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MITES AND INSECTS OCCURRING ON SOME ECONOMIC PLANTS HAVING MEDICINAL AND AROMATIC VALUES IN PURULIA AND BANKURA DISTRICTS OF WEST-BENGAL

Zoology

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ABSTRACT

This paper reports occurrence of 21 species of mites belonging to 12 genera, 6 families and 2 orders occurring on medicinal and aromatic plants in Purulia and Bankura districts of West-Bengal. It also reports 8 species of insects under 7 genera, 6 families and 1 order. Their importance as pest/predators has also been highlighted.

KEYWORDS

Medicinal plants, Aromatic plants, Mites, Insects, West-Bengal, Diversity.

INTRODUCTION

So far as mites and insects occurring on medicinal and aromatic plants of Bankura and Purulia districts of West-Bengal are concerned, no survey has ever been undertaken, and that is the reason why the survey work was undertaken in that area from October ,2017 to June ,2018 and the results thereof documenting mites and insects on those plants are presented in this paper. Apart from listing the species systematically, their relative abundance and importance as pests or predators have also been provided.

MATERIAL AND METHODS

For collection of mites and insects from medicinal and aromatic plants in Purulia and Bankura districts of West- Bengal, collection trips were undertaken in different areas of these two districts during October 2017- June 2018 and collection of mate by examining the leaves under a 20x magnifying lens in the field itself and the mites and insects were collected with the help of a brush moistened with alcohol. While making collection, observations were recorded regarding damage symptoms done by the phytophagus mites/insects and preys attacked/consumed by the predatory mite species. Identification was done by consulting the updated literature and keys.

RESULTS AND DISCUSSION

The identification of the collected material revealed the occurrence of 21 species of mites, belonging to 12 genera, 6 families and 2 orders and the corresponding figures for insects where 8,7,6 and 1, respectively (Table-1). Out of these, 12 species among mites belonging to 3 families were phytophagus and the remaining 9 species belonging to 2 families where predatory in nature. Among the mites the most serious pests were *Tetranychus urticae, Oligonychus indicus, O. mangiferus, Brevipalpus deleoni, B. phoenicis, Polyphagotarsonemus latus* which were most dominating and serious pests of the respective host plants as mentioned in the Table-1. Among the other phytophagus mites, *Tetranychus lonbardinii, T. macfarlanei, T. ludeni, Eotetranychus truncatus, Brevipalpus karachiensis* were occasionally encountered. Among the predatory mites *Amblyseius channabasavannai, Paraphytoseius orientalis* were the most dominating and effective predators, having capability to keep pest mite population at low level.

The insect fauna was represented by 8 species, 7 genera, 6 families and 1 order. Out of those, *Dysdercus cingulatus, Monanthea globulifera, Urentius sentis* were the most dominating and damage causing pest insects. The others were of casual occurrence. Interestingly, the insect population had no species belonging to predatory group.

Earlier to this, no serious effort was made to document mites and insects on medicinal and aromatic plants of these two districts, though these districts are enriched with diversity of medicinal and aromatic plants. Therefore, this report is the first of its kind made documenting mites and insects of the concerned plants. Gupta (2005, 2012) reported mites on medicinal plants of India, which included only a couple of species from these two districts.

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TABLE—1 : List of mites / insects collected on medicinal and aromatic plants in Purulia and Bankura districts of West- Bengal during October 2017- June 2018.

Order/Family	Species	Host/habitat	Abundance Status	Remarks
Order--TROMBIDIFORMES Suborder—PROSTIGMATA Family—1. Tetranychidae	A. PHYTOPHAGUS MITES			
	1. *Tetranychus urticae* Koch	*Curculigo orchioides*	1	Serious infestation noticed near basal part of leaf causing chlorosis.
	2. *T. lonbardinii* Baker & Pritchard	*Mentha arvensis*	2	Occasionally recorded, no damage.
	3. *T. ludeni* Zacher	*Bixa orellana*	2	Infestation noticed on undersurface of leaf in association with *Oligonychus mangiferus* which occurred on upper surface of leaf. Casual occurrence, no damage noticed.
	4. *T. macfarlanei* Baker & Pritchard	*Ambroma augusta*	3	Occurrence on ventral surface of leaf, in small colonies, covered with web producing white patches, good population all along leaf.

	5. *Oligonychus indicus* (Hirst)	*Cymbopogon martinii*	1	Occurred on upper surface of leaf, population good, produced brownish patches.
	6. *O. mangiferus* (Rahman & Sapra)	*Bixa orellana*	1	Casual occurrence, no damage, poor population.
	7. *Eotetranychus truncatus* Estebanes & Baker	*Sida cordifolia*	3	
a. Tenuipalpidae	8. *Brevipalpus chilensis* Baker	*Ocimum sanctum*	3	Casual occurrence, scatterdly found near mid rib.
	9. *B. karachiensis* Chaudhri *et al.*	*Ocimum tenuiflorum*	2	Reasonably good population on under surface of leaf, producing brownish spots. Serious infestation occurred on under surface of leaf producing brownish patches.
	10. *B. phoenicis* (Geij.)	*Ocimum basilicum*	1	Very serious infestation occurred on under surface of leaf having over more than 100 - 150 mites per leaf and the infested leaf turned light brownish to deep brownish.
	11. *B. deleoni* Pritchard & Baker	*Adhatoda vasica*	1	Infested the young apical leaves causing curling and twisting. Each leaf sometimes had 15-20 mites.
b. Tarsonemidae	12. *Polyphagotarsonemus latus* (Banks)	*Mentha arvensis*	1	
Order –MESOSTIGMATA Family –	B. PREDATORY MITES	*Curculigo orchioides*	2	Quite common, found feeding on immature stages of *T. urticae.*
c. Phytoseiidae	13. *Scapulaseius suknaensis* (Gupta)	*Bixa orellana*	2	Common species, associated with *Oligonychus mangiferus*, feeding not observed.
	14. *Amblyseius herbicolus* (Chant)	*Adhatoda vasica*	1	Regularly encountered in colony of *B. deleoni* and found feeding voraciously feeding on all stages of *B .deleoni*
	15. *A. channabasavannai* Gupta	*Ocimum gratissimum/ Mentha arvensis*	1	Regularly encountered on undersurface of leaves in colony of *P. latus*, attacked younger stages of the mite.
	16. *Paraphytoseius orientalis* (Narayanan *et al.)*			
Order--TROMBIDIFORMES Suborder—PROSTIGMATA Family – d. Stigmaeidae	17. *Euseius ovalis* (Evans)	*Cymbopogon martinii*	2	Efficient predator of *O. indicus* but not regularly encountered.
	18. *E. finlandicus* (Oudms.)	*Ocimum gratissimum*	2	Occasionally encountered in colony of *Brevipalpus*, population poor.
	19. *Typhlodromus fleschneri* Oudms.	*Mentha arvensis*	3	Only occasionally encountered.
e. Cunaxidae	*20.* *Agistemus industani* Gonzalez-Rodriguez	*Adhatoda vasica*	2	Found in colony of *Brevipalpus deleoni*, found feeding on *B. deleoni*, making the predator reddish coloured due to reddish pigments of prey mites, moderate population.
Order—HEMIPTERA Family— 1.			3	Though known to be a good predator but only occasionally encountered.

Aphididae	21. (Hermann)	*Cunaxa setirostris*	*Ambroma augusta*	3	Casual occurrence, no damage.
				3	As above
2. Pseudococcidae	C.	INSECTS		3	As above
3. Coccidae	1.	*Aphis gossypii* Glover		1	Very often serious infestation occurred, making the plants weak.
	2.	*A. nerii* (B.d.F.)	*Pterocarpus santalinus*		Only occasionally encountered.
4. Margarodidae	3.	*Coccidohystrix sp.*	*Mentha piperita*	3	Huge population noticed both on plants as well as at the ground, infected leaves turned yellow.
5. Pyrrhocoridae	4.	*Coccus sp.*	*Adhatoda vasica*	1	Serious infestation noticed, the leaves turned yellow.
			Ocimum sanctum		Serious infestation on under surface of leaves specially at a petiolar region causing chlorosis and finally yellow patches developed.
6. Tingidae	5.	*Icerya sp.*		1	
	6. (Fab.)	*Dysdercus cingulatus*	*Adhatoda vasica*	1	
			Bixa orellana		
	7.	*Monanthea globulifera* Walk			
	8.	*Urentius sentis* Dist	*Ocimum tenuiflorum*		
			Cymbopogon martinii		

Abundance status—

- **Most abundant – 1**
- **Moderately abundant – 2**
- **Least abundant – 3**

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