According to ICAR 6th Deans' syllabus for B.Sc. (Hons.) Agriculture

Practical Manual on Diseases of Field and Horticultural Crops and Their Management

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Practical Manual on Diseases of Field and Horticultural Crops and Their Management

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Foreword

Agriculture is the backbone of food security and livelihoods worldwide, yet plant diseases continue to pose serious challenges to sustainable crop production. The increasing incidence and spread of diseases, driven by climate change, intensive cultivation, and the movement of planting material, underscore the need for accurate diagnosis and effective management strategies.

The *Practical Manual on Diseases of Field and Horticultural Crops and Their Management* emphasizes hands-on learning and field applicability, bridging the gap between theoretical plant pathology and practical problem-solving. By focusing on disease identification through symptoms, signs, and field conditions, the manual strengthens diagnostic skills essential for students, researchers, extension personnel, and practitioners.

Equally important is the manual's emphasis on sustainable and integrated disease management approaches. By translating complex pathological concepts into practical, eco-friendly, and farmer-centric solutions, this publication serves as a valuable reference for informed decision-making and resilient agricultural production systems.

I congratulate the authors for their commendable effort. This manual will significantly contribute to capacity building in plant pathology and promote scientifically sound and sustainable agricultural development.

(Ashok K Patra)

Preface

The subject Plant Pathology is an important branch under the discipline Agriculture. This branch deals with the detection and diagnosis of agriculturally important diseases, symptoms, their causal agents, favourable environment and management aspects. Being an applied science and detailed study of plant diseases, laboratory work under this subject is indispensable.

Keeping this view, ICAR has framed a syllabus for practical classes of each courses of Plant Pathology for undergraduate students. Therefore, we have tried to prepare a laboratory manual for the course of "Diseases of Field and Horticultural crops and Their Management" for benefits of the students. In this manual, we have tried to arrange topics and contents in such a manner that students will get an easy understanding of the principles and methods of the experiment in advance. The content of this manual is framed according to the new syllabus of the course- "Diseases of Field and Horticultural crops and Their Management" as mentioned in ICAR Sixth Dean Committee. In this manual, the syllabus for practical of this course has divided into thirty nine lessons including symptoms and etiology of different diseases of field and horticultural crops, field visit for the diagnosis of field and horticultural crop problems, collection of plant diseased specimens for herbarium and wet preservation, methods for microscopic slide preparation (teasing method) and lactophenol cotton blue (LPCB) staining, free hand section method for histopathology study, identification and histopathological studies of different diseases of field and horticultural crops like rice blast, brown spot of rice, sheath blight of rice, bacterial leaf blight (BLB) of rice, black rust of wheat, loose smut of wheat, leaf blight of maize, red rot of sugarcane, downy and powdery mildew of cucurbits, rhizoctonia and cercospora leaf spot of green gram/ black gram, alternaria blight, downy mildew, and white rust of mustard, tikka disease of ground nut, early and late blight of potato/ tomato, phomopsis blight of brinjal, powdery mildew and rust of pea, stem gall of coriander, chilli anthracnose, purple blotch and stemphylium blight of onion, taphrina leaf spot of turmeric, panama wilt of banana, anthracnose of guava, citrus canker, black spot of rose, botrytis blight of marigold, blister blight of tea, coffee rust, acquaintance with fungicides, antibiotics and biopesticides and their use in management of selected diseases of field and horticultural crops.

We hope that this practical manual will prove useful to undergraduate students for easy understanding of the subject with practical importance. We admit our humble gratitude to all those authors from whose work material has been drawn.

We gratefully acknowledge the cooperation of New Delhi Publishers to bring this practical manual in this form within a short time span.

2026 **Arghya Banerjee**

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