

# Vertebrate Pests in Agriculture

Shakunthala Sridhara



# VERTEBRATE PESTS IN AGRICULTURE

*“Man has lot of choices even if he happens to be a subsistence farmer living in villages around the protected area but the herbivores of the forest pushed into or restricted to fragmented and degraded habitat have absolutely no choice but to feed on alternate, available food in their range. It also happens that cultivated crops become an easily accessible resource”*

— *Shakunthala Sridhara*

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# **VERTEBRATE PESTS IN AGRICULTURE**

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*Dedicated to*  
*late Dr. Ishwar Prakash*

## FOREWORD

The most urgent need today is to reduce all losses to crops due to pests and diseases. Rodents take a heavy toll in both the field and in the threshing ground. Later they do damage at the storage level. Our country has to produce more from less land in the coming years. This book provides detailed guidelines on methods of reducing and even eliminating damage by rodents to crops. Dr. Shakunthala Sridhara, the author of the book has been working on rodent control from 1978. She is thus, very eminently qualified to write a book on this topic. I hope, it will be read widely by all concerned with improving the profitability and stability of agricultural production in our country. We owe Dr. Sridhara a deep debt of gratitude for this labour of love.

**M.S. Swaminathan**

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President, Purwash Conferences on Science and World Affairs  
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## PREFACE

In our endeavour to increase agricultural yields no stone has been left unturned. Not long ago, it was fine when pesticides were applied liberally to kill the tiny insects, other arthropods and the ugly, scary destructive rodents to save the cultivated food. Not many of us felt guilty of homicide till Rachel Carson (*Silent Spring*, 1962) drew attention to our lack of sensitivity to the disappeared, destroyed, threatened and mutilated – mutated animals and environments around us. The battle was carried forward with the issues of toxic residues in the food chain and the concurrent health hazards. For sometime, the silent cry of anguish of the subsistence farmer living close to protected areas went unheard whenever his entire crop was trampled and devoured by animals much bigger than him. He was a helpless witness to the devastation caused by crop raiding elephants, ungulates, monkeys and even some granivore birds. Almost all of them, with the exception of birds were not only bigger than him and as intelligent as him if not more, but were protected by the law of the land. He was also bogged down by the divinity associated with them. The problem of crop raiding vertebrate pests is not only economical but also ethical, social, legal and emotional one. In this scenario it is difficult to judge who is suffering more – the unfortunate, farmer or the more unfortunate animal who was forced to seek his nutritional requirements away from his home which was so much degraded and depleted that the resources available were highly inadequate. Thus, our rich wildlife is as much a problem for its conflict with humans for depleting resources as for its conservation priorities. In spite of regular occurrence of crop raiding by vertebrate pests, there does not appear to be a consolidated source of critical evaluations of the problem and its management. The information generated mostly by field biologists and forestry departments are scattered in scientific journals and departmental reports respectively. In spite of being a serious agricultural and conservation problem, we don't have a quick, detailed reference manual on the problem of wildlife damage to crops with the exception of "Handbook of Vertebrate Pest Control" by Fitzwater and Ishwar Prakash (1989).

Thus, there is a need to have detailed information on not only the damage caused by vertebrate pests but also the contributory factors as well as the options available to us to mitigate the problem. This book,



conceived to fulfil such a lacunae has chapters written by eminent specialists on mammalian and avian depredators of crops. Due to time constraints the chapters on bats and elephants are not authored by the experts, I contacted. With my 33 years of research on vertebrate pests, I felt confident to write these chapters in addition to the ones on rodents and general topics of vertebrate pest management. The book is an excellent example of co-operation of field biologists, conservationists and agricultural scientists to shed light on a contemporary problem of great economic, social, emotional, ethical and conservation importance.

A book of this magnitude and perspective is impossible to conceive and produce without inspiration, guidance, encouragement and patronage which I received in abundance from many directly and indirectly. First and foremost, I reverentially put on record my gratitude and affectionate regards to late Dr. Ishwar Prakash who was my Guru literally transforming me from an animal physiologist into an agricultural scientist specializing in rodent control and vertebrate pest management. Of the indirect sources of inspiration, I acknowledge the inherent wisdom of Dr. M.S. Swaminathan who as Director General of Indian Council of Agricultural Research (ICAR) recognised the role of rodents in Indian agriculture and initiated the process of rodent research under the umbrella of ICAR with this act a hitherto scattered discipline of research, which was mostly oriented towards epidemiology got its due place in the agricultural research of the country. I am indebted to him. I am also thankful to Dr. Mangala Rai, Director General, Dr. O.P. Dubey, Assistant Director General (Oil seeds & pulses) and Dr. T.P. Rajendran (Plant Protection) of Indian Council of Agricultural Research, New Delhi for constantly guiding and patronising research on rodent control in the country in general and me in particular. I am highly indebted to the contributors to this book namely Abraham Verghese, Achiraman. S, Archunan. G, Butani. P.G., Chakravarthy. A.K., Chhangani. A.K., Dubey. O.P., Girish. A.C., Ikwal Imam, Iqbal Malik, Jayahari. K.M., Jayson. E.A., Kapadia. M.N., Mohnot. S.M., Parshad. R.K., Rajpurohit. L.S., Raveendra Babu. T., Shivayya. V., Srihari. K., Thyagaraj. N.E., Tripathi. R.S., Vasudeva Rao. V., Vipin Choudhary and Vyas. H.J. all of whom amidst hectic academic life wrote valuable chapters. I thank profusely each one of them.

On the home front I am grateful to Dr. M.N. Sheelavanthar, Vice-chancellor and Dr. T.K. Prabhakar Shetty, Director of Research, University of Agricultural Sciences, Bangalore for providing not only facilities for research and writing this book but also creating and maintaining an atmosphere of academic freedom and trust that is so much essential for the success of a scientist. I feel fortunate to be

patronized by them. I also acknowledge the co-operation and help extended to me by my colleagues Mr. V. Shivayya, T. Raveendra Babu, A. Ravishankar, A.C. Shivaji, Y. Muniraju, Rajanna and Munivenkataramanappa. Ms. Archana S. Shet has painstakingly transferred my manuscript into this highly attractive book format with her sincere, dedicated efforts in computer setting. Her involvement was so thorough that she ended-up even as a technical assistant. I am grateful to her. Last but not least, I owe a lot, beyond words to my daughter, Sriranjini for her patience and interest in my work. The cover credit goes to her to a large extent. It is nice to have a youngster at home, unrelated to the subject giving inputs which largely enrich the contents of a book from a laymen's perception. One of the aims of this book is, to enlighten the public about the intricacies of vertebrate pest management apart from serving as a reference manual for details. To that extent, Sriranjini fine-tuned my presentation.

**Bangalore**

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