



World Scientific News

An International Scientific Journal

WSN 71 (2017) 127-131

EISSN 2392-2192

A Preliminary Report on Diversity of Mites (Acari) in Different Plants from Campus of Barasat Government College, West Bengal

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ABSTRACT

The present paper reports the occurrence of phytophagous and predatory mites from the campus of Barasat Govt. College, Dist. North 24 Parganas, West Bengal. A total of 38 species under 25 genera, 11 families and 2 orders are listed. Among which included 4 species of phytophagous mites under 3 genera, 2 families and 33 species of predatory mites under 21 genera and 8 families. This also includes one fungus feeding mite species, *Acarus* sp. of the family Acaridae. Hosts/habitats/economic importance of the listed species are also provided.

Keywords: Phytophagous mites, Predatory mites, Fungivorous mite, Economic importance Barasat Government College Campus, West Bengal, Tenuipalpidae, Tetranychidae, Bdellidae, Cheyletidae, Cunaxidae, Stigmaeidae, Tydeidae, Ascidae, Phytoseiidae, Acaridae

1. INTRODUCTION

Mites and insects are most important and significant pests of agri-horticultural crops causing serious damages and crop losses. Though insect pests have received adequate attention in India but unfortunately mites have remained neglected probably due to their microscopic size and nature of exploiting concealed niches within plants. Information regarding phytophagous

and predatory mites from India was given by Gupta (1985; 1992, 2012). Barasat Govt. College campus which is situated in North 24 Parganas, very rich with diverse array of vegetation, was found to have been infested with various types of mites. Since no survey was conducted earlier on mites occurring on different vegetation of the college campus, it was thought necessary to undertake a preliminary survey of the plants for occurrence of mites and to document those for the first time from this campus.

2. MATERIAL & METHODS

Collection of mites was made from diverse types of plants present within the campus of Barasat Govt. College during July- October, 2016. Leaves of different types of plants collected from campus were examined under stereo-binocular microscope (MSZ-TR70T0842) and mites were collected with fine brush moistened with alcohol and preserved in 70% ethanol. Samples after mounting in Hoyer's medium followed by gentle heating for proper stretching of appendages, were examined under stereo-research microscope (OLYMPUS CH-20iTr). Mites were identified following the literature of Gupta (2002, 2003).

3. RESULTS AND DISCUSSION

Identified mites are listed in Table 1 along with their hosts, habitats, and economic importance, if any. Altogether 38 species, under 11 families, 25 genera and 2 orders could be recorded. This includes mites of both phytophagous and predatory groups. The former is represented by 4 species, under 3 genera and 2 families and the latter by 33 species, under 21 genera and 8 families. In addition, there is one fungivorous mite species, *Acarus* sp. Among the phytophagous mites, the dominant species are *Tenuipalpus leptadinae* and *Brevipalpus deleoni* of the family Tenuipalpidae. It may be mentioned here that *Tenuipalpus leptadinae* was so far unknown from West Bengal. The predatory group is represented by four dominant species under Phytoseiidae viz. *Amblyseius largoensis*, *Phytoseius kapuri*, *Phytoseius minutus* and *Typhlodromus homalii*.

As far as their economic importance is concerned, *Brevipalpus deleoni* is found to cause brownish patches on Basak leaves, especially towards the margin and hundreds of mites could be seen on a single leaf. The mite was found to be readily fed by *Amblyseius largoensis*, the dominating predatory mite. The infested jarul (*Lagestroemia speciosa*) leaves when examined under microscope, *Euseius ovalis* was found actively feeding on *Eutetranychus maximae*. *Tenuipalpus leptadinae* is found to cause severe chlorosis on jarul and tulsi leaves.

This preliminary report indicates more abundance of predatory mites mostly of Phytoseiidae as compared to phytophagous ones. This is evident from the fact that predatory mites are represented by 33 species compared to only 4 species of phytophagous mites. Hence, the abundance and generic diversity is more among predatory mites than that of the phytophagous mites.

Since, this is a preliminary study conducted for a short duration, the observations presented here need not be considered as final result and for that more intensive study is needed.

ACKNOWLEDGEMENTS

The authors are very grateful to Dr. Subhasis Dutta, Principal and Dr. Sumana Saha, Head of the Postgraduate Department of Zoology, Barasat Government College for providing infrastructure facilities and constant encouragement and to the Department of Science and Technology, Govt. of West Bengal [Sanction no.: 1170(Sanc.)/ST/P/S&T/1G-4/2016 dt. 02.03.2016] for financial assistance.

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Table 1. List of mites collected from the campus of Barasat Govt. College during July, 2016 - October, 2016

Sl. No.	Order/Family/Genus/Species	Host & Habitat	Remarks
	A. PHYTOPHAGOUS GROUP		
	ORDER I: PROSTIGMATA		
	FAMILY 1: Tenuipalpidae		
1.	<i>Brevipalpus deleoni</i> (Pritchard & Baker)	Jarul and Basak leaf.	Produced brownish spot at points of feeding.
2.	<i>Tenuipalpus leptadeniae mohansundaram</i>	Jarul, Basak and Tulsi leaf.	Produced chlorosis of leaves, huge population earlier unreported from West Bengal.
	FAMILY 2: Tetranychidae <i>Eutetranychus</i>		
3.	<i>maximae</i> (Nassar & Ghai)	Mussaenda and Basak leaf	
4.	<i>Eutetranychus orientalis</i> (Klein)	Jarul and Basak leaf.	New record from West Bengal, poor population. Huge population on Jarul and Basak form new record.
	B. PREDATORY GROUP		
	FAMILY 3: Bdellidae		
5.	<i>Bdella</i> sp.	Jarul and tekoma leaf.	Poor population, new habitat recorded.
6.	<i>Cyta</i> sp.	Kath-Tagar leaf.	Poor population, new habitat recorded.
	FAMILY 4: Cheyletidae		
7.	<i>Bak</i> sp.	Mussaenda leaf.	Interesting species, genus earlier unknown from West Bengal.
8.	<i>Chelacarosis</i> sp.	Mango leaf.	New genus record from West Bengal.
9.	<i>Hemichyletia bakeri</i> (Ehara)	Arjun and Champak leaf.	New habitat recorded.
	FAMILY 5: Cunaxidae		
10.	<i>Cunaxa capreolus</i> (Berlese)	Jarul and Mussaenda leaf.	New habitat recorded.
11.	<i>Cunaxa cynodona</i> (Gupta)	Jarul and Mussaenda leaf.	New habitat recorded.
12.	<i>Cunaxa mangiferae</i> (Gupta)	Mango leaf.	
13.	<i>Cunaxa setirostris</i> (Hermann)	Kath-Tagar leaf.	Very good predator of Tenuipalpid mites.
14.	<i>Cunaxoides croceus</i> (Koch)	Shiuli leaf.	New habitat recorded, rare occurrence.
15.	<i>Dactyloscirus machairodus</i> (Oudemans)	Jarul and Arjun leaf.	New habitat recorded, rare occurrence.
	FAMILY 6 : Raphignathidae		
16.	<i>Exothorhis</i> sp.	Mango and Lemon leaf.	May be new species, new habitat recorded.
	FAMILY 7: Stigmaeidae		
17.	<i>Agistemus fleschneri</i> (Summers)	Jarul and rangan leaf.	Known to be good predator but such behaviors not observed
18.	<i>Eryngiopus</i> sp.	Mussaenda leaf.	Interesting species but appear to be un-described.
19.	<i>Stigmaeus</i> sp.	Jarul and champak leaf.	New habitat recorded genus unreported from West Bengal.
	FAMILY 8 : Tydeidae		
20.	<i>Parapronematus</i> sp.	Shiuli and Nut leaf	
21.	<i>Pronematus fleschneri</i> (Baker)	Guava and lemon leaf.	Abundantly available.
	ORDER II: MESOSTIGMATA.		
	FAMILY 9: Ascidae		
22.	<i>Asca</i> sp.	Guava and Nut leaf.	
	FAMILY 10: Phytoseiidae		
23.	<i>Amblyseius largoensis</i> (Muma)	Mango and Guava leaf.	Abundantly available, good predator of tenuipalpid mites.
24.	<i>Amblyseius paraaerialis</i> (Muma)	Shiuli leaf.	Rare occurrence.
25.	<i>Amblyseius channabasavannai</i> (Gupta & Daniel)	Kath-Tagar leaf.	Rare occurrence.
26.	<i>Amblyseius herbicolus</i> (Chant)	Jarul and Basak leaf.	Rare occurrence.
27.	<i>Euseius ovalis</i> (Evans)	Hibiscus and jarul leaf.	Frequently available, good predator of spider mite.
28.	<i>Euseius rhododendronis</i> (Gupta)	Mussaenda and jarul leaf.	New habitat recorded.
29.	<i>Euseius coccinea</i> (Gupta)	Guava and lemon leaf.	
30.	<i>Euseius</i> sp.	Rose and Champak leaf.	Abundantly available.
31.	<i>Paraphytoseius bhadrakaliensis</i> (Gupta)	Jarul leaf	Abundantly available.
32.	<i>Phytoseius kapuri</i> (Gupta)	Nut and Arjun leaf.	Rare occurrence, earlier unknown from West Bengal.
33.	<i>Phytoseius namdaphaensis</i> (Gupta)	Arjun and Jarul leaf.	
34.	<i>Phytoseius minutus</i> (Narayanan, Kaur & Ghai)	Hibiscus and Rose leaf.	Rare occurrence earlier unknown from West Bengal.
35.	<i>Phytoseius mizoramensis</i> (Gupta)	Guava leaf.	Common occurrence.
36.	<i>Scapulaseius suknaensis</i> (Gupta)	Tekoma And Jarul leaf.	Earlier unknown from West Bengal.
37.	<i>Typhlodromus himalayensis</i> (Gupta)	Mussaenda leaf.	Common occurrence.
	<i>Typhlodromus homalii</i> (Gupta)		
	C. FUNGIVOROUS		
	ORDER III: ASTIGMATA		
	FAMILY 11: Acaridae		
38.	<i>Acarus</i> sp.	Mango, Jarul, Rose leaf.	Associated with fungus.

PLATE

Photographs of some of the phytophagous and predatory mites collected from Barasat Government College Campus.



Acaridae
(*Acarus* sp.)



Ascidae
(*Asca* sp.)



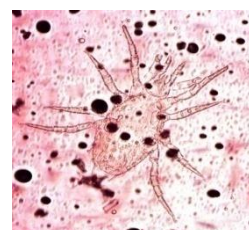
Cheyletidae
(*Cheletogenes ornatus*)



Cunaxidae
(*Cunaxa setirostris*)



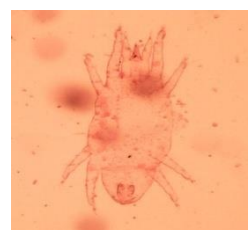
Phytoseiidae
(*Amblyseius largenesis*)



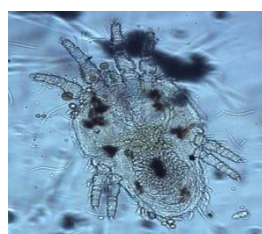
Phytoseiidae
(*Euseius coccineae*)



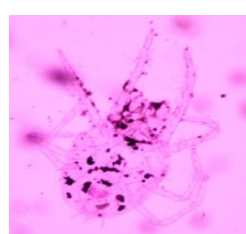
Stigmaeidae
(*Agistemus* sp.)



Raphignathida
(*Exothorhis* sp.)



Tenuipalpidae
(*Tenuipalpus leptadeniae*)



Tetranychidae
(*Eutetranychus orientalis*)