STUDY OF ERIOPHYOID MITES (ACARI: ERIOPHYOIDEA) OF DIFFERENT DISTRICTS FROM LESS EXPLORED PLACES OF SOUTH BENGAL, INDIA

ABSTRACT

The present study was conducted across various lesser known places of Southern part West Bengal from January 2024 to July 2024. This area appears to have been previously unexplored in terms of eriophyoid mite diversity. A total of 60 Eriophyoid mite species, belonging to 29 genera and 2 families were recorded, with families: Eriophyidae accounting for 85% and Diptilomiopidae for 15%. Simpson's index and the Shannon-Wiener diversity index were calculated to assess the mite community in different study areas. These mites were found on a wide variety of host plants, such as *Anthocephalus kadamba*, *Litchi litchi*, *Mangifera indica*, and *Ficus* spp., reflecting complex ecological relationships. These mites were exclusively vagrant in nature, and their presence often led to plant damage, including galls, leaf curling, and other deformities, highlighting their significant impact on plant health.

KEYWORDS:*Acari, Eriophyidae, Diptilomiopidae. Gall mites, Biodiversity indices*

INTRODUCTION

Eriophyoid mites are small, plant-feeding mites belonging to the order Acariformes and the suborder Eriophyoidea. They are characterized by their worm-like or fusiform type, two pairs of legs, structure of genitalia etc. (Amrine *et al*., 2003). They feed on plant tissues (phytophagous in nature), often causing damage like leaf deformities, stunting, gall formation or spotting. These mites are sometimes act as important plant pests and are classified under three main families: Eriophyidae, Diptilomiopidae and Phytoptidae(Amrine & Stasny, 1994). Due to their very small size, they are often difficult to detect without the aid of magnification.

Understanding the diversity and distribution of such group of mites is essential for several reasons. Firstly, documenting the species in these regions offers valuable insights into local biodiversity as well as ecosystem health. Secondly, identifying eriophyoid mites that impact crops enables farmers to implement targeted pest management strategies, reducing damage and enhancing crop yields. Lastly, studying these mites contributes to the broader

scientific knowledge of plant-mite interactions, coevolution and the ecological roles mites play in various environments (de Lillo *et al*., 2018).

Eriophyoid mites, despite their minute size, can have a profound impact on plant health, both through direct damage and by acting as vectors for plant diseases (Solo, K. M et al. 2020). Understanding their role in plant disease is crucial for developing effective management strategies in agriculture and horticulture (Oldfield & Proeseler, 1996).

They can cause significant plant damage, including galls, leaf curling, stunted growth, and other deformities (Agarwal & Kandaswamy, 1959). This damage weakens plants, reduces photosynthesis and decreases agricultural productivity. Additionally, some Eriophyoid mites serve as vectors for plant viruses, amplifying their impact on crops (Otero-Colina *et al*., 2018). Their minute size and concealed nature make them difficult to detect, necessitating the use of specialized tools for proper identification. Understanding their impact on plant health is vital for developing effective pest management strategies to reduce agricultural losses and promote sustainable farming practices.

Despite their importance, detailed studies on the diversity and ecological impact of eriophyoid mites in southern West Bengal remain scarce. This research aims to fill this gap by conducting a comprehensive survey of Eriophyoid mites across various districts in the region. The study evaluates species diversity, distribution and their interactions with local plant species. Understanding the species composition and distribution of these mites, they will contribute to develop effective pest management strategies, benefiting local agriculture. Additionally, the findings will advance the field of Acarology and deepen our understanding of plant-miteinteractions in diverse ecosystems, supporting sustainable agriculture and biodiversity conservation in West Bengal.

MATERIALS & METHODS

Study Area: The study of Eriophyoid mites was conducted across diverse locations in the southern part of West Bengal, India. Sampling sites included the Arambag and Sheoraphuli areas in Hooghly district, representing regions with mixed vegetation and significant agricultural activities. Additionally, mite specimens were also collected from East Medinipur, Howrah and Kolkata districts. The locations encompass a range of habitats, from urban environments in Kolkata to semi-urban and rural landscapes in Howrah and East Medinipur. The selected sites provided an ecologically varied framework for the study, including areas with agricultural fields and natural vegetation. Such diversity in sampling locations ensured a comprehensive understanding of the distribution and diversity of the eriophyoid mites. By incorporating regions with different vegetation types and land-use patterns, the study aimed to highlight the ecological factors influencing mite populations in these areas.Rice (*Oryza sativa*), Wheat (*Triticum aestivum*), Pulses and Legumes, Jute, sugarcane, and oilseeds like mustard are important crops in these regions, contributing to the local economy. Apart from agriculturallands, the natural vegetation includes scatteredpatches of natural deciduous forests can be found, consisting of species such as Sal (*Shorea robusta*), Teak (*Tectona grandis*) and various types of *Acacia*. These trees shed their leaves during the dry season to conserve water. Bamboo species, including *Bambusa vulgaris*, are common in certain areas, particularly in regions with slightly higher moisture content in the soil. The region is also

known for its orchards, particularly Mango (*Mangifera indica*), Banana (*Musa* spp.), and Guava (*Psidium guajava*) trees, which contribute significantly to the local economy and diet.

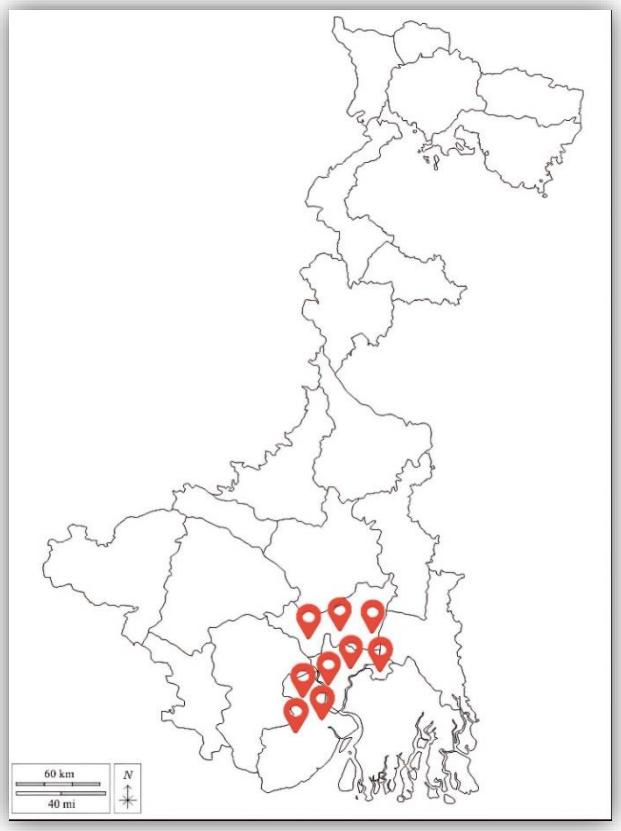

Figure 1: Study Areas in Southern West Bengal. The highlighted locations indicate the primary survey sites, including Arambag and Sheoraphuli in Hooghly, along with areas in Howrah, Kolkata, and East Medinipur (dmaps.com)

Methodology: The plants were examined for signs of disease, gall formation or other related damages. Infected leaves were primarily collected, along with healthy leaves, from the study areas between January and June. Geo-tagged photos were taken and location details were labelled on polythene bags. The collected leaves were stored in polythene bags and refrigerated for further analysis. The lower surfaces of the leaves were inspected under a stereo binocular microscope to locate mites. Using a sharp needle, mites were transferred onto groove slides containing lactic acid and covered with cover slips. Observations were made under a SONY ZEISS STEMI DV4 Stereo Binocular Microscope to identify the specimens (Monfreda *et al*., 2009). Identification relied on relevant literature, including works by (Amrine *et al*., 1996, 2003, 2006). As after the study no new species were found, no permanent slides were prepared, and the temporary slides were discarded after identification.

Analysis of Biodiversity indices (Bhardwaj et al., 2023):

- **The Simpson dominance index-**
  $(D)= 1-[\Sigma n_i(n_i-1) / N(N-1)]$

  Where, Σ = sum of (Total)

  n_i = the number of individuals of each different species

  N = the total number of individuals of all the species

- **The Shannon index of diversity -**

  $(H')= -[\Sigma(n_i/N) \times \ln(n_i/N)]$

  Where, Σ = sum of (Total)

  n_i = the number of individuals of each different species

  N = the total number of individuals of all the species

Result

During the present study a total of 60 Eriophyoid mite species, belonging to 29 genera and 2 families, were identified across various survey areas. The species distribution varied by location, with Arambag (Hooghly)recording 27 species (15 genera under 2 families), Kolkata 24 species (13 genera under 2 families), East Medinipur 23 species (13 genera under 2 families), Howrah 22 species (14 genera under 2 families) and Sheoraphuli(Hooghly) 21 species (11 genera under 2 families).Among the two families of Eriophyoid mites, Eriophyidae (51 Species under 27 Genera) represents the dominant family followed by Diptilomiopidae (9 Species under 2 Genera). In addition, the genus *Aceria* had the highest number of species with 14, followed by *Diptilomiopus* with 8 species.Among the 29 Eriophyoid mite genera, only 2 belong to the family Diptilomiopidae, while the remaining 27 genera belong to the family Eriophyidae.The observed Eriophyoid mites, along with their host plants and locations, are detailed in Table 1, while Table 2 provides information about the families of Eriophyoid mites and their respective host plants.

Table 1: Eriophyoid Mites-Host Plant cataloguewith survey areas

Sl. No.	Eriophyoid Mite	Host Plant/s	Survey Area/s
1.	*Abacus arjunalis* Mondal, Ghosh & Chakrabarti	*Tarminalia arjuna*	Kolkata
2.	*Acalitus ruelliae* Hovore	*Ruellia tuberosa*	Arambag (Hooghly), East Medinipur
3.	*Acaphylla syzygii* Channabasavanna	*Syzygium samarangense*	Sheoraphuli (Hooghly)
4.	*Acaphyllisa pipera* Ghosh & Chakrabarti	*Piper siriboa, Piper betle*	Howrah, Sheoraphuli (Hooghly)
5.	*Aceria alangiae* Mohanasundaram	*Alangium salvifolium*	Arambag (Hooghly)
6.	*Aceria anonae* (Keifer)	*Annona squamosa, Annona reticulata*	Arambag, Sheoraphuli (Hooghly), Howrah
7.	*Aceria banyani* Channabasavanna	*Fatsia japonica, Ficus benghalensis*	Kolkata, Sheoraphuli (Hooghly)
8.	*Aceria clerodendrum* (Farkas)	*Clerodendrum viscosum*	East Medinipur, Arambag (Hooghly)
9.	*Aceria ficivagrans* Mohanasundaram	*Ficus benghalensis*	Howrah
10.	*Aceria ficus* (Cotee)	*Ficus racemose, Ficus religiosa, Ficus hispida*	Arambag (Hooghly), Kolkata
11.	*Aceria granati* (Canestrini & Massalongo)	*Punica granatum*	Howrah
12.	*Aceria holopteleae* Channabasavanna	*Holoptelea intedrifolia*	Arambag (Hooghly)
13.	*Aceria infectoriae* Channabasavanna	*Ficus rumphii, Ficus racemosa*	East Medinipur, Kolkata
14.	*Aceria justice* Berlese	*Justicia adhatoda*	Arambag (Hooghly)
15.	*Aceria litchi* (Keifer)	*Litchi litchi*	Arambag (Hooghly),

			Sheoraphuli (Hooghly), East Medinipur, Kolkata, Howrah
16.	*Aceria mangiferae* Sayed	*Mangifera indica*	Arambag, Sheoraphuli (Hooghly), East Medinipur, Kolkata, Howrah
17.	*Aceria nerii* Channabasavanna	*Nerium indicum*	Arambag (Hooghly), East Medinipur, Kolkata
18.	*Aceria pongamae* Keifer	*Pongomia pinnata*	Arambag, East Medinipur, Kolkata, Howrah
19.	*Aculops spondiasis* Chakrabarti & Sarkar	*Spondias mombin*	Howrah
20.	*Aculopus abutiloni* Mondal & Chakrabarti	*Abutilon indicum*	Arambag
21.	*Aculus montanae* Mohanasundaram	*Diospyros blancoi*	Howrah
22.	*Anthocoptes tectonae* Chakrabarti & Mondal	*Tectona grandis*	Kolkata
23.	*Anthopoda fici* Keifer	*Ficus rumphii*, *Ficus religiosa*	Arambag (Hooghly), Howrah, Sheoraphuli (Hooghly)
24.	*Calcareous quisqualis* Chakrabarti & Mondal	*Quisqualis indica*	Kolkata
25.	*Calepitrimerus azadirachtae* Channabasavanna	*Azadirachta indica*	Kolkata, Arambag (Hooghly)
26.	*Calepitrimerus hispidus* Mondal & Chakrabarti	*Ficus religiosa*, *Ficus racemosa*, *Ficus hispida*, *Syzygium sp.*	Kolkata, East Medinipur
27.	*Calepitrimerus tabernaemontanis* Mondal & Chakrabarti	*Tabernaemontana divaricata*	Sheoraphuli
28.	*Colopodacus bengalensis* Mohanasundaram	*Ficus benghalensis*	Kolkata
29.	*Dellilophyes guajavae* Sur	*Psidium guajava*	Arambag, Howrah, Kolkata
30.	*Diptilomiopus ambromae* Sur, Roy & Chakrabarti	*Ambroma augustum*	Kolkata, Arambag
31.	*Diptilomiopus anthocephali* Chakrabarti, Sarkar & Pandit	*Anthocephalus kadamba*	Arambag, Sheoraphuli, East Medinipur, Kolkata, Howrah
32.	*Diptilomiopus artocarpae* Chakrabarti & Mondal	*Artocarpus heterophyllus*	Kolkata
33.	*Diptilomiopus assamica* Keifer	*Citrus maxima*	Howrah

34.	*Diptilomiopus augustifoliae* Sur, Roy & Chakrabarti	*Ambroma augustum*	East Medinipur
35.	*Diptilomiopus camerae* Mohanasundaram	*Lantana camara*	Arambag, East Medinipur
36.	*Diptilomiopus ficus* Chakrabarti & Mondal	*Ficus religiosa*, *Ficus carica*	Kolkata, Sheoraphuli
37.	*Diptilomiopus guajavae* Mohanasundaram	*Psidium guajava*	Sheoraphuli, East Medinipur
38.	*Disella cumini* Chakrabarti, Das & Pandit	*Syzygium cumini*, *Syzygium samarangense*	Arambag, Howrah, Kolkata, East Medinipur
39.	*Disella tectona* Chandrapatya & Boczek	*Tectona grandis*	Arambag
40.	*Eriophyes lantanae* Mohanasundaram	*Lantana* sp.	East Medinipur
41.	*Eriophyes sp.*	*Prunus* sp.	Kolkata
42.	*Eriophyes terminaliae* Channabasavanna	*Terminalia catappa*	East Medinipur
43.	*Neocecidophyes mallotivagrans* Mohanasundaram	*Mallotus nudiflorus*	East Medinipur, Kolkata, Arambag (Hooghly)
44.	*Neometaculus bauhiniae* Mohanasundaram	*Buhinia veriegata*	Sheoraphuli (Hooghly)
45.	*Neooxycenus dilleniae* Sur, Roy & Chakrabarti	*Dillenia indica*	Arambag (Hooghly), Howrah, East Medinipur, Sheoraphuli (Hooghly)
46.	*Neotegonotus indicus* Mondal & Chakrabarti	*Ficus benghalensis*	Kolkata
47.	*Paraphytophus jujube* Mohanasundaram	*Ziziphus mauritiana*	Howrah, Sheoraphuli
48.	*Paraphytoptus champacae* Mohanasundaram	*Michelia champaca*	Sheoraphuli
49.	*Paraphytoptus jujube* Mohanasundaram	*Zizipus jujuba*	East Medinipur
50.	*Paraphytoptus serenus* Duarte, Chetverikov, Silva & Navia	*Zizipus jujuba*	Arambag (Hooghly)
51.	*Paratetra murrayae* Keifer	*Murraya koenigii*	Arambag, East Medinipur
52.	*Phyllocoptruta citricola* Chakrabarti & Sarkar	*Citrus maxima*, *Citrus limon*	Arambag, Sheoraphuli, East Medinipur, Kolkata
53.	*Phyllocoptruta neemae* Debnath &Karmakar	*Azadirachta indica*	Howrah, Sheoraphuli, East Medinipur, Kolkata
54.	*Rhynaphytophus ficifoliae* Keifer	*Ficus carica*	Howrah
55.	*Tegolophus*	*Bambusa vulgaris*	Howrah, Sheoraphuli

	*bambusae*Channabasavanna		
56.	*Tegolophus indica* Chakrabarti & Mondal	*Artocarpus heterophyllus, Artocarpus lakoocha*	Arambag, Howrah, Sheoraphuli, East Medinipur
57.	*Tegolophus nerii* Mondal & Chakrabarti	*Nerium oleander*	Sheoraphuli
58.	*Tegolophus spondiasis* Mondal & Chakrabarti	*Spondias mombin*	Sheoraphuli
59.	*Tetra asperae* Boczek	*Streblus asper*	Arambag, East Medinipur
60.	*Vasates pavetis* Ghosh	*Pavetta indica*	Howrah

Table 2: Host-Plant –Eriophyoid catalogue

	Eriophyoid Mite	**Family of Eriophyoid Mite**	**Host Plant/s**	**Family of Host Plants**
1.	*Abacus arjunalis*	Eriophyidae	*Tarminalia arjuna*	Combretaceae
2.	*Acalitus ruelliae*	Eriophyidae	*Ruellia tuberosa*	Acanthaceae
3.	*Acaphylla syzygii*	Eriophyidae	*Syzygium samarangense*	Myrtaceae
4.	*Acaphyllisa pipera*	Eriophyidae	*Piper siriboa, Piper betle*	Piperaceae
5.	*Aceria alangiae*	Eriophyidae	*Alangium salvifolium*	Cornaceae
6.	*Aceria anonae* (Keifer)	Eriophyidae	*Annona squamosa, Annona reticulata*	Annonaceae
7.	*Aceria banyani*	Eriophyidae	*Fatsia japonica, Ficus benghalensis*	Araliaceae
8.	*Aceria clerodendrum*	Eriophyidae	*Clerodendrum viscosum*	Lamiaceae
9.	*Aceria ficroprans*	Eriophyidae	*Ficus benghalensis*	Moraceae
10.	*Aceria ficus*	Eriophyidae	*Ficus racemosa, Ficus religiosa, Ficus hispida*	Moraceae
11.	*Aceria granati*	Eriophyidae	*Punica granatum*	Puniaceae
12.	*Aceria holopteleae*	Eriophyidae	*Holoptelea intedrifolia*	Ulmaceae
13.	*Aceria infectoriae*	Eriophyidae	*Ficus rumphii, Ficus racemosa*	Moraceae
14.	*Aceria justicae*	Eriophyidae	*Justicia adhatoda*	Acanthaceae
15.	*Aceria litchi*	Eriophyidae	*Litchi litchi*	Sapindaceae
16.	*Aceria mangiferae*	Eriophyidae	*Mangifera indica*	Anacardiaceae
17.	*Aceria nerii*	Eriophyidae	*Nerium indicum*	Apocynaceae
18.	*Aceria pongamae*	Eriophyidae	*Pongomia pinnata*	Fabaceae
19.	*Aculops spondiasis*	Eriophyidae	*Spondias mombin*	Anacardiaceae
20.	*Aculopus abutiloni*	Eriophyidae	*Abutilon indicum*	Malvaceae
21.	*Aculus montanae*	Eriophyidae	*Diospyros blancoi*	Ebenaceae
22.	*Anthocoptes tectonae*	Eriophyidae	*Tectona grandis*	Lamiaceae
23.	*Anthopoda fici*	Diptilomiopidae	*Ficus Rumphii, Ficus religiosa*	Moraceae

24.	*Calcarus quisqualis*	Eriophyidae	*Quisqualis indica*	Combretaceae
25.	*Calepitrimerus azadirachtae*	Eriophyidae	*Azadirachta indica*	Meliaceae
26.	*Calepitrimerus hispidus*	Eriophyidae	*Ficus religiosa*, *Ficus racemosa*, *Ficus hispida*, *Syzygium* sp.	Moraceae
27.	*Calepitrimerus tabernaemontanis*	Eriophyidae	*Tabernaemontana divaricata*	Apocynaceae
28.	*Colopodacus bengalensis*	Eriophyidae	*Ficus benghalensis*	Moraceae
29.	*Dellilophyes guajavae*	Eriophyidae	*Psidium guajava*	Myrtaceae
30.	*Diptilomiopus ambromae*	Diptilomiopidae	*Ambroma augustum*	Malvaceae
31.	*Diptilomiopus anthocephali*	Diptilomiopidae	*Anthocephalus kadamba*	Rubiaceae
32.	*Diptilomiopus artocarpae*	Diptilomiopidae	*Artocarpus heterophyllus*	Moraceae
33.	*Diptilomiopus assamica*	Diptilomiopidae	*Citrus maxima*	Rutaceae
34.	*Diptilomiopus augustifoliae*	Diptilomiopidae	*Ambroma augustum*	Malvaceae
35.	*Diptilomiopus camerae*	Diptilomiopidae	*Lantana camara*	Verbenaceae
36.	*Diptilomiopus ficus*	Diptilomiopidae	*Ficus religiosa*, *Ficus carica*	Moraceae
37.	*Diptilomiopus guajavae*	Diptilomiopidae	*Psidium guajava*	Myrtaceae
38.	*Disella cumini*	Eriophyidae	*Syzygium cumini*, *Syzygium samarangense*	Myrtaceae
39.	*Disella tectona*	Eriophyidae	*Tectona grandis*	Lamiaceae
40.	*Eriophyes lantanae*	Eriophyidae	*Lantana* sp.	Verbenaceae
41.	*Eriophyes* sp.	Eriophyidae	*Prunus* sp.	Rosaceae
42.	*Eriophyes terminaliae*	Eriophyidae	*Terminalia catappa*	Combretaceae
43.	*Neocecidophyes mallotivagrans*	Eriophyidae	*Mallotus nudiflorus*	Euphorbiaceae
44.	*Neometaculus bauhiniae*	Eriophyidae	*Bauhinia veriegata*	Fabaceae
45.	*Neooxycenus dilleniae*	Eriophyidae	*Dillenia indica*	Dilleniaceae
46.	*Neotegonotus indicus*	Eriophyidae	*Ficus benghalensis*	Moraceae
47.	*Paraphytophus jujube*	Eriophyidae	*Ziziphus mauritiana*	Rhamnaceae
48.	*Paraphytoptus champacae*	Eriophyidae	*Michelia champaca*	Magnoliaceae

49.	*Paraphytoptus jujube*	Eriophyidae	*Zizipus jujuba*	Rhamnaceae
50.	*Paraphytoptus serenus*	Eriophyidae	*Zizipus jujuba*	Rhamnaceae
51.	*Paratetra murrayae*	Eriophyidae	*Murraya koenigii*	Rutaceae
52.	*Phyllocoptruta citricola*	Eriophyidae	*Citrus maxima, Citrus limon*	Rutaceae
53.	*Phyllocoptruta neemae*	Eriophyidae	*Azadirachta indica*	Meliaceae
54.	*Rhynaphytophus ficifoliae*	Eriophyidae	*Ficus carica*	Moraceae
55.	*Tegolophus bambusae*	Eriophyidae	*Bambusa vulgaris*	Poaceae
56.	*Tegolophus indica*	Eriophyidae	*Artocarpus heterophyllus, Artocarpus lakoocha*	Moraceae
57.	*Tegolophus nerii*	Eriophyidae	*Nerium oleander*	Apocynaceae
58.	*Tegolophus spondiasis*	Eriophyidae	*Spondias mombin*	Anacardiaceae
59.	*Tetra asperae*	Eriophyidae	*Streblus asper*	Moraceae
60.	*Vasates pavetis*	Eriophyidae	*Pavetta indica*	Rubiaceae

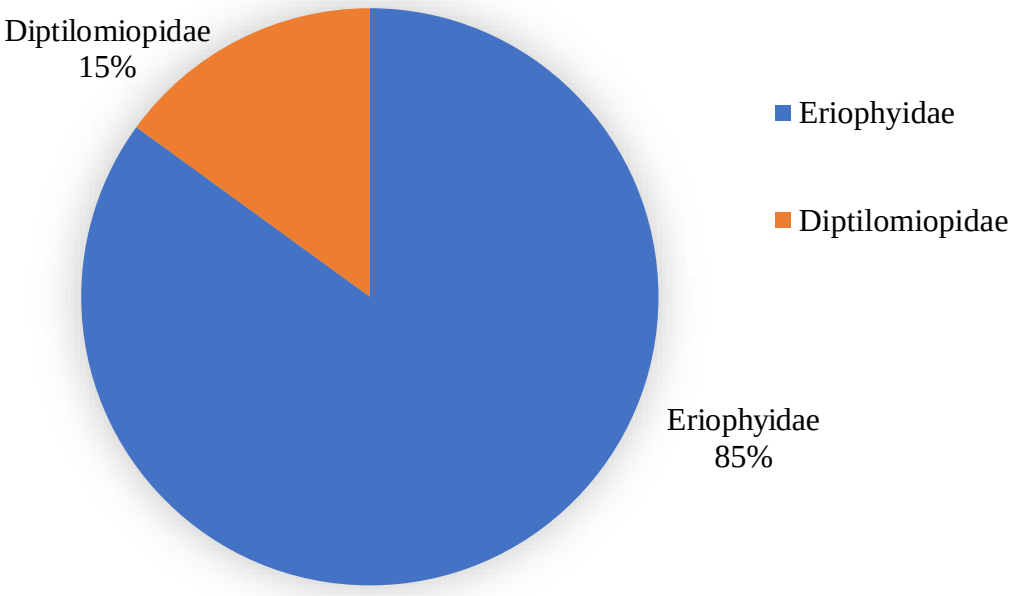

Figure 2: Species Composition of the observed families of Eriophyoid Mites from the Study areas

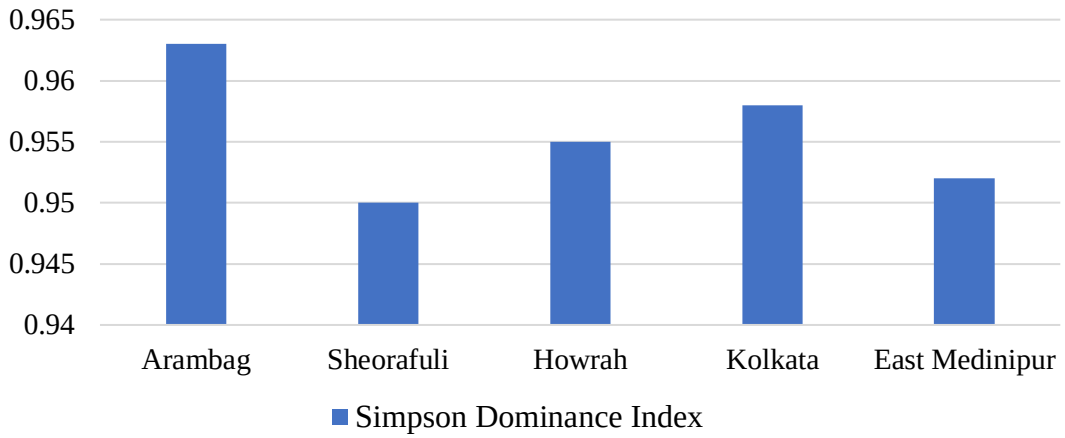

Figure 3: Simpson Dominance index of the Eriophyoidmites from different study areas

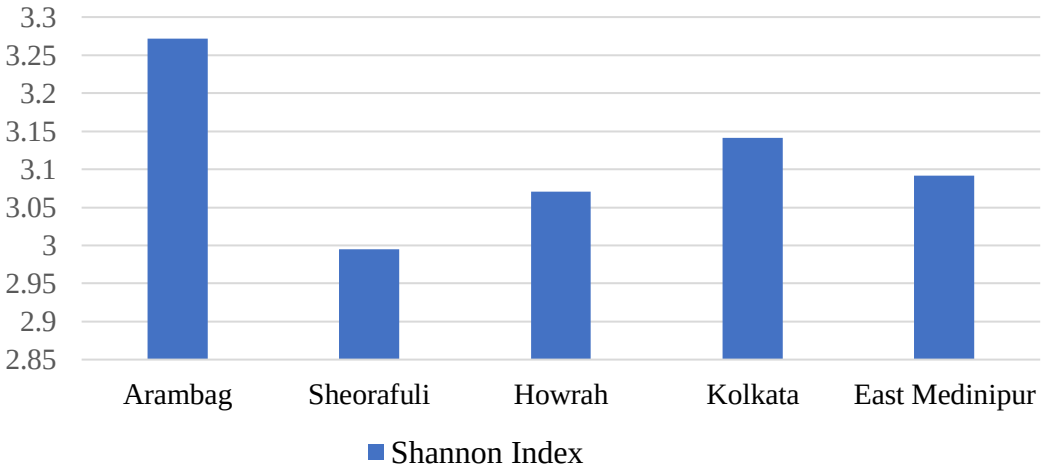

Figure 4: Shannon index of the Eriophyoidmites from different study areas

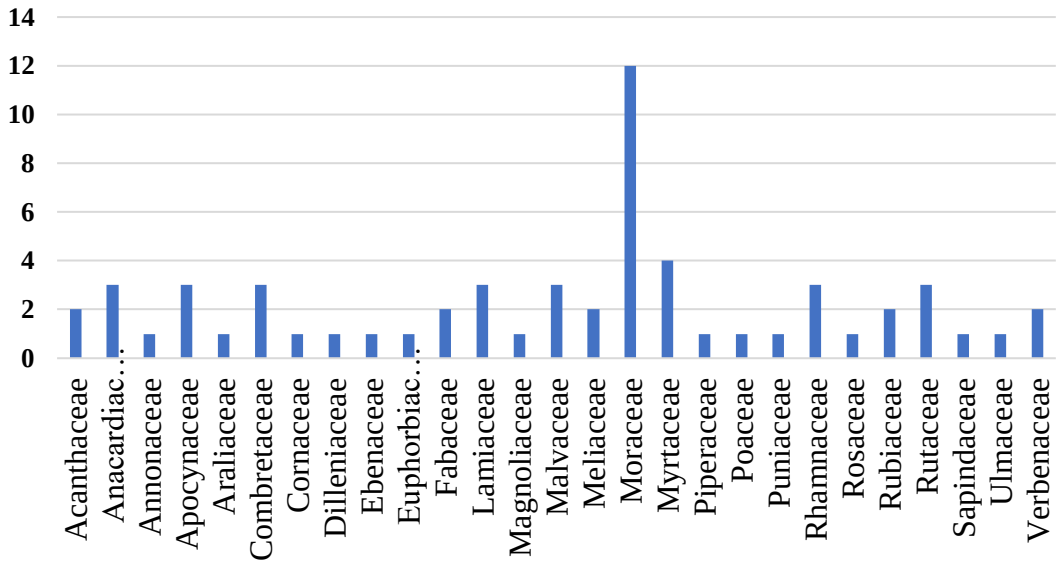

Figure 5: Number of Eriophyoidmites found from different families of host plants

DISCUSSION

This study aims to assess the diversity of Eriophyoid mites across various districts in southern West Bengal, India. The findings indicate a significant diversity of Eriophyoid mite species in these regions. Their diversity is strongly influenced by the presence of host plants, which serve as their primary food source.

Figure 2 represents the family wise graphical representation of the Eriophyoid mite species. During the study, 51 species were recorded from the family Eriophyidae and 9 species from Diptilomiopidae, highlighting the dominance of family Eriophyidae. This family's higher species richness may be due to its broader host range and adaptability to diverse environments. In contrast, the fewer species in Diptilomiopidae suggest a more restricted distribution and host specificity.

Figure 3 illustrates the Simpson's Dominance Index of Eriophyoid mites across different regions, with values close to 1, indicating an even distribution of species and minimal dominance by a few. The highest index was recorded in Arambag (0.963), followed by Kolkata (0.958), Howrah (0.955), East Medinipur (0.952), and Sheoraphuli (0.950). These findings suggest a well-balanced mite community with multiple species coexisting in each area.

Figure 4 depicts the Shannon Diversity Index of Eriophyoid mites, highlighting high species diversity across regions. Arambag exhibited the highest diversity (3.272), followed by Kolkata (3.141), East Medinipur (3.092), Howrah (3.071), and Sheoraphuli (2.995). These values reflect a rich and varied mite community, with Arambag being the most diverse. The high Shannon Index values underline the role of favorable conditions and host plant variety in supporting a balanced and diverse mite population, emphasizing the importance of habitat diversity for ecological stability.

Figure 5 shows the number of Eriophyoid mite species associated with different host plant families. The study found Eriophyoid mites living on plants from 27 different families, showing their ability to adapt to a wide range of hosts. Among these, the family Moraceae recorded the highest number of mite species, with 12 species observed, indicating its significant role in supporting Eriophyoid diversity. Other families with notable contributions include Myrtaceae (4 species), Lamiaceae, Malvaceae, Combretaceae, Apocynaceae, and Rhamnaceae, Anacardiaceae, Rutaceae, each hosting 3 species. Several families, such as Acanthaceae, Fabaceae, Meliaceae, Rubiaceae, and Verbenaceae, supported 2 species each. The remaining families, including Annonaceae, Araliaceae, Cornaceae, Dilleniaceae, Ebenaceae, Euphorbiaceae, Magnoliaceae, Piperaceae, Poaceae, Puniaceae, Rosaceae, Sapindaceae, and Ulmaceae contributed 1 species each. This diverse association highlights the ecological importance of host plants in determining Eriophyoid mite distribution and abundance. Families with higher species counts may provide favourable conditions, such as specific morphological traits or nutritional benefits, crucial for supporting mite populations.

During the present study of Eriophyoid mites, all specimens were found exclusively on the lower surface of leaves. This microhabitat preference provides several ecological advantages, such as protection from environmental stress and predators, a stable and humid environment, and better access to plant nutrients through stomata. The underside of leaves offers tender tissue and stomatal openings, facilitating feeding and nutrient extraction.

Additionally, this location provides a safer environment for egg laying and larval development, supporting the mites' reproductive strategies. However, this behaviour can negatively impact plant health, leading to chlorosis, necrosis, and deformation due to continuous feeding.

During the present study, a total of 60 distinct species were identified from 54 different plant species, underscoring the high level of biodiversity in these regions. Each Eriophyoid mite species exhibited strong host specificity, with certain mites predominantly found on specific plants. This specificity suggests a close co-evolutionary relationship between Eriophyoid mites and their host plants, highlighting the importance of host plant identification in the accurate identification of mite species. (de Lillo et al., 2018)During the study, some mite species were found on multiple host plants, while certain host plant species supported more than one Eriophyoid mite species.For example, *Aceria ficus* (Cottee) was found on various host plants, including *Ficus racemosa*, *Ficus religiosa*, and *Ficus hispida*. Alternatively,*Aceria banyani* Channabasavanna and *Colopodacus bengalensis* Mohanasundaram were both observed on *Ficus benghalensis*.The details of the Eriophyoid mite species and their host plants are provided in Table 1.

In the current study on Eriophyoid mite diversity, several research papers were reviewed and analysed, including those by Chandrapatya *et al*. (2016), Dyamanagouda (2020), and Bhardwaj *et al*. (2023). These studies explored the Eriophyoid mite diversity in various habitats, such as Thailand, Tamil Nadu (India), and Himachal Pradesh (India), documenting 215, 281, and 11 species, respectively. However, these works did not include statistical analyses or diversity indices like the Simpson Dominance Index and Shannon-Wiener Index. In contrast, the present study incorporates these indices and statistical analyses to provide a more comprehensive understanding of Eriophyoid mite diversity and habitat variations.

CONCLUSION

This comprehensive survey of Eriophyoid mites revealed substantial biodiversity and host specificity. Thirty Eriophyoid mite species were identified from 54 plant species, emphasizing the ecological richness and intricate host-mite relationships. The high specificity of Eriophyoid mites to their host plants suggests co-evolutionary adaptations that merit further investigation. These findings are crucial for developing targeted pest management strategies, particularly for economically important crops like mango and litchi, which are susceptible to mite infestations.The observation of spider mites on certain plants where Eriophyoid mites were absent points to the need for comprehensive pest monitoring and integrated management approaches. This study provides a foundational understanding of the diversity and ecological impact of Eriophyoid mites in the region. Future studies should aim to explore such mite fauna mainly from these less explored places from these regions and develop sustainable pest management practices to protect the agricultural productivity as well as biodiversity.

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