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Some new records of mites (Acari) from India occurring on plants of economic importance

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Abstract

The present paper reports the occurrence of mites belonging to 38 species under 22 genera and 9 families and 3 orders on economically important plants which includes 4 species hitherto unknown from India, besides 11 new host records. This also includes a total of 23 phytophagous, 12 predatory and 3 fungal associated mites from West Bengal.

Keywords: Mites, Economic plants, West Bengal, India, Phytophagous, Predatory, Fungal associated.

1. Introduction

In the recent years the damage caused by the mites on Agri-horticultural crops is increasing at a very rapid rate because of two reasons, i) Indiscriminate use of broad spectrum pesticides which eliminate the natural enemies of pests, ii) development of resistance due to overuse and misuse of synthetic chemical. In view of this, many of the mites which were earlier innocuous are now becoming important pests of various types of economically important crops and hence have received world attention including India. Although quite a good number of publications have already been done from different parts of India as reviewed by Gupta (1985, 1991, 2012). The present paper includes results of survey of mites on some economically important plants of West Bengal along with their host/habitat records, localities, and economic importance, if any.

2. Material and Methodologies

The surveys for occurrence of mites on economically important plants in west Bengal were conducted during August 2014-September 2015. The leaf samples were brought in the laboratory in tightly packed polythene bags and examined under binocular stereo microscope. Mites, were collected by fine brush moistened with alcohol. Often the plant samples were also examined in the field under 20 X lens for collection of mites. The mounting of mites was done using modified Hoyer's medium and examined under stereo research microscope for identification.

3. Result and Discussion

The identification of the collected mite specimens revealed the occurrence of a total of 38 species belonging to 22 genera, 9 families and 3 Orders (Table-1). This included 4 species (marked with**) viz. *Brevipalpus sayedi* Baker, *Tydeus schusteri* Andre, *Tenuipalpus lawrencei* Baker and Pritchard, *Tarsonemus confusus* Ewing, the occurrence of which were earlier unknown from India. This also reports 11 new host/habitat records (marked with*). Out of 38 species, 23 are phytophagous species under 4 families and 12 genera and 11 are predatory mites under 4 families and 7 genera and there were 3 species under 1 family and 3 genera which were fungal associated. The list of mites along with their host/habitats, localities, period of occurrence and their economic importance, if any, have also been given in Table-1.

Sl. No.	Order/Family/Genus/Species Order: Prostigmata	Host/Habitat Records	Period Of Occurrence	Locality	Remarks
	A. Phytophagous Group Family1-Tetranychidae				
1.	<i>Aponychuss arjui</i> Gupta	<i>Bambusa vulgaris</i>	September 2014	Narendrapur	Casual occurrence on under surface of leaves, white spots produced at feeding points.
2.	<i>Eotetranychus hirsti</i> (Baker and Pritchard)	<i>Ficus carica</i>	September 2014	Narendrapur	Colony observed on undersurface of leaves causing chlorosis.
3.	<i>Eotetranychus suginamensis</i> (Yokoyama)	<i>Morus alba</i>	October 2014	Behrampur	Colony on undersurface of leaves, brownish spots produced at feeding points.
4.	<i>Eutetranychus orientalis</i> (Klein)	<i>Zizyphus jujuba</i>	February 2015	Narendrapur	Population on undersurface of leaves, amidst dust, brownish spots at feeding points, later leaf turned brown, dried up, defoliated.
5.	<i>Eutetranychus maximae</i> Nassar and Ghai	* <i>Calotropis procera</i>	January 2015	Narendrapur	Casual occurrence, no damage caused.
6.	<i>Oligonychus biharensis</i> (Hirst)	<i>Rosa centifolia</i>	March 2015	Kalyani	Occasionally encountered on undersurface of rose leaves producing brownish patches.
7.	<i>Oligonychus mangiferus</i> (Rahman and Sapro)	<i>Eugenia jambolana</i>	March 2015	Kalyani	Colony on undersurface of leaves mostly along midrib, occasionally on lower surface as well, causing chlorosis.
8.	<i>Schizotetranychus cajani</i> Gupta	<i>Cajanus cajan</i>	April 2015	Narendrapur	Good population of all stages found on undersurface of leaves, infestation caused yellowing and drying of leaves.
9.	<i>Tetranychus neocaledonicus</i> Andre	<i>Solanum melongena</i>	March 2015	Barasat	Heavy population observed on lower surface of leaves, chlorosis and drying of leaves.
10.	** <i>Tetranychus sayedi</i> Baker and Pritchard	<i>Clitoria ternatea</i>	March 2015	Narendrapur	Encountered once only, no damage. This is the first record from India
11.	<i>Tetranychus urticae</i> Koch	* <i>Rosa centifolia</i> , <i>Trichosanthes cucumerina</i> , <i>Momordica charantia</i> , <i>Dolichos lablab</i>	April 2015	Narendrapur, Debra, Alipurduar	Heavy population observed on cucurbitaceous plants and rose causing chlorosis, browning, drying of leaves.
Family2-Tenuipalpidae					
12.	<i>Brevipalpus phoenicis</i> (Geijskes)	<i>Abelmoschus moschatus</i> , <i>Datura metel</i> , <i>Ocimum sanctum</i> , * <i>Lagenaria vulgaris</i>	April 2015	Narendrapur, canning, Barasat, chuchura, kalyani.	Good population on <i>Ocimum sanctum</i> , <i>Datura metel</i> and <i>Abelmoschus moschatus</i> , inhabiting 30-40 mites/leaf and even more and sometimes on the fruits as well, no significant damage on other hosts.
13.	<i>Brevipalpus obovatus</i> Donnadieu	<i>Coffea arabica</i>	June 2015	Narendrapur	Casual occurrence, damage not noteworthy.
14.	<i>Brevipalpus deleoni</i> Pritchard and Baker	<i>Mentha piperita</i> , <i>Plumbago zeylanica</i>	June 2015	Narendrapur, Agriculture society Alipur	Stray population on undersurface of leaves, no noticeable damage.

15.	**Brevipalpus sayedi Baker	<i>*Musa sapientum</i>	February 2015	Narendrapur	This mite was earlier unknown from India hence form new record.
16.	**Tenuipalpus lawrencei Baker and Pritchard	<i>Achras sapota</i>	April 2015	Bardhaman	This was hitherto unknown from India
Family3-Eriophyidae					
17.	<i>Aceria jasmini</i> Channa Basavanna	<i>Jasminum sambac</i>	June 2015	Agri-Horticulture Society, Alipur	Occurred as vagrants on undersurface of leaves, no damage.
18.	<i>Aceria mangiferae</i> Sayed	<i>Mangifera indica</i>	June 2015	Narendrapur	Recorded within axillary buds, population low.
19.	<i>Aceria nerii</i> Channa Basavanna	<i>Nerium indicum</i>	July 2015	Narendrapur, Kalyani	Occurred as vagrants on undersurface of leaves.
20.	<i>Aceria adhatodae</i> Channa Basavanna	<i>Adhatoda vasica</i>	July 2015	Narendrapur	Only stray occurrence, no damage.
21.	<i>Phytoptus rosae</i> Mohanasundaram	<i>Rosa centifolia</i>	July 2015	Narendrapur	Only stray occurrence, no damage.
Family4-Tarsonemidae					
22.	<i>Polyphagotarsonemus latus</i> (Banks)	<i>Mentha piperita, Datura metel, *Ocimum gratissimum</i>	November 2014	Narendrapur	Regularly occur red on listed hosts, especially on apical young leaves causing crinkling of leaves.
23.	<i>Tarsonemus confusus</i> Ewing	<i>Withania somnifera</i>	March 2015	Narendrapur and Kalyani	Stray occurrence, earlier unknown from India.
B. Predatory GroupFamily5- Cunaxidae					
24.	<i>Cunaxa capreolus</i> (Berlese)	<i>Artocarpus integrifolia</i>	July2015	Narendrapur	Casual occurrence, predatory behaviour not noticed in field.
25.	<i>Cunaxa mangiferae</i> Gupta	<i>Mangifera indica</i>	July2015	Narendrapur and Alipur	Collected in association with mango bud mite (<i>Aceria mangiferae</i>) on which it was found feeding.
26.	<i>Cunaxa womersleyi</i> Baker and Hoffmann	<i>Psidium guajava</i>	August 2015	Kalyani	Casual occurrence, no feeding observed.
27.	<i>Dactyloscirus bengalensis</i> Gupta	<i>Cajanus cajan</i>	August 2015	Narendrapur	Collected in association with <i>Brevipalpus sayedi</i> on which it was found feeding.
Family6-Stigmaeidae					
28.	<i>Agistemus macrommatus</i> Gonzalez	<i>Tagetes erecta</i>	August 2015	Narendrapur	Casually encountered.
29.	<i>Agistemus heterophylla</i> Gupta Family7-Tydeidae	<i>*Azadirachta indica</i>	September 2015	Narendrapur	Casually encountered.
30.	**Tydeus schusteri Andre	<i>*Wedelia chinensis</i>	September 2015	Narendrapur	Casually encountered.
31.	<i>Parapronematus murshidabadensis</i> Gupta	<i>Mangifera indica</i>	July 2015	Kalyani	Casually encountered.
Order: MesostigmataFamily8-Phytoseiidae					
32.	<i>Amblyseius herbicolus</i> (Chant)	<i>*Bixa orellana</i>	March 2015	Narendrapur	Regularly encountered on mango, blackberry and once collected on <i>Bixa orellana</i> , good predator of tetranychids.
33.	<i>Amblyseius largoensis</i> (Muma)	<i>Cocos nucifera, Mangifera indica, Croton spp, Phoenix sp</i>	March 2015	Narendrapur, Kalyani, Chuchura, Behrampur, Kharagpur	Regularly encountered on listed hosts, good predatory mite.
34.	<i>Amblyseius mcmurtri</i> Muma	<i>Artocarpus integrifolia</i>	July 2015	Narendrapur	Casually encountered.
35.	<i>Paraphytoseius orientalis</i> (Narayanan and Ghai)	<i>Ocimum basilicum, Mentha sp, Solanum melongena, Lycopersicon esculentum, Abelmoschus esculentus</i>	July 2015	Narendrapur, Kalyani, Debra, Kharagpur, Alipurduar, Cooch Behar	Regularly encountered on listed hosts, fed on tenupalpid mites especially eggs.
Order: Astigmata Family9-Acaridae					

36.	<i>Caloglyphus berlesei</i> (Michael)	* <i>Cymbopogon martinii</i>	June 2015	Narendrapur	Only casually encountered in association with fungus.
37.	<i>Tyrophagus putrescentiae</i> (Schrank)	* <i>Azadirachta indica</i> , <i>Coccinia grandis</i> , <i>Oryza sativa</i> , * <i>Withania somnifera</i>	June 2015	Narendrapur	Found always in association with fungus on rotten paddy leaves.
38.	<i>Acarus</i> sp	<i>Pavonia odorata</i>	September 2015	Narendrapur	Casually encountered on rotten leaf.

*indicate new host/habitat records.

**indicate new report from India.

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