USE OF PARASITE AND PREDACIOUS MITE FOR CONTROL OF THE RED PALM WEEVIL, *Rhynchophorus ferrugineus* OLIVIER (CURCULIONIDAE: COLEOPTERA) IN EGYPT

By

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ABSTRACT

Abundance and Agrobiodiversity of mite species associated with red palm weevil,collected from Marasiq(Giza – governorate) Egypt,from September 2017 to August 2018, 27 samples contained 133 adults and 199 pupae of *R .ferrugineus* and 5400 g. of core palm weevil were collected by hand from damaged trunk of infested date palm trees. 19 families were found four mite groups (Mesostigmata , Oribatida,Prostigmata and Astigmata) were associated with the adults , pupae of *R . ferrogineus* (Order: Coleoptera) and the core around tunnel bored larvae inside the palm .The four mite groups and mite families are: Mesostigmata included eight families (Urpodidae , Sejidae , Melicharidae , Laelapidae , Parasitidae , Digamasellidae , Macrochelidae and Ologamasidae). Order Mesostigmata occupied the first category as recorded 7666 mites by 83.3%, but the suborder oribatida recorded 1154 (12.5%) associated with adult and pupae of *R . ferrogineus*. Samples of cores of the palm included four families (Oppiidae , Oribatulidae, Haplozetidae and Epilohmanniidae). The two mite groups Astigmatina and Prostigmata recorded low numbers of mites. The suborder Prostigmata represented by five families (Cunaxidae,Pyemotidae, Bdellidae, Pygmephoridae and Rhagidiidae). Only one family (Acaridae) was found.

Seasonal fluctuation of mite groups associated with red palm weevil, Thirteen mite species under investigation associated with red palm weevil**.** Four mite groups are recorded **families associated with red palm weevil <u>Order Mesostigmata</u>:1-Family :Uropodidae -.2. Family Sejidae -)3. Family: Melicharidae 4. Family Laelapidae - 5: Family Parasitidae - 6- Family Digamasellidae. 7. Family Macrochelidae - 8-Family: Ologamasidae - <u>Suborder Oribatida</u> 1-Family Oppiidae** found comprises about three species (*Multioppia wilsoni , Oppia sitnikovae* and *Opppia sticta* **2.Family: Oribatidae -** This family represented by (*Scheloribates Zaheri)***.3-Family Haplozetidae -** it represented by *Rostrozetes foveolatus* **.4- Family: Epilohmanniidae -** it represented 0.4% of all families mite. Only one species (*Epilohmannia cylindrica*) associated with core of the palm.**<u>Suborder: Prostigmata</u> 1-Family Cunaxidae -**. It representing 0.7% and 0.6% of all families collected on pupa and core of palm **.2-Family: Pyemotidae**-it represented by genus (*Pyemotes*) associated with core of palm RPW.**3-Family: Bdellidae -** Mites of this family recorded by very small numbers with core of palm and associated with adults of RPW **4-Family: Pygmephoridae -**This family represented during two months only (April and July) **5-Family Rhagidiidae-** This family associated with core of palm only and not found associated with adults and pupa **<u>Cohort Astigmatina:</u>Family Acaridae,**. highest numbers were recorded associated pupa and adults

Distribution and abundance of facultative parasite mites *Centrouropoda rhynehophorus* on different regions of male and female. Mean abundance of phoretic mites on female weevils was significantly higher than that on male . The mean distributions of phoretic mites on the inner elytra surface(75.8 and 62.0 individuals) for both sexes female and male ,respectively were significantly greater than those observed in the other body regions. The second highest phoretic load was observed in the membrane wing followed by the abdomen (120 and 131individuals)in both sexes ,

Biological studies and life table parameters of the predatory mite, *Proctolaelaps gizaensis* reared on larvae of red palm weevil and different diets of food. were studied.**Biological studies and life table parameters of the predatory mite, *Proctolaelaps gizaensis* reared ondifferent diets of food.**The shortest period of life cycle was recorded when reared on (sugar cane + chitosan),whereas the longest period was recorded when the mite reared on (sugar cane +pollen+ chitosan) . Significant differences were reported in the fecundity rate between four artificial diets..**Reproduction** was affected by the types of the applied diet. In this respect, rearing on sugarcane recorded higher reproduction rate, but the least reproduction rate was observed on *A. niger*. Mixture of sugarcane *+F. oxysporium* recorded the highest number of individuals**Mass production of the predatory mite *Proctolaelaps gizaensis* .**Immature and adults were success fully reared in the laboratory on six different diets; sugarcane , two species of fingi (*Fusarium oxysporium, Aspergillus niger*),mixture of sugarcane *+F. oxysporium,*mixture of sugarcane *+A. niger*and mixture of sugarcane *+F. oxysporium+A. niger.* Both total immature stages for female and male are affected by different diets.Predaceous mite play a considerable role in the biological control of associated insect pest such as red palm weevil *Rhynchophorus ferrugineus* .

Key Words: Red palm weevil *Rynchophorus ferrugines*,Biodiversity,Seasonal fluctuation, ***Proctolaelaps gizaensis*** -biology -Mass rearing,

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