

A Report on Mites Occurring in Household Stored Products in South Bengal



Healthcare

KEYWORDS :Mites, stored products, South Bengal.

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ABSTRACT

The present paper reports the occurrence of 29 species, under 19 genera and 10 families occurring on various household stored products from South Bengal. This includes 13 species, hitherto not reported on stored products in South Bengal. The nature of damage, habitats, distribution etc. is also given.

Introduction:

The Stored products are often attacked by a good number of pests including insects and mites and they are known to cause often serious damage to those products. Two types of mites are known to occur on stored products, viz. those which are damage causing while the others are important predators, helping in biological control of not only mite pests but also some insects. Since not much studies have been undertaken on mites infesting household stored products in South Bengal, barring Gupta and Chatterjee(2004) from Kolkata, Gupta *et al.*(1991) from West Bengal, Nahar and Gupta(1980) from Bihar, Nangia(1986) from Karnataka, Prakash and Rao(1980) from Odisha & Gupta(2012), in his book reviewed the work done on stored products mites from India where 106 species of mites were listed. In view of this paucity of knowledge, this topic of research was chosen and mites fauna on various household stored products and observation regarding their economic importance have been included in this paper

2:Material & Methods:

For Collection of mites, surveys were undertaken in different districts of South Bengal viz- Howrah, North and South 24 Parganas, West Midnapur, Kolkata. The samples of different stored product like cereals (Rice and rice products, pressed rice, puffed rice, popped rice, wheat products like wheat flour, Semolina), farinacious products (biscuits), pulses and pulse products, spices, oil seeds, condiments, milk powder and some other house-

hold products, etc, were collected during May'2014 –Nov'2015.

The samples were brought to the laboratory in polythene bag and were subjected to heat treatment in modified Tullgren's Funnel. The extracted materials were examined under stereobinocular microscope and different groups of mites were sorted out. In many a cases, the stored products which were unsuitable for extraction of mites by Tullgren's Funnel were examined directly under stereobinocular microscope and the mite specimens were picked up with a fine brush moistened with alcohol and preserved in 70% alcohol. The mounting was done in Hoyer's medium. Observations were recorded regarding damage done (if any) by the mites and also predatory behavior of the predatory mites, wherever those were found present.

3:Results and Discussion:

The examination of extracted material revealed the occurrence of 29 species under 10 families, belonging to 3 orders of which 17 species were damage causing mites, and 12 species were predatory mites. The identified mite species have been listed in Table -1 along with their localities habitats, period of collection and economic importance (if any). Apart from this, 13 new habitats have also been recorded, which were previously unknown.

Acknowledgements:

The authors are thankful, to the Secretary, Ramakrishna Mission Ashram, Narendrapur, for providing infrastructure facilities and to the Head, Dept of Zoology, Victoria Institution (College), Kolkata, for providing working facilities and encouragement.

Table-1: List of stored product mites along with localities, period occurrence, importance, etc. collected from different districts of West-Bengal

Sl. NO	Name of mite species	Habitat	Locality	Period of Collection	Degree of Abundance A:highly Infested :moderate Infestation C: rare occurrence	Remarks
	Order 1)ASTIGMATA					
	Family 1)Acaridae					
1	<i>Acarus farris</i> (Oudemans)	Cumin Seeds	Dist – South-24 Parganas (Canning)	September 2014	A	This mite was found very severely infesting cumin seeds, which were hollowed out because of the feeding of seed content.
2	<i>Acarus gracilis</i> (Hughes)	Biscuit Powder	Dist Howrah (Domjur)	May' 2014	C	This mite was reported casually on biscuit dust and economic importance is unknown earlier this was not reported on this habitat.

3	<i>Acarus siro</i> (Linnaeus)	1)Mung Dal	Dist Howrah (Bagnan)	May' 2015	B	This mite was occasionally encountered in Mung Dal , which was made powder due to feeding of this mite. The population was moderate.
		2)Mustard Seeds	Dist South-24 Parganas (Canning)	September2014	C	In addition this was also recorded on mustard and coriander seeds .Both form new habitat records for this mite and the infestation was of moderate nature
4	<i>Caloglyphus mycophagus</i> (Megnin)	Wheat Flour	Dist – Howrah (Bagnan)	May' 2014	B	This mite was found infesting wheat flour and its population was moderate. The infested sample produced some foul odor
5	<i>Cologlyphus oudemans</i> (Zachvatkin)	Rice husk	Dist – Hooghly (Chinsurah)	May '2014	D	The occurrence of this mite on rice husk is interesting and is new as its earlier records were mostly infesting stored products .The occurrence of this mite in this habitat was very rare.
6	<i>Rhizoglyphus eschinopus</i> (Fumouze & Robin)	Stored Potato	Dist Hooghly (Chinsurah)	May 2014	D	This mite was encountered in partially rotten, stored potato but its number was rather poor. This is a common mite known to occur in this habitat.
7	<i>Rhizoglyphus robini</i> (Claparede)	Wheat Flour	Dist – West Midnapur (Kharagpur)	July 2014	B	The presence of this mite in wheat flour, caused the change of colour turning that into little yellowish and making the powder crumpled Its occurrence was of moderate nature.
8	<i>Tyrolichus casei</i> (Oudemans)	Ground nut	Dist– Howrah (Shalimar)	November 20 14	B	The groundnut on which this mite was collected forms new habitat record and the seeds were damaged, making those fussy. It was of moderate occurrence.
9	<i>Tyrolichus longior</i> (Gervais)	Semolina	Dist– South. Parganas (Canning)	24 February 2015	B	This was found from semolina where the population was of moderate nature. The infestation changed the texture of food making those crumpled.
10	<i>Tyrophagus putrescentiae</i> (Schrank)	Chille Powder	Dist-Kolkata (Behala)	September 2014	C	The occurrence was moderate and infestation changed the colour and texture of chille powder.
	(2) Family Glycyphagidae					
11	<i>Austroglyphus</i> <i>phagus</i> sp.	Wheat Flour	Dist-North-24 Parganas (Barrackpore)	July 2014	A	A huge population of this mite was seen in wheat flour, making them Emitting foul odor and becoming unsuitable for human consumption
12	<i>Glycyphagus domesticus</i> (De Geer,1778)	Wheat Flour	Dist-North-24 Parganas (Barrackpore)	July 20 14	A	Infestation was severe on wheat flour and the damage was of similar nature as in case of <i>Austroglyphus</i> sp.
	3)Family Pyroglyphidae					
14	<i>Dermatohagoides pterorysinus</i> (Troupssart)	Opium Seeds	Dist-South -24 Parganas (Canning)	February 2015	C	The occurrence of this mite on opium seeds is new habitat record where the population was of poor nature and damage was not noticeable.
		Dried Kasuri metho	Dist-Kolkata (Shambazar)	September 20 14	C	
15	<i>Euroglyphus</i> sp. (near <i>longier</i>)	Popped Rice	Dist-Kolkata (Shambazar)	September 20 14	B	Popped rice where this mite was recorded with moderate population. This forms a new habitat record and the infested product turned powdery <i>Blattisocius dentriticus</i> was the predator mite associated with this mite.

	4) Family Saprogllyphidae					
16	<i>Suidasia medanensis</i> (Oudemans)	1)Pressed Rice	Dist Howrah (Bagnan)	May 2014	B	The pressed rice forms new habitant record for this mite, where its population was of moderate nature. The infestation turned the pressed rice into powdery mass. The other stored products like milk powder where its abundance was quite high, but was of moderate nature in opium seed
		2) Milk Powder	Dist-South-24 Parganas. (Canning)	September 2014	A	
		3) Opium seeds	Diat-West Midnapur (Kharagpur)	July 2014	C	
17	<i>Suidasia nesbitti</i> (Hughes)	1)Pressed rice	Dist-Howrah (Shalimar)	November 2014	B	Among the various habitats on which this mite was collected, semolina, chille powder, pressed rice, biulir dal, roasted gram flour, form new habitant records. This is a good cosmopolitan species and infests a wide range of host.
		2) Pigeon pea (Biulir Dal)	Dist-West. Midnapur (Kharagpur)	February 2015	C	
		3)Moong Dal	Dist-South.24 Parganas (Canning)	September 2014	B	
		4)Milk Powder	Dist-South.24 Parganas (Canning)	September 2014	A	
18		5)Semolina	Dist-West. Midnapur (Kharagpur)	February 2015	B	
		6)Opium seeds	Dist -Howrah (Bagnan)	May 2015	B	
		7)Chille powder	Dist-Howrah (Bagnan)	May 2015	B	
		8)Wheat flour	Dist- South.24 Parganas (Canning)	September 2014	B	
		9)Sattu (Roasted Gram Flower)	Dist-Howrah (Bagnan)	May 2015	B	
	II) ORDER MESOSTIGMATA					
	5) Family Ascidae					
	<i>Blattisocius dendriticus</i> (Berlese)	Popped rice	Dist-Kolkata (Shambazar)	September 2014	A	This predatory ascid mite was abundantly available on popped rice in association with <i>Euryglyphus</i> sp (near <i>longior</i>). But sample when examined under microscope did not reveal its predation

19	<i>Blatticius tarsalis</i> (Berlese)	Dried Kasuri Methi	Dist-Kolkata (Shambazar)	September 2014	A	This predatory ascid mite was collected in association with <i>Dermatophagoides pteronyssinus</i> , on kasuri methi, but this association is likely to be accidental
20	Digamsellus.sp	Coriander seeds	Dist-South-24 Parganas (Canning)	September 2014	C	This undetermined species was found in association with <i>Acarus siro</i> , found feeding on it
	6)Family Parasitidae					
21	<i>Parasitus consanguineus</i> (Oudemans and Voigts)	Wheat flour	Dist- North- 24 Parganas (Barrackpore)	July 2014	A	This was also found abundantly in wheat flour, in association with <i>Glycyphagus domesticus</i> and <i>Caloglyphus mycophagus</i> , but it was observed to feed upon only <i>Caloglyphus</i>
			Dist-Howrah (Bagnan)	May 2014	A	
	III)ORDER PROSTIGMATA					
	7) Family Cheletidae					
22	<i>Cheyletus aversor</i> (Rohdendorf)	Semolina	Dist-West Midnapur (Kharagpur)	February 2015	B	Its occurrence was less abundant and was collected on semolina in association with <i>Suidesia nesbitti</i> and was found to be a good predator of all stages
23	<i>Cheyletus eruditus</i> (Shrank)	1)Ground Nut	Dist-Howrah (Shalimar)	November 2014	B	The predatory mite was quite abundantly available from many sample collected from different localities in association with
		2)Pressed Rice	Dist-Howrah (Shalimar)	November 2014	A	
		3)Mung Dal	Dist-S- 24 Pgs (Canning)	September 2014	B	<i>Tyrolichus casei</i> . <i>Suidasia nesbitti</i> , <i>Acarus farris</i> as well as with some insect pests. This was found efficiently feeding upon <i>Tribolium</i> sp.
		4)Cumin Seeds	Dist-South- 24 Parganas (Canning)	September 2014	B	
24	<i>Cheyletus fortis</i> (Oudemans)	1)Pressed Rice	Dist-Howrah (Bagnan)	May 2014	A	This predatory mite was collected from different stored products but was most abundant in pressed rice. It seemed to be associated with those and fed on <i>Suidesia medanensis</i> .
		2)Opium seeds	Dist-West. Midnapur (Kharagpur)	July 2014	B	
25	<i>Cheyletus malaccensis</i> (Oudemans)	1)Ground Nut	Dist-Howrah (Shalimar)	November 2014	B	Though it was collected in different stored products, but its population was abundant in Milk powder and poor in others. The feeding of this mite might be on <i>Suidasia nesbitti</i> which was also abundantly found in milk powder.
		2)Pigeon pea(Biulir Dal)	Dist-West Midnipur (Kharagpur)	February 2015	C	
		3)Milk Powder	Dist-South-24 Parganas (Canning)	September 2014	C	
	8)Family Cunaxidae					
26	<i>Cunaza</i> sp.	Wheat flour	Dist-North- 24 Parganas (Narendrapur)	July 2014	C	This was collected only occasionally No feeding was Observed
	9)Family Tarsonemidae					
27	<i>Acarophenax</i> sp	Mung Kalai (<i>Vigna radiate</i>)	Dist-South 24 Parganas (Canning)	February 20 15	B	Its population was moderate and predatory behavior was seen only with insect pest & undetermined beetle grub

28	<i>Tarsonamus granaries</i> (Lindquest)	Wheat bran	Dist-North.24 Parganas (Narendrapur)	November 2014	C	It was only collected once
	10)Family Tydeidae					
29	<i>Paratydeus</i> .sp	Pressed Rice	Dist-Howrah (Bangnan)	September2014	B	This was encountered occasionally once.

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