

***Acarapis Woodi*: A Novel Parasite of Honey Bee in Khyber Pakhtunkhwa Pakistan**

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ABSTRACT

INTRODUCTION

Honey bees are a highly valued resource around the world and prized for their honey and wax production and depended upon for pollination of many important crops. Managed honey bee populations are influenced by many factors including pesticides, environmental stresses, and parasites. *Acarapis woodi* (tracheal mite) is an endoparasite of adult honey bees and lives in the prothoracic trachea and feed on hemolymph by perforating the bee tracheal wall. It usually causes covert infections but can have devastating effects on bee's health when mite population increases to threshold level. The infestations of tracheal mites were reported worldwide both in managed and feral honey bee populations. In Pakistan, no information about the *Acarapis* mite existence and infection were reported in honey bee populations.

OBJECTIVES

The present study is designed to evaluate the presence of *A. woodi* in *Apis mellifera* population in southern districts of Khyber Pakhtunkhwa Pakistan.

METHODOLOGY

In order to investigate *A. woodi*, the precise number of diseased adult bees were collected from various apiaries of *A. mellifera* situated at the southern regions (Lakki Marwat, Karak and Kohat districts) of Khyber Pakhtunkhwa. Out of 760 colonies, 472 symptomatic samples were collected that include 196 (41.52%) dislocated hind wings, 156 (33%) weak bees crawling near hive entrance and 120 (25.42%) abdominal distention adult bees.

RESULTS

All the samples were processed using microscopic examination for the detection of *Acarapis* mites. The obtained results showed greater frequency of mite infection in district Karak followed by other southern districts of Khyber Pakhtunkhwa. Our work shows that *A. woodi* is present in bee colonies and causes colony deterioration in combination with other bee mites and seems to be the first study to report *A. woodi* existence in *A. mellifera* population in Pakistan. With the help of advanced molecular techniques, it is possible to increase our understanding of the *A. woodi* incidence and another bee associated microbial pathogens in Pakistan.

CONCLUSION AND RECOMMENDATIONS

From the current study we conclude that honey bee populations are affected by the tracheal mite along with other parasitic mites including varroa and *Tropilaelaps* spp. as well as other pathogens and environmental stresses in studied area. More research is needed to confirm the results obtained in the present work to eradicate

the infestation of these mites via scientific control approaches. The outcome of this study is to make awareness among beekeepers about this mite infection as well as its control in honey bees, and proper apiary management for the monitoring of *A. woodi*. Subsequently, beekeeping industry in Pakistan will accelerate and have positive impact on country economy and agriculture services.

KEYWORDS

Acarapis woodi; *Apis mellifera*; Infestations; Khyber Pakhtunkhwa; Microscopy.

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