



Mites Infesting Floricultural and Leafy Ornamental Plants in West Bengal (India)

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ABSTRACT

The present study on mites infesting 25 types of floricultural and ornamental plants from 9 districts of South Bengal reports the occurrence of 33 species belonging to 9 genera and 5 families which included 16 species under 4 families and 9 genera as phytophagous and 15 species under 10 genera and 5 families as predators and the remaining 2 were fungivorous. All the species are listed host-wise along with their nature of damage and economic study.

KEYWORDS : Ornamental, Floricultural plants, South Bengal, Mite, Phytophagous, Predatory

INTRODUCTION

Flowers have immense values in social, cultural, aesthetic and religious lives of Indian people. Ornamental and floricultural plants have recently become viable business in India including West Bengal. This sector is also helping in livelihood generation of women as many women are involved in this trade. West Bengal is one of the leading states of India in production of flowers and leafy ornamentals and these are extensively grown in home gardens, community parks and also in large scale commercially in various gardens. Unfortunately, this enterprise is receiving severe threats from attack of mite pests causing substantial economic loss to the growers. Therefore, with a view to studying the occurrence of pest and predatory mites on these plants, their identities, record observation regarding their host range, nature of damage, period of occurrence, etc. in West Bengal, this topic of research was undertaken in South Bengal during 2009-2012 and the results of the same are presented in this communication.

As many as 25 types of ornamental and floricultural plants growing in South Bengal covering 9 districts were surveyed during 2009-2012 and that yielded a total of 33 species belonging to 21 genera under 10 families. Among these, 16 species belonging to 4 families and 9 genera were phytophagous, 15 species under 5 families, 10 genera were predatory and 2 belonged to fungivorous group.

MATERIAL AND METHODS

The survey of mites occurring on ornamental plants of different types were conducted during 2009- 2012 in 9 out of 18 districts of West Bengal and the mites were collected by directly examining the leaves under 20X folding lens in the field. The mites were picked up with a fine brush moistened with alcohol and then preserved in 70% ethyl alcohol. Whenever necessary, the infested leaves were also brought in a polythene zipper bag for examination under stereo binocular microscope in the laboratory. This was specially needed for collection of Tenuipalpid and Tydeid mites. Mounting was done in Hoyer's medium and then the slide was slightly warmed on a hot plate for proper clearing and stretching of appendages. While making collection in the field, the nature of damage done by phytophagous mite and predatory behavior in case of predatory mites were also recorded in the field.

RESULTS AND DISCUSSION:

The results of survey revealed the occurrence of a total of 33 species under 21 genera and 10 families which included 16 species under 9 genera and 4 families being phytophagous in nature and 15 species under 10 genera and 5 families being predatory in nature. In addition, there were 2 species under 2 genera and 1 family which belonged to fungal feeding group. All these species have been listed giving their

host/ habitat records (Table-1) along with the damage symptoms they produced. Among the phytophagous species there were 9 species under 4 families which appeared as major pests and marked with "A" in the list. There were 1 species which was occasional pests marked with "B" and remaining species were of casual occurrence marked with "C".

Among the 15 species of predatory mites, there were only 5 species which were found to be potential predators marked in the list as "D". The remaining predatory mites were of casual occurrence marked with "E". Though some of predatory mites listed here have been reported earlier to be of potential value but in the present study they were not found to be highly promising mainly because of the fact that their abundance was poor.

Some of the earlier works done in this aspects are: Chatterjee and Gupta (1995), Dhooria (1999), Gupta (1985), Karmakar *et al.* (2010), Karuppachamy and Mohanasundaram(1988), Menon and Ghai(1968), Onkarappa and Harishkumar (1999), Sadana *et al.* (1981) etc.

Table: Diversity of mites on Floricultural and Leafy ornamental plants with their damage symptoms and remarks:

Serial No.	Name of Ornamental plant	Name of mite species	Nature of damage symptoms	Remarks
1.	Rose (<i>Rosa centifolia</i> L., <i>R. damascena</i> R. alba)	<i>Tetranychus armitage</i> Koch	Seriously pest, infested leaves turned brown, dried up.	A
		<i>Tetranychus maculifera</i> Baker & Pritchard, <i>Tetranychus ludeni</i> Zolner, <i>Oligonychus bifasciatus</i> (Hirst), <i>Brevipalpus zizaniensis</i> (Gesi)	Occasionally attacked, produced characteristic damage symptoms of the species	B
		<i>Phytoseius rosae</i> Mohanasundaram	Occasionally occur location wise, no noticeable damage symptoms	C
		<i>Amblyseius longispinus</i> (Nanna), <i>Amblyseius kerriensis</i> (Chant), <i>Euseius evallii</i> (Evans), <i>Phytoseius rosae</i> Mohanasundaram S. & S.	Common predators found feeding on all stages of Tetranychid mites	D
2.	Marigold (<i>Tagetes patula</i> L.)	<i>T. armitage</i> Koch	Seriously enveloped the leaves, caused chlorosis and drying up of leaves	A
		<i>Polyphagotarsonemus latus</i> (Banik)	Infested apical young leaves causing curling, wrinkling and drying of leaves	A
3.	Chrysanthemum (<i>Chrysanthemum</i> sp. L.)	<i>T. armitage</i> Koch	Occasionally infested causing yellowing of leaves	B
		<i>Rhyssalus eburne</i> Pritchard & Baker	Occasionally infested location wise, produced yellowish patches on leaves	C
		<i>Brevipalpus heterotarsus</i> Choudhury <i>et al.</i> , <i>Euseius evallii</i> (Evans)	Appeared brownish spots on leaves Good predators of Tetranychids of all stages	A D

4.	Oleander (<i>Nerium odoratum</i> L.)	<i>Eurytetranychus orientalis</i> (Klaim) <i>Indoseiulus eharai</i> (Gupta) <i>B. rhoeneticus</i> (Gesi.) <i>Euseius alstoniae</i> (Gupta), <i>A. largensis</i>	Infested upper surface of leaves, enveloping it profusely causing yellowing Voraciously fed <i>Tetranychus</i> mites Occasionally occurred, no damage symptoms Occasionally occur, predatory behavior not noticed	B D C E
5.	Temple tree (<i>Plumeria alba</i> L.)	<i>Oligonychus bharensis</i> (Hirst) <i>B. rhoeneticus</i> (Gesi.) <i>Oecobdellodes swainsonae</i> Chatterjee & Gupta <i>A. largensis</i> (Muma)	Severely infested upper surface of leaves, covered with webs where dust particles adhered. Colonize under surface of leaves, the entire leaf became brownish, dried up. Occasionally collected Fed on <i>O. bharensis</i>	A A B D
6.	Zinia (<i>Zinia elegans</i> Jacq.)	<i>T. urticae</i> , <i>Brevipalpus karachiensis</i> <i>Polyphagotarsonemus latus</i> (Banks)	Damage symptoms same as mentioned earlier Occasionally found on young leaves, population poor	B C
7.	Golden Champa (<i>Machaonia champakali</i> L.)	<i>Tetranychus macfarlanei</i> Baker & Pritchard <i>Euseius coccinosus</i> (Gupta)	Damage symptoms same as in other Tetranychid mites Occasionally encountered	C E
8.	Cape Jasmine (<i>Gardenia florida</i> J. Ellis)	<i>T. urticae</i> Koch	Symptoms as mentioned earlier Occasionally encountered,	C

16.	Mountain Ebony (<i>Bauhinia acuminata</i> L.)	<i>T. urticae</i> <i>O. bharensis</i> , <i>O. mansuetor</i> (Rabum & Sapsa) <i>A. largensis</i> , <i>E. coccinosus</i>	plants Major pest Occasionally encountered Occasionally encountered	A C E
17.	Carnation (<i>Dianthus caryophyllus</i> L.)	<i>T. urticae</i>	Infested sporadically causing chlorosis of leaves, sometimes very heavy infestation noticed	A
18.	Gladiolus (<i>Gladiolus</i> L.)	<i>T. urticae</i>	Occasional occurrence	C
19.	Cosmos (<i>Cosmos</i> Cav.)	<i>T. urticae</i>	Occasional occurrence	C
20.	Codaeum (<i>Codaeum variegatum</i> L.)	<i>O. bharensis</i> , <i>Brevipalpus essigi</i> Baker <i>A. largensis</i> , <i>A. indiana</i> Gonzalez-Rodriguez, <i>E. ovalis</i>	Occasional occurrence Predatory mites often encountered, no known economic importance	C E
21.	Croton spp. (<i>Croton</i> L.)	<i>B. ebevanus</i> <i>Cunaxa capryolus</i> (Berlese), <i>C. seticornis</i> (Hermann), <i>A. largensis</i> , <i>A. herbicola</i> <i>Tetranychus longior</i> Gervais	Occasionally infested leaves, Commonly occurred but of no known importance Fungal associated mite	C E C
22.	Canna (<i>Canna indica</i> L.)	<i>A. largensis</i>	Occasional occurrence	E
23.	Dracaena (<i>Dracaena</i> sp. Vaid)	<i>B. ebevanus</i> , <i>B. karachiensis</i> , <i>Paratetranychus camelliae</i> Gupta <i>A. largensis</i> , <i>E. ovalis</i> , <i>P. multidentatus</i> , <i>Acarus citra</i> Linn.	Mites encountered on this host, importance unknown	C
24.	Mussaenda (<i>Mussaenda corymbosa</i> Roxb.)	<i>Cunaxa capryolus</i> , <i>A. largensis</i>	Mites encountered, importance unknown	E
25.	Bougainvillea (<i>Bougainvillea spectabilis</i> Comm.)	<i>B. californicus</i> (Banks)	Occasionally occurred, no serious damage	C

		<i>Eronematus flexuosus</i> Baker	found feeding on eggs of <i>Tetranychus urticae</i> Koch	D
9.	Jasmine (<i>Jasminum sambac</i> L.)	<i>T. urticae</i> Koch, <i>T. neocaledonicus</i> André, <i>Brevipalpus ebevanus</i> , <i>B. rhoeneticus</i> (Gesi.), <i>Aceria jasmine</i> Channa Basavanna	Species encountered on leaves but none produced any noticeable damage symptoms excepting <i>A. jasmini</i> which caused galling formation	C A
10.	Night Jasmine (<i>Nyctanthes arbor-amra</i> L.)	<i>Schizotetranychus caini</i> Gupta <i>B. rhoeneticus</i> (Gesi.)	Caused yellowing of leaves and dried up Damage symptoms as mentioned earlier	B C
11.	China rose (<i>Hibiscus rosa-sinensis</i> L.)	<i>B. californicus</i> <i>Eronematus flexuosus</i> Gupta, <i>A. largensis</i> , <i>E. ovalis</i>	Small brownish patches on leaves Occasionally encountered predatory mites, feeding not observed	C E
12.	Wax flower (<i>Tabernaemontana coronaria</i> R. Br. ex. Roem & Schult)	<i>Eurytetranychus orientalis</i> <i>B. californicus</i> <i>Neoseiulus longispinosus</i> (Evans), <i>A. largensis</i> , <i>E. alstoniae</i> , <i>E. ovalis</i>	Seriously infested upper surface of leaves Occasionally infested lower leaf surface Good predatory mites collected, feeding not observed	A C E
13.	Sunflower (<i>Helianthus annuus</i> L.)	<i>T. urticae</i> , <i>B. californicus</i> <i>P. multidentatus</i>	Commonly encountered. No significant predatory behavior observed	C E
14.	Dahlia (<i>Dahlia variabilis</i> Cav.)	<i>T. urticae</i> , <i>T. macfarlanei</i>	Occasionally encountered	C
15.	Tuber rose (<i>Polyanthus tuberosa</i> L.)	<i>T. urticae</i>	Very serious infestation causing drying and death of	A

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