical and molecular aspects of host-parasite interactions. Tremendous advancements have been made, particularly in twin realms of molecular biology and biotechnology during past decades and have become of greater significance as the revised PG courses curricula included most of the topics related to these advancing frontiers. Consequently, this endeavor is the outcome of such many necessities and academic requirements. The book is targeted to be widely received by teachers, students, scientists and scholars alike, who are either interested to understand the concepts or dedicatedly pursuing their research interests on any of the topics described in detail including transgenic crops, plant biotechnology, bio-safety issues, bioinformatics etc. Moreover, the topics in the book directly bear a relevance to the PG course curricula of Plant Pathology which is being either taught as a major subject at Agricultural Universities or as a special paper in Departments of Botany and life sciences of traditional Universities.

A phrase "Understanding is science and doing is art", mentioned by J G Horsfall and A E Dimond in the prefatory chapter of their classical book on Plant Pathology published in early sixties, triggered an interest in me to develop a synopsis of this book for submission to Department of Science and Technology (DST), Ministry of Science and Technology, Govt. of India for consideration of support. Later, approval of the proposal under USERS Scheme of DST provided me an opportunity to translate my long cherished dream of writing a book on the topics related to interface of plant pathology, plant physiology and molecular biology. The approval of the proposal and financial support of DST for writing this book are most thankfully acknowledged.

It would be an amiss if I do not remember and pay my obeisance to my teacher, mentor and guide-**Professor HC Dube** who, by way of his sublime teaching, made the subject of Mycology and Plant Pathology so interesting that it became my career and life as well. His insatiable thirst for new knowledge instilled in all of his students a desire to remain updated about latest trends in research and recent publications. My inclination to extend Plant Pathology to Plant Physiology and Molecular Biology emanates from my training under his affectionate guidance. Sir! Thank you very much, for everything.

I express my sincere appreciation and thanks to the authorities of Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur particularly, Hon'ble Vice-Chancellor, Comptroller and Registrar for their support. Thanks to the Dean, Rajasthan College of Agriculture, Librarian, Central Library, RCA Campus and the Heads (former and present), Department of Nematology for their cooperation and providing physical facilities.

I personally thank Dr. Arvind Kumar Purohit, Professor of Plant Physiology and former Director Extension Education, SKRAU, Bikaner, Dr. Arun Kumar, former Principal Scientist (Plant Pathology), CAZRI, Jodhpur and Dr. Subhash Bhargava, former Prof. & Head (Nematology), RCA, Udaipur; for their timely advices, creative suggestions and interest in the book. My sincere thanks to Dr. Pankaj Sharma, Principal Scientist, DRMR, Bharatpur for providing necessary literature . He has been an asset to me, since when he joined my research team at MPUAT, Udaipur .

I express my cordial gratitude to my beloved family members, my spouse Ms Nirmala Gour, sons Ayush and Aditya and daughter-in-law Ms Nidhi, who have been very supportive throughout.

The valuable technical support provided by Ms. Priyanka Mehta is gratefully acknowledged. I am thankful to Shri Pawan Sharma, Scientific Publishers, Jodhpur for publishing the book and also contributing to enhance its presentation. All quoted text, figures, tables and data in the book have been duly acknowledged and cited suitably in respective chapters.

H.N. Gour

Udaipur,
January, 2018

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