

Mites Infesting the Grasshoppers Occurring in Different Ecosystems in Coimbatore

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ABSTRACT

Several species of parasitic mites, namely, *Leptus* spp. (Erythraeidae), *Iolina* spp. (Iolinidae), *Locustacus* spp. *Podopolipus* spp., (Podapolipidae), *Pyemotes* spp. (Pyemotidae) and *Tarsonemus* sp. (Tarsonemidae) have been recorded on different species of grasshoppers occurring in different ecosystems in Coimbatore and their relationship discussed.

KEY WORDS: Parasite, mites, Grasshoppers

Several species of mites have been recorded on grasshoppers in different parts of the world. In India, Chandra and Mittal (1981) recorded *Caloglyphus* sp. on *Chrotogonus trachypterus* B.; *Eutrombium trigonum* (Hermann) on *Heiroglyphus nigrarepletus* F. (Peswani, 1960) and *Trombidium grandiosimum* (Koch) on locusts (Ghai, 1964). So far no mite has been recorded from grasshoppers from Tamil Nadu except for *Leptus oxyae* Vish. and Moh. on *Oxya velox* F. (Vishnupriya and Mohanasundaram, 1988). Hence the present study was taken up to find the mite fauna associated with grasshoppers in Tamil Nadu.

MATERIALS AND METHODS

Generally mites associated with insects may be either phoretic using the host as a carrier from one place to another or maybe truly parasitic when one or all stages of development may be met with on the host insect. In the present investigation only a few phoretic mites were encountered on the grasshoppers and majority of the mites noted were purely parasitic. To find out the species of grasshoppers infested with mites, the grasshoppers were collected from different ecosystems like dryland, wetland, gardenland and lawns. The grasshoppers were anaesthetised with chloroform and observed under a stereobinocular microscope for mites on different parts of the body. Whenever mites were seen, they were removed and mounted on microslides in Hoyer's medium for identification.

Dryland ecosystem

In the dryland ecosystem, the predominant species of grasshoppers were *Chrotogonus* spp. and *Attractomorpha* spp. The following mites were observed on them.

1) *Chrotogonus* spp. : The mites belonging to *Leptus* spp. were found attached to the legs, abdomen or antennae of these grasshoppers. The mites measured around 900-1200 μ , red in colour with three pairs of long legs. They were found firmly attached to the body of the grasshoppers with their chelicerae embedded into the exoskeleton of the insects.

2) *Attractomorpha* spp. : These grasshoppers were found to be infested by more than one species of mites as given below.

a) *Leptus* spp. (Erythraeidae) : Atleast three different species were found attached to the exposed parts of the body.

b) *Iolina* sp. (Iolinidae) : These mites were either white, or pink, found in large numbers below the fore wing base; in the folds of the hind wing and in the tympanal region of the first abdominal segment. Eggs were elongate oval measuring 150 μ by 80 μ ; larvae and nymphs resembled adults, but of smaller size and adults were 320 μ long and 160 μ wide in case of females, and 250 μ long and 120 μ wide in case of males.

c) *Locustacarus* sp. (Podopolipidae) : These were minute, nearly round, measuring 230 μ in diameter with a pair of prominent and long tail-like setae in the caudal end. These were found attached to the thorax and abdomen below the wings and below the pronotal shield. Only one stage of this mite species was encountered on the body of grasshoppers.

d) *Pyemotes* sp. (Pyemotidae) : The elongated females measuring about 250 μ were found actively moving over the body of the

grasshoppers both on the thoracic region and on the abdomen. No gravid, physogastric female or males were encountered.

Wet land ecosystem

Grasshoppers from the Paddy Breeding Station were collected and observed for mites. The predominant grasshopper species were *Oxya* sp. and *Heiroglyphus* sp. and a few Tetrigids. Interestingly, even though a very large number of grasshoppers of *O. velox* and *Heiroglyphus banian* F. were collected and observed, no mites were encountered on these two groups of grasshoppers. The Tetrigids and other grasshoppers were found infested with mites as noted below.

- a) *Amphinotus pygmaeus* Han. (Tetrigidae: Orthoptera): These dark brown grasshoppers were found infested with *Tarsonemus* sp. (Tarsonemidae), in their wing base.
- b) *Acrida exaltata* Wlk. and *Othacris simulans* Bol. (Acrididae): The red mite, *Leptus* spp. was found attached to the exposed parts of the body.

Gardenland ecosystem

Grasshoppers from cotton and sugarcane fields were examined.

- 1) Cotton field : *Cyrtacanthacris ranacea* (Acrididae) This common cotton grasshopper was found infested with the following mite species:

- a) *Leptus* sp. (Erythraeidae) : Red mites were found attached to antennae, legs, abdomen and thorax.
- b) *Iolina* sp. (Iolinidae) : The nymphs and adults were bigger in size than those found on *Attractomorpha* sp. which were yellow in colour and found in the base of the forewings; in the base and folds of the hind wing and in the tympanal region of the abdomen in all stages of development.
- c) *Locustacarus* sp. (Podopolipidae) : The circular mites were found below the wing on the thorax and abdomen and are larger than the ones encountered on *Attractomorpha* sp.

- d) *Podopolipus* sp. (Podopolipidae) : The nymphs were roundish with three pairs of legs and a

pair of prominent caudal setae, found attached to the body surface on thorax and abdomen. The mature adult female was globular, without any legs and attached to the body of grasshoppers and were larviparous.

- 2) Sugarcane field : A large number of grasshoppers both adults, nymphs and wingless grasshoppers were collected and examined. Generally, the nymphs and wingless grasshoppers did not have any mite infestation. The following winged adult forms had mite infestation.

- a) *Chrotogonus sausseri* B. : *Iolina* sp. Male and female mites, their nymphs and eggs were seen in the wing base and wing folds.
- b) *Pyrgomorpha conica* Oliv. : Reddish mites *Leptus* sp. were found attached to the legs.

Lawn ecosystem

Grasshoppers collected from the grassy patches of lawn around buildings were examined. The following grasshoppers had mite infestation.

1. *Acrida exaltata* Walk. (Acrididae) : *Iolina* sp. The white mites in all stages were found below the forewings and in the folds of the hind wing.

2. *Orthacris acuticeps* Bol. (Acrididae) : *Leptus* sp. Reddish mites were found attached to the legs and antennae.

3. *Attractomorpha* sp. (Acrididae)

- a) *Iolina* sp. : Mites in wing folds and tympanum.

- b) *Podapolipus* sp. (Podapolipidae) : Mites on thorax and abdomen.

4. *Acrida* sp. (Acrididae) : *Tarsonemus* sp. The tarsonemid mites were found on the thorax and abdomen below the wings.

5. *Euprocnemeis* sp. (Acrididae)

- a) *Iolina* sp. : Mites found in the wing folds.

- b) *Podapolipus* sp. : Mites on thorax and abdomen.

6. *C. ranaceae* (Acrididae)

- a) *Leptus* sp. : Red mites on legs.

- b) *Iolina* sp. : Yellowish mites in all stages below wing base and wing folds.

7. *Chrotogonus* sp. (Acrididae)

- a) *Iolina* sp. : White mites below wings and in wing folds.
- b) *Pyemotes* sp. : Mites on abdomen actively moving about. No physogastric females were noted.

DISCUSSION

In the present study it was interesting to note that several species of grasshoppers were infested with mites. Of these *Leptus* sp. alone was generally visible to the unaided eye; while the others were microscopic. The study revealed that no mite was found as phoretic in association with the gras-

shoppers and all the species noted were parasitic. Mites like *Iolina* sp. and *Podopolipus* sp. were found in large numbers and may exert a natural control indirectly; ie., the infested grasshoppers being less active, falls an easy prey to the insectivorous birds like 'mynah' and others.

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