



# Potential Plant Protection Strategies

*Editors*

**D. PRASAD  
RAJVIR SHARMA**



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## Foreword

The use of chemical pesticides has been the most potent method for controlling crop pests but the excessive and indiscriminate use of hazardous chemicals has led to various problems of health of not only human beings but also of livestock, fish and birds due to environmental pollution, loss of biodiversity, etc. Besides the development of resistance in pests, decimation of beneficial insects such as parasitoids, predators and honeybees often cause colossal loss to the productivity. It has been amply realized that it is always wise to make judicious and need based use of pesticides in combination with other safer methods of pest management.

The editors of the book **Potential Plant Protection Strategies**, **Dr. D. Prasad**, Division of Nematology and **Rajvir Sharma**, Division of Agronomy, IARI, New Delhi have made concerted efforts to compile the work done at various institutions under the National Agricultural Research System (NARS) into various thought provoking chapters. The authors have put forth new impetus on the plant protection subject as a whole. This book not only serves as a reference source but also as a guide for shaping future research in the area of plant protection to achieve the most cherished goal of ecologically and economically sustainable agriculture in general and plant protection in particular.

(C.D. Mayee)

13.07.2009



## Preface

Plant protection has become one of the important inputs in crop production. In the context of the changing cropping pattern and the environment degradation, strategies are needed to minimize use of organic inputs hence, eco-friendly means and options are presently required and have special significance. During the past few decades, the science of plant protection has developed rapidly resulting in many diverse techniques to manage a variety of pests, pathogens and nematodes. The prospects of use of pesticides do not appear good because of accidental and incidental trauma encountered in the field of chemical pesticides. Therefore, vigorous research efforts for the control of various pests become imperative.

A number of methods like cultural, biological and physical means of them are modification of the agro-practices being followed by the farmers since ages, were also developed either for economic or environmental reasons, but very soon thought and realized that none of these techniques individually could serve as a panacea against target pests and pathogens including nematodes. After invoking them resulting in resurgence of the target species or suppression of useful enemies. Therefore, the approach should be multifaceted to combat the disease complex.

The book “**Potential Plant Protection Strategies**” is an attempt to analysis the problems and purpose, suitable measures for the effective management of the insect pests, plant diseases and plant parasitic nematodes. Therefore, an effort was made to compile possible data base information in this book which contains 39 exhaustive and thought provoking chapters written by specialists in their field of plant protection.

There are 15 chapters on Entomological problems as a whole covering chemo sterility, Transgenic technology, Insect pests of Mung and Urdbean, IPM, modified atmosphere for control of insects in storage. Eco-friendly management of potato pests, use of biotechnological tools in pest management and tissue culture and transgenic crops in pest management.

There are 18 chapters deals with Plant Diseases like Wilt of chick pea, Citrus canker, Bacterial diseases of fruit crops. Biocontrol of chick pea with and soil pathogens, Antifungal activity of essential oils, Management of rice diseases through induced resistance crop loss by viral diseases, Viral diseases of orchids, *Trichoderma* spp. for disease management, Pathotype, Management of red rot in sugarcane, Biocontrol agents and Mechanisms of action. There are 4 articles on Nematology that highlights eco-froendly management of nematode in vegetables, Nematophagous fungi of plant parasitic nematodes, Biocontrol agents and Bacterial antagonists of plant parasitic nematodes.

There are few chapters of common interest such as paradigm shift in Lac application, Seed production in sugar cane, Genetic engineering approaches for detoxification and decontamination of pesticides and Attraction behaviour of *Discolaimus* major to prey nematodes.

viii *Preface*

Besides these, 3 chapters on Importance of weeds, Integrated weed management and Role of composting in organic farming.

The book “**Potential Plant Protection Strategies**” not provides references but also serve as guide and inspiration for future research into the realm of biological, chemical, physical and quarantine aspects and onslaughts of modern agriculture on it.

The scientist, teachers, students, scholars, administrators and policy makers dealing with pest and disease management strategies in particular and plant protection in general expected to be, this book very useful and informative.

I am grateful to all the contributors and their valuable articles and kind cooperation, I am also thankful to I.K. International Publishing House Pvt. Ltd., New Delhi for the technical guidance and help in bringing on this book.

**D. Prasad  
Rajvir Sharma**

# Contents

<i>Foreword</i>	v
<i>Preface</i>	vii
<b>1. Fusarium Wilt of Chickpea and its Management</b> <i>S.C. Dubey, Birendra Singh and R. Bhavani</i>	<b>1</b>
<b>2. Paradigm Shift in Applications of Lac</b> <i>S. Srivastava, Govind Pal and D. Prasad</i>	<b>11</b>
<b>3. Citrus Canker Research: Global Scenario</b> <i>S.G. Borkar</i>	<b>19</b>
<b>4. Significance of Transgenic Crops in Pest Management</b> <i>S.K. Mandal and R.K. Mandal</i>	<b>29</b>
<b>5. Chemosterility: Approach for Insect Pest Management</b> <i>S.K. Mandal</i>	<b>37</b>
<b>6. Transgenic Technology: A Modern Weapon in Pest Management</b> <i>S.K. Mandal and V.B. Jha</i>	<b>43</b>
<b>7. Bacterial Diseases of Fruit Crops and their Management</b> <i>Dinesh Singh and R.R. Sharma</i>	<b>75</b>
<b>8. Insect Pests of Mungbean and Urdbean and their Integrated Management: A Review</b> <i>S.K. Singh and D.K. Yadav</i>	<b>97</b>
<b>9. Integrated Management of Soybean Insect Pests for Sustainable Agriculture</b> <i>Debjani Dey and Jaydeep Halder</i>	<b>133</b>
<b>10. Modified Atmosphere: An Alternative to Control Insects in Storage</b> <i>Chitra Srivastava and A. Cecily</i>	<b>153</b>
<b>11. Current Modified Three-tier Seed Production of Sugar Cane</b> <i>Vijai Singh, S.K. Awasthi and B.B. Joshi</i>	<b>165</b>
<b>12. Eco-friendly Management of Potato Pest</b> <i>V.K. Chandla, Sonu Kashyap and Anupam Sharma</i>	<b>173</b>

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