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Results from Resurveys for Prostigmatid Predatory Mites on Economically Important Crops in Karnataka

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ABSTRACT

During 2014-15, a survey was conducted for predatory mites in four districts of Karnataka on agriculturally important hosts. Result yielded, twelve species of predatory mites belonging to six genera and five families under suborder Prostigmata.

Key words: *Prostigmata, Predatory mites, Karnataka, survey*

INTRODUCTION

Predatory mites are on the rise as one of the preferred biological control options for both phytophagous mites and certain sucking insect pests. They have been extensively used in biological control programmes the world over[5], not only because of voracious feeders but also because many are abundantly available in field. Plant inhabiting predatory mite species belonging to the order prostigmata consists of the several families *viz*., Anystidae, Bdellidae, Caligonellidae, Camerobiidae, Cheyletidae, Cunaxidae, Erythraeidae, Eupodidae, Raphignathidae, Stigmaeidae and Tydeidae. Incessant faunistic studies around India have resulted in the identification of 128 species of mites[2].Most of these mites are predators on phytophagous mites and other soft bodied insects, but some of them are phorectic, fungivorous, nematovorous and free living in certain situations. Such predatory mites that can flourish regardless of whether their primary food source (i.e., phytophagous mites) is present or not may be commercially exploitable. This resurvey in 2014-15 was taken up to recognize the predatory mites of suborder prostigmata in four districts of Karnataka, India.

MATERIALS AND METHOD

Qualitative and quantitative collections were made during 2014-15 in four districts viz., Bengaluru Urban, Belagavi, Tumakuru and Dakshina Kannada district of Karnataka, India (Table 1). The plant species belonging to different agriculturally important were observed for predatory mites. Mites were picked up with a camel hair brush and observed under a stereozoom microscope. In some instances, mites were washed from plant parts or shaken loose into jars filled with alcohol or water to which a surfactant had been added.

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Mites were killed, fixed and preserved in a 70–80% ethyl alcohol and stored in a vial. Permanent slides were made with Hoyer's medium for all the collected specimens. Mounted slides were kept on a hot plate at 40–45°C for 72 h and finally the cover glass was ringed with either paint or transparent nail polish. Mites were identified with the help of published keys[1,3].

Table 1: Collection of samples were made in different locations

Sl. no.	Districts	Locations
1	Bengaluru Urban	Yelahanka
2	Belagavi	Bailahongal
3	Dakshina Kannada	Sullia
4	Tumakuru	Madhugiri

RESULTS AND DISCUSSION

Collections during resurveys of 2014–15 revealed that 12 species of predatory mites belonging to five families and six genera were found on different plant species in the presence and absence of phytophagous mites. *Abrolophus* sp. nr. *delhiensis*, *Abrolophus* sp., *Eupodes sigmoidensis*, *Agistemus gamblei*, *Agistemus garrulus*, *Agistemus hystrix*, *Agistemus javanicum*, *Agistemus obscura*, *Zetzellia languida*, *Parapronematus* sp. nr. *murshidabadensis*, *Tydeus* sp. nr. *cumini* and *Tydeus* sp. nr. *wallachi* were encountered (Table 2). Amongst, genus *Agistemus* was found abundant and in total, five species were recorded. But *Z. languida* recorded on *Solanum melongena* was found associated with *Tetranychus* sp., earlier the same species was reported on *Mangifera indica* L. and *Morus alba* L. in West Bengal[2] and the others were found without having any association with prey.

Table 2: Predatory mite (Acari: Prostigmata) fauna associated with different host and their locations

Sl. No.	Species	Family	Host	Location
1	*Abrolophus* sp. nr. *delhiensis* Khot	Erythraeidae	*Coffea robusta* L. Linden	Sullia
2	*Abrolophus* sp.	Erythraeidae	*Chromalaena odorata* (L.)	Sullia
3	*Eupodes sigmoidensis* Strandtmann & Goff	Eupodidae	*Theobroma cacao* L.	Sullia
4	*Agistemus gamblei* Gupta	Stigmaeidae	*Jasminum officinale* L.	Madhugiri, Yelahanka
5	*Agistemus hystrix* Gupta	Stigmaeidae	*Phaseolus vulgaris* L.	Madhugiri
6	*Agistemus javanicum* Gupta	Stigmaeidae	*Dolichos lablab* var. *lignosus* L.	Madhugiri
7	*Agistemus garrulus* Chaudri, Akbar & Rasool	Stigmaeidae	*Ricinus communis* L.	Bailahongal
8	*Agistemus obscura* Gupta	Stigmaeidae	*Gossypium hirsutum* L.	Bailahongal, Yelahanka
9	*Zetzellia languida* Gonzalez-Rodriguez	Stigmaeidae	*Solanum melongena* L.	Bailahongal
10	*Parapronematus* sp. nr. *murshidabadensis* Gupta	Iolinidae	*Cocos nucifera* L.	Yelahanka
11	*Tydeus* sp. nr. *cumini* Gupta	Tydeidae	*Anacardium occidentale* L.	Bailahongal
12	*Tydeus* sp. nr. *wallachi* Gupta & Chatterjee	Tydeidae	*Psidium guajava* L.	Bailahongal

CONCLUSION

Several species of mites were reported as effective predators of plant feeding mites all over the world in many diverse crop ecosystems[6,4]. Studies have to be conducted to identify the different host range of recorded mite species and further, the potential of the predatory mites in bringing down the

population of phytophagous mites. This would lead to the identification of potential predatory mites for successful biological control programmes.

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