

Biointensive Integrated Pest Management in Horticultural Ecosystems

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BIOINTENSIVE INTEGRATED PEST MANAGEMENT IN HORTICULTURAL ECOSYSTEMS

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PREFACE

Through ‘Green Revolution’ in late 1960’s, India achieved self sufficiency in food production, which was hailed as a breakthrough on the farm front by international agricultural experts. But still the country has not achieved self sufficiency in production of horticultural crops. Most of the growth in food production during the green revolution period is attributed to the use of improved crop varieties and higher levels of inputs of fertilizers and pesticides. The modern agricultural techniques such as use of synthetic fertilizers and pesticides are continuing to destroy stable traditional ecosystems and the use of high yielding varieties of crops has resulted in the elimination of thousands of traditional varieties with the concurrent loss of genetic resources. The introduction of high yielding varieties changed the agricultural environment leading to numerous pest problems of economic importance. In the process of intensive farming, the environment has been treated in an unfriendly manner.

Prof. Swaminathan (2000) emphasized the need for ‘Ever Green Revolution’ keeping in view the increase in population. The increase in population and diminishing per capita availability of land demands rise in productivity per unit area. In India, annual crop losses due to pests, diseases and weeds have been estimated to be about Rs. 600,000 million in 2005. Increasing yields from existing land requires effective crop protection to prevent losses before and after harvest. The challenge before the crop protection scientist is to do this without harming the environment and resource base. This can be achieved by adopting eco-friendly Biointensive Integrated Pest Management (BIPM) strategy.

BIPM is defined as “A systems approach to pest management based on an understanding of pest ecology. It begins with steps to accurately diagnose the nature and source of pest problems, and then relies on a range of preventive tactics and biological controls to keep pest populations within acceptable limits. Reduced-risk pesticides are used if other tactics have not been adequately effective, as a last resort, and with care to minimize risks” (Benbrook, 1996).

BIPM incorporates ecological and economic factors into agricultural system design and decision making, and addresses public concerns about environmental quality and food safety. The benefits of implementing BIPM can include reduced chemical input costs, reduced on-farm and off-farm environmental impacts, and more effective and sustainable pest management. An ecology-based IPM has the potential of decreasing inputs of fuel, machinery, and synthetic chemicals-all of which are

energy intensive and increasingly costly in terms of financial and environmental impact. Such reductions will benefit the grower and society.

The information on biointensive integrated pest management (insect, mite and nematode pests, and diseases caused by bacteria, fungi, virus/mycoplasma) in horticultural ecosystems (fruits, vegetables, ornamentals, medicinal, aromatic, tuber, plantation and spice crops) is very much scattered. There is no book at present which comprehensively and exclusively deals with the above aspects. The present book deals with the most recent biointensive integrated approaches utilizing components such as bioagents [predators, parasitoids and pathogens (bacteria, fungi, viruses)], botanicals (biofumigation, oil cakes, FYM, compost, crop residues, green manuring and other organic amendments), endomycorrhizae, physical methods (hot water treatment of planting material, soil solarization), cultural methods (crop rotation, summer ploughing, fallowing, intercropping, pruning, mulching, spacing, planting date, trap cropping, *etc.*), biorational chemicals (pheromones) and resistant cultivars. The book is illustrated with excellent quality photographs enhancing the quality of publication. The book is written in lucid style, easy to understand language along with adoptable recommendations for pest management.

This book can serve as a useful reference to policy makers, research and extension workers, practicing farmers and students. The material can also be used for teaching post-graduate courses. Suggestions to improve the contents of the book are most welcome (E-mail: reddy_parvatha@yahoo.com). The Publisher, Scientific Publishers (India), Jodhpur, deserves commendation for their professional contribution.

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Section I
INTRODUCTION

