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DIVERSITY OF MITES INFESTING VEGETABLE CROPS IN HOWRAH DISTRICT OF WEST BENGAL WITH THEIR ECONOMIC IMPORTANCE

Zoology

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ABSTRACT

The present paper reports the occurrence of 34 species of mites under 20 genera, 8 families, 2 orders on 15 types of vegetables collected from Howrah district of West Bengal. This included 17 phytophagous species and 17 predatory species. Majority of the hosts listed here form new host/habitat records of the respective species.

KEYWORDS:

Phytophagous mites, predatory mites, vegetable crops, West Bengal

INTRODUCTION:- The district Howrah is famous for growing different types of vegetable crops but recently those are seen often attacked by several mites which have so far not been explored and documented. The present paper makes a maiden attempt to document those. It may be mentioned here that Gupta(2012) in his book on mites of agri-horticultural crops in India included many mites on as many as 40 types of vegetable crops in India but unfortunately, the mites of Howrah district were rarely represented in that book and hence the present paper provides a detailed list along with giving their economic importance and relative abundance of mites for the first time from Howrah district of West Bengal.

MATERIAL AND METHODS:- For studying the diversity of mites on vegetable crops (Snake gourd,Papaya,String beans,Ridge gourd, Leaf amaranth, Hyacinth bean, Bottle gourd, Brinjal, Tomato, Pumpkin, Bitter gourd, Parval, Potato, Chilli, Cauliflower) of Howrah district, the places from where the collection was made were Salkia, Dassnagar, Badamtala, Kadamtala, Panchanantala and Ramrajatala. The collection trip was conducted twice in a month and as such fourteen trips were conducted during September, 2016 to March, 2017. Leaves were examined in the field itself under a 20x hand lens and mites were collected with a fine brush moistened with alcohol and preserved in 70% alcohol. In many a cases, the leaves were brought to laboratory in polythene bags covering the mouth tightly and examined under a stereobinocular microscope and the mites were collected from there. The mounting was done in Hoyer's medium.

RESULTS AND DISCUSSION:- The identification of collected mites revealed the occurrence of a total of 34species under 20 genera 8 families and 2 orders. All those were listed in Table-1 and Table-2. The mites fauna included 17 phytophagous species and 17 predatory species. The list included host/habitat, records, locality, relative abundance and remarks giving economic importance, if any and hence is self explanatory.

Table 1: List of phytophagous mites collected from vegetable crops in Howrah district of West Bengal along with localities, hosts, relative abundance and economic importance during September, 2016 to March,2017.

Phytophagous Mites						
Sl. No.	**Order/ Family**	**Name of species**	**Host**	**Locality**	**Relative Abundance**	**Economic importance**
1.	Order-Prostigmata Family- Tetranychidae	*Eotetranychus hirsti* Pritchard and Baker	Snake gourd	Kadamtala	2	Casual occurrence, transparent yellowish spots appeared.
2.	Order-Prostigmata Family- Tetranychidae	*Oligonychus mangiferus* (Rahman and Sapra)	Papaya	Belgachia	3	Casual occurrence. No damage seen.
3.	Order-Prostigmata Family- Tetranychidae	*Oligonychus persicae* Tuttle, Baker and Abbatiello	Snake gourd	Salkia	3	Casual occurrence. No damage seen.
4.	Order-Prostigmata Family- Tetranychidae	*Oligonychus biharensis* (Hirst)	String bean	Kadamtala	3	This species is usually not found on this plant. No significant damage seen.
5.	Order-Prostigmata Family- Tetranychidae	*Panonychus citri* (McGregor)	Papaya	Dassnagar	1	Infested both surfaces of leaves, produced brownish patches, infested leaves dried up.
6.	Order-Prostigmata Family- Tetranychidae	*Schizotetranychus baltazari* Rimando	Ridge gourd	Belgachia	2	Regular infestation seen producing white stipplings.
7.	Order-Prostigmata Family- Tetranychidae	*Tetranychus lombardinii* Baker and Pritchard	Leaf amarnath	Ramrajatala	2	The occurrence of this mite was only once during the period of study, population low, no damage.
8.	Order-Prostigmata Family- Tetranychidae	*Tetranychus ludeni* Zacher	Hyacinth bean, Bottle gourd	Dassnagar	1	Heavy infestation seen on both surfaces, leaves which turned brown and defoliated.
9.	Order-Prostigmata Family- Tetranychidae	*Tetranychus macfarlanei* Baker and Pritchard	Brinjal Tomato, Pumpkin	Dassnagar Ramrajatala	1 2	Heavy infestation seen on brinjal produced characteristic damage symptoms. Infestation moderate. Leaves turned yellowish.

10.	Order-Prostigmata Family- Tetranychidae	*Tetranychus utricae* Koch	Ridge gourd, Brinjal Hyacinth bean	Badamtala Dassnagar	1 2	Occurrence on undersurface of leaves of ridge gourd and hyacinth bean, produced brownish patches. Production of yellow patches on both sides of the leaves.
11.	Order-Prostigmata Family- Tenuipalpidae	*Brevipalpus californicus* (Banks)	Brinjal Bitter gourd, Ridge Gourd	Salkia Ramrajatala	1 2	Heavy infestation seen on brinjal leaves, causing leaves to wither and finally defoliated. Heavy infestation on bitter gourd and ridge gourd, produced brownish patches
12.	Order-Prostigmata Family- Tenuipalpidae	*Brevipalpus phoenicis* (Geijskes)	Pumpkin, Parval Hyacinth bean, Brinjal	Dassnagar Dassnagar	2 3	Infested leaves of pumpkin showed very distinct brownish patches. Nothing noteworthy.
13.	Order-Prostigmata Family- Tenuipalpidae	*Brevipalpus* spp.	Ridge gourd, Bitter gourd, Brinjal	Ramrajatala	2	Heavy infestation seen on leaves of ridge gourd, bitter gourd and brinjal. The leaves often showed yellowish patchy areas.
14.	Order-Prostigmata Family- Eriophyidae	*Aceria lycopersici* (Wolff.)	Tomato, Potato	Salkia	2	Produce whitish erineum undersurface of leaves.
15.	Order-Prostigmata Family- Tarsonemidae	*Polyphagotarsonemus latus* (Banks)	Chili Potato, Bitter gourd	Salkia Ramrajatala	1 2	Attacked young apical leaves causing crinkling. Infestation seen on the leaves of potato and bitter gourd. The leaves showed brownish patches.
16.	Order-Prostigmata Family- Tarsonemidae	*Tarsonemus* spp.	Pumpkin Brinjal	Salkia Dassnagar	2 3	Heavy infestation seen on brinjal and pumpkin, produced characteristic damage symptoms. Damage not very distinct.
17.	Order-Prostigmata Family- Tarsonemidae	*Xenotarsonemus* sp.	Parval	Panchanantala	3	No damage seen, poor population.

Table 2: List of predatory mites collected from vegetable crops in Howrah district of West Bengal along with localities, habitats, relative abundance and economic importance during September,2016 to March,2017.

Predatory Mites						
Sl. No.	**Order/ Family**	**Name of species**	**Habitat**	**Locality**	**Relative abundance**	**Economic importance**
18.	Order-Prostigmata Family-Stigmaeidae	*Agistemus edulis* Gupta	Papaya	Salkia	3	Casual occurrence. Feeding on prey not observed.
19.	Order-Prostigmata Family-Stigmaeidae	*Agistemus exsertus* Gonzalez-Rodriguez	Brinjal, Parval	Dassnagar	3	Casual occurrence. Feeding on prey not observed.
20.	Order-Prostigmata Family-Stigmaeidae	*Agistemus gamblei* Gupta	Chilli, Pumpkin	Salkia	3	Casual occurrence. Feeding on prey not observed.
21.	Order-Prostigmata Family-Stigmaeidae	*Agistemus hystrix* Gupta	Papaya, Cauliflower	Kadamtala	3	Casual occurrence. Feeding on prey not observed.
22.	Order-Prostigmata Family- Cunaxidae	*Cunaxa* sp.	Ridge gourd, Chilli, Brinjal	Badamtala; Salkia	2	Occasionally encountered.
23.	Order-Prostigmata Family- Cunaxidae	*Neocunaxoides* sp.	Snake gourd	Belgachia	3	Casual occurrence. Feeding on prey not observed.
24.	Order-Prostigmata Family- Tydeidae	*Tydeus* sp.	Papaya, Pumpkin	Salkia	3	Nothing noteworthy.
25.	Order- Mesostigmata Family- Phytoseiidae	*Amblyseius paraaerialis* Muma	Papaya, Hyacinth bean	Dassnagar, Badamtala	3	Associated with *Eutetranychus orientalis* eggs, might be feeding on eggs, though not observed under microscope.
26.	Order- Mesostigmata Family- Phytoseiidae	*Euseius alstoniae* (Gupta)	Brinjal, Tomato	Salkia	3	Occasionally encountered. Predatory behavior not noticed.
27.	Order- Mesostigmata Family- Phytoseiidae	*Euseius coccineae* (Gupta)	Papaya	Ramrajatala	2	Predation not observed.
28.	Order- Mesostigmata Family- Phytoseiidae	*Euseius kalimpongensis* Gupta	Papaya	Badamtala	3	Occasionally encountered. Predatory behavior not noticed.
29.	Order- Mesostigmata Family- Phytoseiidae	*Neoseiulus fallacis* (Garman)	Brinjal	Salkia	3	Nothing noteworthy.
30.	Order- Mesostigmata Family- Phytoseiidae	*Neoseiulus longispinosus* (Evans)	Brinjal	Salkia	1	Associated with *Brevipalpus californicus,* seen feeding on all stages of this prey mite.
31.	Order- Mesostigmata Family- Phytoseiidae	*Paraphytoseius bhadrakaliensis* (Gupta)	Ridge gourd	Kadamtala	1	Active predators of *Tetranychus utricae*, preferring eggs.

32.	Order- Mesostigmata Family- Phytoseiidae	*Paraphytoseius orientalis* (Narayanan *et al.*)	Tomato, Brinjal	Kadamtala	1	Associated with *Tetranychus macfarlanei,* though predation not observed.
33.	Order- Mesostigmata Family- Phytoseiidae	*Phytoseius* spp.	Leaf amaranth, Cauliflower	Dassnagar	3	Occasionally encountered. Predatory behavior not noticed.
34.	Order- Mesostigmata Family- Phytoseiidae	*Scapulaseius suknaensis* (Gupta)	Brinjal	Salkia	3	Occasionally encountered. Predatory behavior not noticed.

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